AUSLEY & MCMULLEN

ATTORNEYS AND COUNSELORS AT LAW

227 SOUTH CALHOUN STREET
P.O. BOX 391 (ZIP 32302)
TALLAHASSEE, FLORIDA 32301
(850) 224-9115 FAX (850) 222-7560

July 28, 1999

HAND DELIVERED

ORIGINAL

Ms. Blanca S. Bayo, Director
Division of Records and Reporting
Florida Public Service Commission
2540 Shumard Oak Boulevard
Tallahassee, FL 32399-0850

990976-EI

Re: Petition of Tampa Electric Company for Approval of New Environmental Programs for Cost Recovery through the Environmental Cost Recovery Clause

Dear Ms. Bayo:

Enclosed for filing in the above-styled matter are the original and fifteen (15) copies of Tampa Electric Company's Petition for Approval of New Environmental Programs for Cost Recovery through the Environmental Cost Recovery Clause.

Also enclosed are Environmental Project Summaries pertaining to the two new environmental compliance programs that are the subject of this Petition.

Please acknowledge receipt and filing of the above by stamping the duplicate copy of this letter and returning same to this writer.

Thank you for your assistance in connection with this matter.

Sincerely,

James D. Beasley

JDB/pp
Enclosures

RECEIVED & FILED
FPSC-BUREAU OF RECORDS

DOCUMENT NUMBER-DATE
08950 JUL 28 99
FPSC-RECORDS/REPORTING

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In re: Petition of Tampa Electric Company for approval of new environmental programs for cost recovery through the Environmental Cost Recovery Clause.

DOCKET NO. 990976-EI
FILED: July 28, 1999

PETITION OF TAMPA ELECTRIC COMPANY FOR APPROVAL OF NEW ENVIRONMENTAL PROGRAMS FOR COST RECOVERY THROUGH THE ENVIRONMENTAL COST RECOVERY CLAUSE

Tampa Electric Company ("Tampa Electric" or "the company"), by and through its undersigned counsel, and pursuant to Section 366.8255, Florida Statutes, and Florida Public Service Commission Order Nos. PSC-94-0044-FOF-EI and PSC-94-1207-FOF-EI, hereby petitions this Commission for approval of the company's two new environmental compliance programs; the Environmental Protection Agency ("EPA") Section 114 Mercury Emissions Information Collection Effort and the Gannon Electrostatic Precipitator ("ESP") Optimization Study for cost recovery through the Environmental Cost Recovery Clause ("ECRC").

1. Tampa Electric is an investor-owned electric utility subject to the Commission's jurisdiction pursuant to Chapter 366, Florida Statutes. Tampa Electric serves retail customers in Hillsborough and portions of Polk, Pinellas and Pasco Counties in Florida. The company's principal offices are located at 702 North Franklin Street, Tampa, Florida 33602.

2. The persons to whom all notices and other documents should be sent in connection with this docket are:

Angela Llewellyn
Administrator, Regulatory Coordination
Tampa Electric Company
Post Office Box 111
Tampa, FL 33601
(813) 228-1752
(813) 228-1770 (fax)

Lee L. Willis
James D. Beasley
Ausley & McMullen
Post Office Box 391
Tallahassee, FL 32302
(850) 224-9115
(850) 222-7952 (fax)

EPA Section 114 Mercury Emissions Information Collection Effort

3. Implementation of the EPA Section 114 requirements for the Mercury Emissions Information Collection Effort is necessary for Tampa Electric to ensure compliance with new environmental requirements mandated by the United States EPA. The EPA asserts that Section 114 of the Clean Air Act grants to the EPA the authority to request the collection of information necessary for it to study whether or not regulation of electric utility steam generating units is appropriate and necessary.

4. In a letter dated November 25, 1998, Tampa Electric was notified by the EPA that, pursuant to Section 114 of the Clean Air Act, the company is required to periodically sample and analyze coal shipments for mercury and chlorine content during the period January 1, 1999 through December 31, 1999. Although sampling has begun and will continue through 1999 Tampa Electric is only seeking recovery for costs incurred subsequent to the filing of this petition. The mercury and chlorine content coal analyses will be performed by the same laboratory Tampa Electric uses to perform on-going quality assurance analyses of coal shipment samples.

5. In addition to coal sampling, stack testing and analyses are also required. Tampa Electric received a second letter from EPA, dated March 11, 1999, requiring Tampa Electric to perform speciated mercury testing of the inlet and outlet of the last emission control device installed for Big Bend Units 1, 2 or 3, and Polk Unit 1 as part of the mercury data collection as

specified in Exhibit "A", dated March 11, 1999. Stack testing will be performed by outside contract labor. Part of the cost incurred to perform the stack testing is due to the need to construct special test facilities at the Big Bend stack testing location to meet EPA's testing requirements. EPA has set forth the specific compliance requirement, therefore, no other compliance alternatives were considered.

Gannon Electrostatic Precipitator ("ESP") Optimization Study

6. Implementation of the Gannon ESP Optimization Study is necessary for Tampa Electric to ensure compliance with new environmental requirements mandated by the Florida Department of Environmental Protection ("DEP"). Pursuant to Section 403.087, Florida Statutes, approval of Tampa Electric's fuel yard permit for Gannon Station was granted by the DEP in a letter received on February 11, 1999. As specified in Specific Condition No. 21 on page 7 of the DEP letter, permit approval was granted based on the condition that the company conduct an ESP Optimization Study for all six of the Gannon Station units within six months of the permit being issued. At the conclusion of the six month study period, Tampa Electric will be required to submit a report of its findings to the Environmental Protection Commission of Hillsborough County ("EPC") and the DEP. The study is subject to EPC and DEP approval and full implementation of the results of the study or recommended action plans are to be completed within twelve months of the permit issue date, or within a mutually agreed upon date by Tampa Electric and the EPC. The Gannon ESP Optimization Study is being implemented by Tampa Electric as expressed in the DEP permit received on February 11, 1999. The DEP permit is attached hereto as Exhibit "B". The DEP set forth specific compliance criteria, therefore, no other compliance alternatives were considered.

Qualifications for ECRC Recovery

7. Tampa Electric will incur costs for both of the new environmental programs in order to meet compliance requirements related to the Clean Air Act. Both new programs meet the criteria established by this Commission in Docket No. 930613-EI, Order No. PSC-94-0044-FOF-EI in that:

(a) All expenditures will be prudently incurred after April 13, 1993.

(b) The activities are legally required to comply with a governmentally imposed environmental regulation enacted, became effective, or whose effect was triggered after the company's last test year upon which rates are based.

(c) None of the expenditures are being recovered through some other cost recovery mechanism or through base rates.

8. The costs for which Tampa Electric is seeking recovery related to the EPA Section 114 Mercury Emissions Information Collection Effort include both operating and maintenance ("O & M") activities and capital expenditures. These expenditures are projected to be approximately $114,750 for calendar year 1999. The O & M expenses associated with the EPA Section 114 Mercury Emissions Information Collection Effort for both the coal sampling and stack testing are projected to be $49,750 for calendar year 1999 and will be incurred due to the additional analyses. The capital expenditures associated with the Section 114 mercury data collection is expected to be $65,000 and will be incurred due to the need to construct permanent scaffolding to access the stack sampling location.

9. The Gannon ESP Optimization Study will result in O & M expenses and is projected to be $110,000 for calendar year 1999.

10. Tampa Electric is not requesting a change in the ECRC factors that have been approved for calendar year 1999. The actual program expenses will be addressed in an

upcoming projection cycle and will be subject to audit. Tampa Electric proposes to recover the expenditures associated with the environmental activities described above in the upcoming true-up filing cycle.

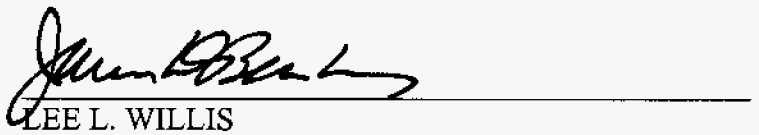
11. Both programs are Clean Air Act compliance activities and should be allocated to rate classes on an energy basis.

12. Tampa Electric is not aware of any disputed issues of material fact relative to the matters set forth in this Petition.

WHEREFORE, Tampa Electric Company respectfully requests the Commission to approve recovery, prospective from the filing date of this Petition, of the EPA Section 114 Mercury Emissions Information Collection Effort, the Gannon ESP Optimization Study and the expenditures associated therewith through the ECRC.

DATED this 28th day of July, 1999.

Respectfully submitted,



LEE L. WILLIS
JAMES D. BEASLEY
Ausley & McMullen
Post Office Box 391
Tallahassee, FL 32302
(850) 224-9115

ATTORNEYS FOR TAMPA ELECTRIC COMPANY

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ENVIRONMENTAL PROJECT SUMMARY

EPA Section 114 Mercury Emissions Information Collection Effort

The EPA Section 114 Mercury Emissions Information Collection Effort compliance initiatives are comprised of two parts; collection of mercury data through coal analyses as well as speciated mercury emissions data collection.

Background: The EPA has issued a Mercury Information Request (ICR) which requires all coal-fired power plants to analyze their coal for mercury and chlorine content and also requires selected coal-fired power plants to analyze their plants emissions for mercury species. In a letter dated November 25, 1998, EPA established coal sampling and testing requirements for coal sampling. This protocol required Tampa Electric to report the amount of coal received on per shipment basis for the calendar year and that every sixth shipment shall be analyzed for mercury and chlorine content of the coal. A minimum of three analyses per month for mercury and chlorine shall be performed. Attached is an estimate of the costs to perform the required coal analyses.

On Wednesday, March 10, 1999 EPA released a list of 84 selected power plants that must measure speciated mercury in stack emissions. Unit 1 at Polk and Unit 3 at Big Bend Power Stations of Tampa Electric Co. were among the 84 selected power plants.

In order to comply with the EPA request, Tampa Electric Co. must measure the mercury species emitted from the Polk Power Station unit 1 stack (outlet). Unit 1 is a Coal Gasification Combined Cycle System firing Syngas in a GE 7F Gas Turbine. This Station is located fifteen miles south of Mulberry, Florida on State Road 37. Sample ports and stack drawings are attached.

Additionally in order to comply with the EPA request, Tampa Electric Co. must measure the mercury species before the limestone based wet scrubber (inlet) and emitted from the Big Bend Station Unit 3 stack (outlet). Unit 3 is a wet bottom Riley Stroker boiler with a cold ESP and fired with bituminous coal. The Big Bend Station is located ten miles south on Tampa, Florida at the intersections of US highway 41 and State Road 672 in North Ruskin Beach, Florida. Sample ports, inlet and outlet drawings are attached.

Coal sampling will be performed by TEC's in-house laboratory while the stack testing will be performed by outside contract labor pursuant to the scope of work described below.

Scope of work for stack testing:

All Work must be performed as outlined and referenced in the attached letter from EPA Director Sally L. Shaver dated March 11, 1999. This Work shall include all professional services, equipment, instrumentation, supplies, manpower and expenses to conduct mercury speciation sampling and analysis on the Polk Unit 1 (outlet stack only) and on Big Bend Unit 3 (scrubber inlet and stack outlet). The Work shall include the preparation of a site-specific test plan and a Quality Assurance Program Plan for each unit to be tested. These plans must be completed, reviewed, revised if necessary and submitted for approval by Tampa Electric Co. in a timely manner in order to meet the June 1, 1999 EPA submittal deadline. Six copies of each final plan shall be provided to Tampa Electric for this submittal. The performance of the field sampling must be coordinated/scheduled with Tampa Electric Co. to prevent any operational and or maintenance conflicts and to meet notification requirements. The Contractor shall provide as part of their bid, any additional costs that may be incurred due to re-mobilizations and or delays of Tampa Electric Co. The Work shall include the fuel analysis for each test. Tampa Electric Co. shall obtain the fuel sample and provide the sample to the contractor as well as all the plant operating data required during the tests. The Work shall include a draft of the final report for review and approval by Tampa Electric Co.. Any revisions are included in the scope of Work. The contractor shall provide six copies of the final report to Tampa Electric Co.

- Consequences of Not Implementing (Year 1 and Long Term)
  Not implementing this project will result in a violation of the EPA's mandate to perform such testing and failure to comply with EPA's request could result in fines or other enforcement actions.

- Justification (Expected Gains in Service, Economics & Reliability and Intangible Benefits)
  No gains in service, economics or reliability will occur as a result of this project

- Discussion of Business Risk
  Based on the results of the study EPA may require further environmental compliance activities to be conducted.

- Detailed Description (Describe Units of Property) Additions
  Scaffolding to accommodate the stack testing will need to be constructed

- Removal (Described Retirement Units of Property
  N/A

DISCUSSION OF ALTERNATIVES

- Alternatives Considered

  No alternatives applicable

- Cost Effective Measures Considered

  No alternatives applicable

EPA SECTION 114 MERCURY EMISSIONS INFORMATION COLLECTION EFFORT

O & M Expenses

RESOURC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
00							1,625	1,625	1,625	1,625	1,625	1,625	$ 9,750 *
01													
02													
03											40,000		$ 40,000 **
06													
07													
09													
10													
15													
70													
71													
72													
TOTAL													$ 49,750

* Cost estimates based on laboratory analytical costs of $48.75 per sample. Estimated number of samples for July through December 1999 is 200 samples.

** Cost estimate for contract labor to perform stack testing

EPA SECTION 114 MERCURY EMISSIONS INFORMATION COLLECTION EFFORT

Capital Expenditures

RESOURCE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
00											15,000		$ 15,000
01													
02													
03											50,000		$ 50,000
06													
07													
09													
10													
15													
70													
71													
72													
TOTAL													$ 65,000

ENVIRONMENTAL PROJECT SUMMARY

Gannon Electrostatic Precipitator Optimization Study

Condition No. 21 of the Gannon Coal Yard permit requires that an Electrostatic Precipitator Optimization Study be conducted for all six units at the Gannon Station. This study will be conducted by an outside contractor and will include the following scope of work:

Scope of Work:

The scope of work for this study involves investigating the ESP operations for all six ESP's at the Gannon Station and identifying the operating parameters and operating practices that will describe/provide the most effective particulate collection efficiency for each ESP. This includes but is not limited to:

1) Identification of operating procedures, parameters and their corresponding range of values that will be indicative of effective particulate collection efficiency.
2) The study shall provide justification for the use of this operating parameter (s) or procedure (s) as an indicator (s) of effective particulate collection efficiency. The justification shall have sufficient detail and engineering justification to provide Florida air permitting agencies with reasonable assurance to satisfy the requirements of permit condition #21 of the Florida Department of Environmental Protection (FDEP) permit number 0570040-006-AC (see attached).

Specific Tasks to be accomplished in the Scope of Work

Preliminary Inspection

An inspection of the ESP's both internally and externally for mechanical and electrical defects shall be conducted as needed. The inspections shall include, but are not limited to, inspecting the outer casing, rapping system, collection plates, all electrodes, insulators, ducting and potential for flue gas sneakage. An analysis of operation and maintenance records for each ESP shall be performed as needed and the results of this analysis shall be submitted to Tampa Electric in a detailed report.

Key Operating Parameters

The following operating parameters directly affect ESP performance and, therefore, shall be investigated and evaluated and measured if deemed necessary by Tampa Electric to complete the requirements of permit condition #21 of Florida Department of Environmental Protection permit number 0570040-006-AC:

- Flue gas volume and velocity distribution
- Flue gas flow and temperature distribution
- Flue gas moisture content and chemical composition
- Rapping process
- Particle size distribution and concentration

- Flyash Particle resistivity
- Power input and characteristics provided to the ESP
- Corona power
- Specific collection area

Key Operating Practices

Once the key operating parameters have been identified, analyzed and evaluated, the conditions for improved operation shall be established. The contractor shall determine an operational baseline and evaluate the effect of process variations in the normal operation of the ESPs. These variations shall include, but are not limited to, the following:

1. Periods of multiple field outages. (Both in series and in parallel)
2. Establish corrective actions for conditions outside of normal operation.
3. Establish and justify conditions that may allow operation in compliance with regulations outside of the normal conditions.
4. Establish a maximum number of fields, both in parallel and in series that can be out of service at one time while still not exceeding the regulatory requirements.

All of these operating practices shall be computer modeled and analyzed if deemed necessary by Tampa Electric. This analysis shall include a 'worst case scenario' to be established for each ESP. The most effective practices shall be evaluated thoroughly in a detailed technical and economic evaluation that shall include, but is not limited to, the following items:

1. Establishing the point of diminishing collection efficiency on power input.
2. Determining the optimum current and voltage as established by the flue gas conditions.

Reports

The contractor shall produce two reports. One will include all products of the study. The second will be produced for the consumption of the air permitting agencies. This report will be designed to satisfy the requirements of the aforementioned permit condition.

- Consequences of Not Implementing (Year 1 and Long Term)

  Not implementing this project will result in a violation of the coal yard permit conditions and could result in fines and/or revocation of the permit.

- Justification (Expected Gains in Service, Economics & Reliability and Intangible Benefits)

  This project is an environmental requirement and is required as part of the Gannon Coalyard throughput increase permit.

- Discussion of Business Risk
  This project does not present any significant business risks, except that depending on the outcome of the studies, DEP may require further environmental compliance activities to be conducted.

- Detailed Description (Describe Units of Property) Additions
  N/A

- Removal (Described Retirement Units of Property
  N/A

DISCUSSION OF ALTERNATIVES

- Alternatives Considered

  No alternatives are applicable.

- Cost Effective Measures Considered

  No alternatives are applicable.

GANNON ELECTROSTATIC PRECIPITATOR OPTIMIZATION STUDY

O & M Expenses

RESOURCE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
00													
01													
02													
03									25,000	35,000	40,000	10,000	$ 110,000
06													
07													
09													
10													
15													
70													
71													
72													
TOTAL													$ 110,000

EXHIBIT "A"

November 25, 1998 letter from EPA

March 11, 1998 letter from EPA

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
RESEARCH TRIANGLE PARK, NC 27711

OFFICE OF
AIR QUALITY PLANNING
AND STANDARDS

November 25, 1998

Tampa Electric Company
702 North Franklin St.
P.O. Box 111
Tampa, FL 33601
ATTN: Hugh W. Smith, Director, Environmental & Fuels, or Chief Environmental Coordinator

Dear Sir:

This letter is to inform you that the U.S. Environmental Protection Agency (EPA) is using its authority under section 114 of the Clean Air Act, as amended, (the Act) to require that all coal-fired electric utility steam generating units provide certain information that will allow the Agency to calculate the annual mercury emissions from each such unit. This information will assist the Administrator of the EPA in determining whether it is appropriate and necessary to regulate emissions of hazardous air pollutants (HAPs) from electric utility steam generating units. These data in some form will ultimately be made available to the public.

Section 112(n)(1)(A) of the Act requires the Administrator of the EPA to perform a study of the hazards to public health reasonably anticipated to occur as a result of emissions by electric utility steam generating units of HAPs and to prepare a Report to Congress containing the results of the study. The study has been completed and the Final Report to Congress was issued on February 24, 1998.

In the Final Report to Congress, the EPA stated that mercury is the HAP emission of greatest potential concern from coal-fired utilities and that additional research and monitoring are merited. The EPA also listed a number of research needs related to these mercury emissions. These include obtaining additional data on mercury emissions (e.g., how much is emitted from various types of units; how much is divalent vs. elemental mercury; and how do factors such as control device, fuel type, and plant configuration affect emissions and speciation).

Section 112(n)(1)(A) of the Act also requires the Administrator to regulate electric utility steam generating units under section 112 if the Administrator finds that such regulation is appropriate and necessary after "considering the results of the study" noted above. At the time the report was issued, the Agency deferred making any determination as to whether regulation of

electric utility steam generating units for HAP emissions is appropriate and necessary The Administrator interprets the quoted language as indicating that the results of the study are to play a principle, but not exclusive, role in informing the Administrator's decision as to whether it is appropriate and necessary to regulate electric utility steam generating units under section 112. The Administrator believes that in addition to considering the results of the study, she may consider any other available information in making her decision. The Administrator also believes that she is authorized to collect and evaluate any additional information which may be necessary to inform this decision, as well as possible subsequent decisions, regarding mercury emissions from electric utility steam generating units.

After carefully considering the Final Report, the Administrator has concluded that obtaining additional information from owner/operators of coal-fired electric utility steam generating units is appropriate. The data collected under this effort, along with other information, will be used by the Agency in evaluating whether or not regulation of electric utility steam generating units is appropriate and necessary and in potential subsequent regulatory decisions. Section 112(a)(8) of the Act defines "electric utility steam generating unit" as follows:

> The term "electric utility steam generating unit" means any fossil fuel fired combustion unit of more than 25 megawatts that serves a generator that produces electricity for sale. A unit that cogenerates steam and electricity and supplies more than one-third of its potential electric output capacity and more than 25 megawatts electrical output to any utility power distribution system for sale shall be considered an electric utility steam generating unit.

Specifically, the data will respond in part to the research need noted above, providing the Agency with updated information on the total amount of mercury emitted from electric utility steam generating units and on the speciation and controllability of such mercury . The data will be added to the existing database and will be used to further evaluate the emission of mercury by electric utility steam generating units.

This letter is to request from Tampa Electric Company information about all of your coal-fired electric utility steam generating unit(s). The information requested is itemized in enclosure 1 to this letter. You are required to complete and return Part I of the enclosure by January 4, 1999. This information will allow the Agency to confirm the unit-specific data requested and to allow for selection of units to perform speciated mercury emissions testing. All recipients that are owner/operator(s) of units meeting the section 112(a)(8) definition of an electric utility steam generating unit and who utilize coal as a fuel are required to initiate the coal mercury analyses program outlined in Part II of the enclosure on January 1, 1999 and to continue such analyses until December 31, 1999. Owner/operators of units selected to perform speciated mercury emissions testing will be notified at a later date. We are sensitive to the amount of labor required to respond to this request and have tried to limit it to features important to regulatory development and to minimize demands on your time. Enclosure 2 gives additional information and instructions for compiling and providing the information requested.

The authority for the EPA's information gathering is included in section 114 of the Act (42 U.S.C. 7414). Enclosure 3 contains a summary of this authority. The EPA is requiring this information under an information collection request (ICR) approved by the Office of Management and Budget (OMB) under the Paperwork Reduction Act. The OMB Control No. is 2060-0396.

The EPA does not believe that any of the information subject to this request is confidential; however, if you believe that disclosure of specific pieces of information you submit would reveal a trade secret, you should clearly identify such pieces of information. Please do not label an entire response "confidential" if only certain portions consist of material which you claim to be trade secret information. Refer to enclosure 3 for the information the EPA may require, at a later time, to support your confidentiality claims. Any information determined to constitute a trade secret will be protected under 18 U.S.C. 1905. If no claim of confidentially accompanies the information when it is received by the EPA, it may be made available to the public by the EPA without further notice (40 CFR part 2.203, September 1, 1976). Section 114(c) of the Act exempts emission data from claims of confidentiality. The emission data you provide may be made available to the public. A clarification of what the EPA considers to be emissions data is contained in enclosure 4. You should not mark the emissions section as confidential business information.

The EPA has contracted Research Triangle Institute (RTI) (Contract No. 68-D6-0014) to obtain information pertinent to the industry. Thus, as noted in enclosure 5, RTI has been designated by the EPA as an authorized representative of the Agency. Therefore, RTI has the rights discussed above and in enclosure 3. Accordingly, RTI will have access to information provided to the EPA in response to this request. As a designated representative of the Agency, RTI is subject to the provisions of 42 U.S.C. 7414(c) respecting confidentiality of methods or processes entitled to protection as trade secrets.

Enclosure 6 summarizes Agency and Emission Standards Division policies and procedures for handling privileged information and describes the EPA's contractor commitments and procedures for use of confidential materials. It is the EPA's policy that compliance by an authorized representative with the requirements detailed in enclosure 6 provides sufficient protection for the rights of submitters of privileged information.

If you have any questions regarding this request, or are unable to provide responses to the information requested under Part I of enclosure 1 by January 4, 1999, please contact Mr. William Maxwell of the EPA at (919) 541-5430.

Sincerely,

Sally L. Shaver

Sally L. Shaver
Director
Emission Standards Division

6 Enclosures

cc: Howard Rhodes, Division Director, Florida Department of Environmental Protection - Air Resources Management
Winston A. Smith, Region IV, Director, Air, Pesticides & Toxics Mgmt. Division

Form Approved 11/13/98
OMB Control No. 2060-0396
Approval Expires 06/30/00

ELECTRIC UTILITY STEAM GENERATING UNIT MERCURY EMISSIONS INFORMATION COLLECTION EFFORT

BURDEN STATEMENT

Preliminary estimates of the public burden associated with this information collection effort indicate a total of 186,127 hours and $16,806,796. This is the estimated burden for 1,100 facilities to provide information on their boilers, 766 facilities to provide coal analyses, and 102 units to provide speciated mercury emission data.

Burden means the total time, effort, or financial resources expended by persons to generate, maintain, retain, or disclose or provide information to or for a Federal agency. This includes the time needed to review instructions; develop, acquire, install, and utilize technology and systems for the purposes of collecting, validating, and verifying information, processing and maintaining information, and disclosing and providing information; adjust the existing ways to comply with any previously applicable instructions and requirements; train personnel to be able to respond to a collection of information; search data sources; complete and review the collection of information; and transmit or otherwise disclose the information. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information that is sent to ten or more persons unless it displays a currently valid OMB control number.

GENERAL INSTRUCTIONS

Please provide the information requested in the following forms. If you are unable to respond to an item as it is stated, please provide any information you believe may be related. Use additional copies of the request forms for your response.

If you believe the disclosure of the information requested would compromise a trade secret, clearly identify such information as discussed in the cover letter. Any information subsequently determined to constitute a trade secret will be protected under 18 U.S.C. 1905. If

no claim of confidentiality accompanies the information when it is received by EPA, i' may be made available to the public by EPA without further notice (40 CFR 2.203, Septembe 1, 1976). Because section 114(c) of the Act exempts emission data from claims of confidentiali /, the emission data you provide may be made available to the public. A definition of what the EPA considers emissions data is provided in 40 CFR 2.301(a)(2)(i).

The following section is to be completed by all facilities:

- Part I - General Facility Information: once for each facility. A copy of Part I should be completed and returned to the address noted below within 30 days of receipt.

The following section is to be completed by all facilities meeting the section 112 a)(8) definition of an electric utility steam generating unit:

- Part II - Coal Analyses: Item 3 of Part II is to be completed for every coal shipment received at each facility at which one or more coal-fired electric utility steam generating units are located. Item 4 of Part II is to be completed for every sample analyzed per the schedule described in Part II. A copy of each Part II compiled for a calendar quarter should be completed and returned to the address noted below within 45 days of the end of the previous calendar quarter.

The following section is to be completed by all facilities selected for speciated stack testing:

- Part III - Speciated Mercury Emissions Data: one emissions test (consisting of three runs at each sampling location). A copy of the emissions test report should be completed and returned to the address noted below within 60 days of completion of the test.

Detailed instructions for each part follow.

Questions regarding this information request should be directed to Mr. Bill Maxwell at (919) 541-5430 or Mr. Bill Grimley at (919) 541-1065.

Return this information request and any additional information to:

Emissions Standards Division (MD-13)
U.S. Environmental Protection Agency
Office of Air Quality Planning and Standards
Research Triangle Park, North Carolina 27711

Attention: Sally L. Shaver, Director

Form Approved 11/13/98
OMB Control No. 1060-0396
Approval Expire 06/30/00

PART I: GENERAL FACILITY INFORMATION

NOTE: If any type of coal is fired, complete Part I and continue to Part II. If NO coal is fired, complete only Part I and return to the address noted earlier.

1. Name of legal owner of facility: _____

2. Name of legal operator of facility, if different from legal owner: _____

3. Address of ____legal owner or____operator: _____

4a. Plant name (as reported on Form EIA-767, "Steam-Electric Plant Operation and Design Report," page 1, question 3) OR Facility name (as reported on Form EIA-867, "Annual Nonutility Power Producer Report," page 1, question 2): _____

4b. Plant code (as reported on Form EIA-767, page 1, question 4) OR Facility code (as reported on Form EIA-867, page 1, question 1): _____

5. Complete street address of facility (physical location): _____

6. Provide mailing address if different: _____

7. Name and title of contact(s) able to answer technical questions about the completed survey: _____

8. Contact(s) telephone number(s): _____
and e-mail address(es): _____

9. What fuels are fired in any steam generating unit at this facility

_____ coal _____ oil _____ natural gas _____other (specify_____)

10. If coal is fired, indicate which type of coal is utilized:

__ lignite __ subbituminous (including waste coal)

__ bituminous (including waste coal or gob) __ anthracite (including waste coal or culm)

11. Identification (or designation), nameplate capacity (megawatts electric output; MWe), and MWe sold to any utility power distribution system for all coal-fired steam generating units (boilers) (as defined by section 112(a)(8) of the Clean Air Act) located at this facility.

Boiler ID[1]	MWe capacity	MWe sold	Boiler ID	MWe capacity	MWe sold

[1] Boiler ID (as reported on Form EIA-767, "Steam-Electric Plant Operation and Design Report," page 5, question 1) OR Generator ID (as reported on Form EIA-867, "Annual Nonutility Power Producer Report," page 7, question 1).

12. For each b ›iler noted in Part I, question 11, provide the following information:

Boiler ID[2]	Type[3]	NO_x control[4]	SO_2 control[5]	PM co ıtrol[6]
·1				

[2] Boiler ID (as reported on Form EIA-767, "Steam-Electric Plant Operation and Design Report," page 5, question 1) OR Generator ID (as reported on Form EIA-867, "Annual Nonutility Power Producer Report," page 7, question 1).

[3] Examples: tangential-fired; cyclone; wall-fired; fluidized bed combustion (FBC); coal gasification

[4] Examples: low-NO_x burners; selective catalytic reduction (SCR); selective non-catalytic reduction (SNCR)

[5] Examples: wet flue gas desulfurization (FGD; any type); dry scrubbing (any type); compliance (low sulfur) coal; FBC (any type); coal gasification

[6] Examples: fabric filter; cold-side electrostatic precipitator (ESP); hot-side ESP; cyclone

Form Approved 1/13/98
OMB Control No. 2(60-0396
Approval Expires)6/30/00

PART II: COAL ANALYSIS

Each facility should report the amount of coal received on a per shipment basis for the calendar year. In addition, for every sixth shipment the mercury and chlorine content of the coal, and any other available analyzed information as specified, should be reported. However, each facility is required to obtain a minimum of three analyses per month for mercury and chlorine in order to maintain good statistical practices. There are two exceptions where "shipments" will not apply in maintaining these three analyses per month. If a facility such as a mine-mouth operation does not receive "shipments" of coal, analyses of the coal supply should be made approximately every ten days in order to meet the required three analyses per month. A facility that receives less than 18 shipments of coal in any given month should report the analyzed information for 3 shipments received that are spaced approximately equally across the month.

At the end of the first quarter (i.e., three months), an evaluation is required to determine whether or not a 90 percent confidence interval about the mean amount of mercury content from the coal is within ± 10 percent. The calculation is as follows:

$$P[\overline{X}-t_{.05}(\frac{s}{\sqrt{n}}) < \mu < \overline{X}+t_{.05}(\frac{s}{\sqrt{n}})]=.90$$

$$LCL_{.05} = \overline{X}-t_{.05}(\frac{s}{\sqrt{n}})$$

$$UCL_{.05} = \overline{X}+t_{.05}(\frac{s}{\sqrt{n}})$$

$$\textit{Target: } LCL_{.05} \geq .9\overline{X} \textit{ with } UCL_{.95} \leq .1\overline{X}$$

If the evaluation meets this target, continue analysis for every sixth shipment with a minimum of three reports per month. If the evaluation is outside the target, start reporting every third shipment, while maintaining a minimum of three analyses per month.

This evaluation should be repeated every quarter (i.e., every three months) for the duration of one year. The following table indicates how to proceed based on the potential outcomes of the quarterly evaluations.

IF	THEN
Two quarterly evaluations back-to-back (i.e., total over a 6-month period) meet target...	...analyses may be relaxed to every twelfth shipment.
The evaluation results fail to meet the target in any quarter...	...analyses must increase to every shipment, if current analyses are being made for every third shipment; ... OR
	...to every third shipment, if current analyses are being made for every sixth shipment; ... OR
	...to every sixth shipment, if current analyses are being made for every twelfth shipment.
Analyses for every shipment or every third shipment and a quarterly evaluation meets the target...	...analyses may be relaxed back to every third shipment, if analyzing every shipment, ... OR
	...analyses may be relaxed back to every sixth shipment, if analyzing every third shipment.

There should never be fewer than three reports per month (i.e., minimum total reports for the year should be 36) for each facility nor should a facility ever sample less frequently than every twelfth shipment. Sufficient data were unavailable to determine whether or not a $\pm$ 10 percent of a 90 percent confidence interval about the mean amount of mercury contained within the coal was attainable. If data become available before reporting begins on January 1, 1999 that indicates this percentage should be higher or lower, proper adjustments will be made.

Form Approved 11/13/98
OMB Control No. 2060-0396
Approval Expires 06/30/00

1a. Plant or facility name from Part I, question 4a: _____

1b. Plant or facility code from Part I, question 4b: _____

2. Period covered by this report: _____

3. For each individual coal shipment received, provide the following information:

Date shipment received	Amount received, dry basis, tons	ID # of boiler(s) firing coal[7]	Coal source			Contract verification sample ID #	Coal shipment method
			State	County	Seam[8]		

[7] Boiler ID (as reported on Form EIA-767, "Steam-Electric Plant Operation and Design Report," page 5, question 1) OR Generator ID (as reported on Form EIA-867, "Annual Nonutility Power Producer Report," page 7, question 1).

[8] If known.

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1a. Plant or facility name from Part I, question 4a: _____

1b. Plant or facility code from Part I, question 4b: _____

2. Period covered by this report: _____

3. For each individual coal shipment received, provide the following information:

Date shipment received	Amount received, dry basis, tons	ID # of boiler(s) firing coal[7]	Coal source			Contract verification sample ID #	Coal shipment method
			State	County	Seam[8]		

[7] Boiler ID (as reported on Form EIA-767, "Steam-Electric Plant Operation and Design Report," page 5, question 1) OR Generator ID (as reported on Form EIA-867, "Annual Nonutility Power Producer Report," page 7, question 1).

[8] If known.

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4. For each contract verification sample picked for analysis, provide the following information (reported as dry basis):

Sample ID #	Total amount of coal represented by sample, tons	Total sulfur, %	Heating value, Btu/lb	Ash, %	Mercury, ppm	Chlorine, ppm

5. Analyses provided in Part II, question 4 supplied by

__ Coal supplier (name and address) _____

_____

__ Other (name and address) _____

_____

6. Name and address of laboratory performing analyses:

_____

_____

7. Specific method(s) used to obtain samples:_____

8. Specific method(s) used to prepare samples for analysis for mercury:

_____

_____

9. Specific method(s) used to analyze samples for mercury: _____

_____

10. Evidence of accuracy and precision of analysis for mercury (e.g., results of concurrent analyses of NIST SRMs):_____

11. In addition to the analyses required in question 4 above, please provide copies of any analyses for (a) complete proximate and ultimate analyses, (b) additional trace metals, and (c) the mineralogy of the ash that are readily available for the coal(s) listed in Part II, question 3 above. The Agency is requesting these data only as they may already be available; no additional sampling or analyses are required to provide these data.

PART III: SPECIATED MERCURY EMISSIONS TESTING DATA

For statistically selected sources from the category, testing is to be performed on a one-time basis at the inlet and outlet of the SO_2 control device or, for the category of "no SO_2 control," at the inlet and outlet of the particulate control device.

Prior to the test, a site-specific test plan is to be submitted by the owner/operator to the EPA for review and approval. In addition, any revisions suggested by the owner/operator and any plant-specific material that should be added to the generic Quality Assurance Project Plan (QAPP) provided by the EPA with the section 114 letter should be submitted for approval with the site-specific test plan. The EPA will provide the results of its review of the site-specific test plan, and any QAPP modifications suggested, to the facility within 30 days of receipt. The test plan is to be prepared according to the document entitled "Preparation and Review of Site Specific Test Plans," which can be electronically obtained from the Internet at

"http://www.epa.gov/ttn/emc/guidlnd.html".

Use the test method entitled "Standard Test Method for Elemental, Oxidized, Particle-Bound, and Total Mercury in Flue Gas Generated from Coal-Fired Stationary Sources (Ontario Hydro Method)," which can be electronically obtained from the Internet at

"http://www.epa.gov/ttn/emc/prelim.html".

Each test is to consist of three separate runs at each sampling location with inlet and outlet runs being run concurrently. Concurrent coal sampling and analysis of the coal fired during each of the three separate runs is to be done by taking three coal samples at intervals throughout each testing period, and the results are to be reported along with the emission results. Following the testing, submit the test report prepared according to the document entitled "Preparation and Review of Emission Test Reports," which can be electronically obtained from the Internet at

"http://www.epa.gov/ttn/emc/guidlnd.html".

ENCLOSURE 2

Electric Utility Steam Generating Unit
Mercury Emissions Information Collection Effort
Web Site

In order to minimize the effort involved with submitting the required information, a Web site is available to facilitate communication and assist with transfer of the data. The use of the Web site will also reduce the number of errors that would occur if entering the information from paper. The Web site address is:

http://utility.rti.org

To keep the mercury emissions data on this site secure, the site will be password protected, and access will be limited to designated representative(s) from each company. The individuals named as contacts under Part I, question 7, will be the designated representatives, unless specified otherwise by a company. These individuals will each be assigned a unique username and password after the information in Part I is received. The site will employ the Secure Sockets Layer (SSL) technology to encrypt all transmissions. This is the same technology used by commercial Web sites to process credit card information. Each company will only have access to their own coal analysis data. No public reporting of the data will be made directly from this site. The site will be as user friendly as possible. The following telephone number is available to provide assistance in data entry and answer questions about the site: **1-800-262-3011.**

Part I of the questionnaire may be completed either on paper (use the form enclosed with the letter), or electronically. An electronic version of the form is available for download at the Web site in both Excel and Lotus formats. Paper forms should be mailed or faxed to Sally L. Shaver (Fax No. 919-541-0072). Electronic forms should be emailed to **partone@utility.rti.org** or uploaded at the site. Instructions for uploading the forms are available on the site. The site will not be secure or password protected during the time Part I information is being received.

The coal analysis data required under Part II of the questionnaire will be submitted through the Web site. This part of the Web site is under construction and will be available by March 1, 1999. Information and instructions for the Web site data entry will be provided by late January 1999, and some testing of the site will be performed during February 1999. The site will be secure and password protected for the individuals named under Part I, question 7. It is important that these individuals' email addresses be included in the information provided with Part I, because information and instructions will be provided through email to simplify and speed up the process.

Part III of the questionnaire is only required from selected facilities. The submission of this portion will be by paper report. The Web site will not be used to submit the information required under this part of the questionnaire.

EPA's Information Gathering Authority Under Section 114 of the Clean Air Act

Under Section 114 of the Act (42 U.S.C. 7414), Congress has given the U.S. Environmental Protection Agency broad authority to secure information needed "for the purpose of (i) developing or assisting in the development of any implementation plan under Section 110 or 111(d), any standard of performance under Section 111, or any emission standard under Section 112, (ii) determining whether any person is in violation of any such standard of any requirement of such a plan, or (iii) carrying out any provision of this Act." Among other things, Section 114 authorizes EPA to make inspections, conduct tests, examine records, and require owners or operators of emission sources to submit information reasonably required for the purpose of developing such standards. In addition, the EPA Office of General Counsel has interpreted Section 114 to include authority to photograph or require submission of photographs of pertinent equipment, emissions, or both.

Under Section 114, EPA is empowered to obtain information described by that section even if you consider it to be confidential. You may, however, request that EPA treat such information as confidential. Information obtained under Section 114 and covered by such a request will ordinarily be released to the public only if EPA determines that the information is not entitled to confidential treatment.* Procedures to be used for making confidentiality determinations, substantive criteria to be used in such determinations, and special rules governing information obtained under Section 114 are set forth in 40 CFR Part 2 published in the Federal Register on September 1, 1976 (40 FR 36902).

Pursuant to §2.204(a) of EPA's Freedom of Information Act (FOIA) regulation, in the event a request is received, or it is determined that a request is likely to be received, or EPA desires to determine whether business information in its possession is entitled to confidential treatment even though no request for release of the information has been received, please be advised that EPA will seek, at that time, the following information to support your claim as required by §2.204(e)(4) of EPA's FOIA regulations:

1. Measures taken by your company to guard against undesired disclosure of the information to others;

2. The extent to which the information has been disclosed to others, and the precautions taken in connection therewith;

3. Pertinent confidentiality determinations, if any, by EPA or other Federal agencies, and a copy of any such determinations, or reference to it, if available; and

4. Whether your company asserts that disclosure of the information would be likely to result in substantial harmful effects on the business' competitive position, and if so, what those harmful effects would be, why they should be viewed as substantial, and an explanation of the causal relationship between disclosure and such harmful effects.

*Section 114 requires public avaiability of all emission data and authorizes diclosure of confidential information in certain circumstances. See 40 FR 36902 - 36912 (September 1, 1976)

ENCLOSURE 4

[AD-FRL-3906-3]

Disclosure of Emission Data Claimed as Confidential Under Sections 110 and 114(c) of the Clean Air Act

AGENCY: Environmental Protection Agency (EPA).

ACTION: Notice of policy on public release of certain emission data submitted under sections 110 and 114(c) of the Clean Air Act (CAA).

SUMMARY: Section 114(c) of the CAA excludes emission data from the general definition of trade secret information. Certain classes of data submitted to the EPA under sections 110 and 114(a) of the CAA are emission data, and, as such, cannnot be withheld from disclosure as confidential pursuant to section 1905 of title 18 of the United States Code. This notice clarifies EPA's current policy, and solicits comment regarding that policy and categories of data which it considers excluded from a trade secret definition.

DATES: Written comments pertaining to this notice are requested by April 22, 1991.

ADDRESSES: Submit comments to: Nancy D. Riley, U.S. Environmental Protection Agency, Emission Standards Division, Pollutant Assessment Branch (MD–13), Research Triangle Park, NC 27711.

FOR FURTHER INFORMATION CONTACT: Timothy Mohin (telephone: (919) 541–5349 commercial/FTS 629–5349) or Karen Blanchard (telephone: (919) 541–5503 commercial/FTS 629–5503), Pollutant Assessment Branch (MD–13), Emission Standards Division; or Thomas Rosendahl (telephone: (919) 541–5404 commercial/FTS 629–5404), National Air Data Branch (MD–14), Technical Support Division, U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711.

SUPPLEMENTARY INFORMATION: The EPA routinely uses the authority of sections 110 and 114(a) of the CAA to gather technical information from industries involved in operations that lead to emission of pollutants to the ambient air. This information has been used, among other things, to better characterize emitting facilities and to evaluate the need for and impacts of potential regulation.

Information requests under sections 110 and 114(a) of the CAA typically include questions on uncontrolled and controlled emission rates and emission parameters of the pollutant or group of pollutants of concern. The respondents sometimes claim that its response constitutes trade secret information, and thus, should be treated as confidential. Claims of confidentiality may be made under section 114(c) of the CAA, which states: "* * * upon a showing satisfactory to the Administrator by any person that records, reports, or information, or a particular part thereof, (other than emission data) to which the Administrator has access under this section if made public, would divulge methods or processes entitled to protection as trade secrets of such person, the Administrator shall consider such * * * confidential in accordance with the purposes of section 1905 of title 18 of the United States Code * * *." If the Administrator so determines, the information is not disclosable to the public.

However, section 114(c) of the CAA provides that information claimed to be a trade secret but which constitutes emission data may not be withheld as confidential. Although typically the EPA evaluates whether information constitutes emission data on a case-by-case basis, it believes that some kinds of data will always constitute emission data within the meaning of section 114(c). The purpose of this notice is to describe, without attempting to be comprehensive, that information which the EPA generally considers to be emission data, and which cannot qualify as confidential under either section 114(c) or section 110 (as set forth in 40 CFR 51.321, 51.322 and 51.323) of the CAA. The EPA is issuing this notice to clarify its policy and procedures, to facilitate the use of these data in automated data systems and computer-based simulation models, and to expedite processing of claims for confidentiality or requests for disclosure.

The EPA presently determines that data submitted to it as emission data does not qualify as confidential if it meets the following definition under 40 CFR 2.301(a)(2)(i):

a. Definitions. For the purpose of this section: (1) *Act* means the Clean Air Act, as amended, 42 U.S.C. 7401 *et seq.* (2)(i) *Emission data* means, with reference to any source of emission of any substance into the air—

(A) Information necessary to determine the identity, amount, frequency, concentration, or other characteristics (to the extent related to air quality) of any emission which has been emitted by the source (or of any pollutant resulting from any emission by the source), or any combination of the foregoing;

(B) Information necessary to determine the identity, amount, frequency, concentration, or other characteristics (to the extent related to air quality) of the emission which, under an applicable standard or limitation, the source was authorized to emit (including, to the extent necessary for such purposes, a description of the manner or rate of operation of the source), or any combination of the foregoing;

(C) A general description of the location and/or nature of the source to the extent necessary to identify the source and to distinguish it from other sources (including, to the extent necessary for such purposes, a description of the device, installation, or operation constituting the source).

The table below lists the specific data fields which the EPA presently considers to constitute emission data and provides a brief description of what each data field describes. The descriptions are intended to provide general information. This list is not exhaustive and, therefore, other data might be found, in a proper case, to constitute emission data.

Emission Data Fields

Facility Identification: The following data fields are needed to establish the identity and location of emission sources, this shall also include a description or an identifier of the device, installation, or operation constituting the source. These data are used to locate sources for dispersion evaluation and exposure modeling.

Plant Name and related point identifiers
Address
City
County
AQCR (Air Quality Control Region)
MSA, PMSA, CMSA (Metropolitan Statistical Areas)
State
Zip Code
Ownership and point of contact information
Locational Identifiers:
  Latitute & Longitude, or UTM Grid Coordinates
SIC (Standard Industrial Classification)
Emission point, device or operation description, information
SCC (Source Classification Codes)

Emissions Parameters: The following data fields are needed to establish the characteristics of the emissions. This information is needed for the analyses of dispersion and potential control equipment.

Emission type
  (e.g., nature of emissions such as CO_2), particulate or a specific toxic compound, and origin of emissions such as process vents, storage tanks or equipment leaks)
Emission rate

ENCLOSURE 5

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
RESEARCH TRIANGLE PARK, NC 27711

OFFICE OF
AIR QUALITY PLANNING
AND STANDARDS

DESIGNATION OF AUTHORIZED REPRESENTATIVE FOR STANDARDS OF PERFORMANCE FOR NEW STATIONARY SOURCES (SECTION 111) AND SOLID WASTE COMBUSTION (SECTION 129), NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS (SECTION 112), AND FEDERAL OZONE MEASURES (SECTION 183)

Under contract 68D60014, Research Triangle Institute (prime contractor) and Resolve Incorporated, The Kevric Company Incorporated, and SKT Consulting (subcontractors) are hereby designated Authorized Representatives of the Administrator of the United States Environmental Protection Agency for the purpose of assisting in the development of national emission standards for hazardous air pollutants under 42 U.S.C. 7412, standards of performance for new stationary sources under 42 U.S.C. 7411, solid waste combustion under 42 U.S. C. 7429, and Federal ozone measures under 42 U.S.C. 7511 (b).

This designation is made pursuant to the Clean Air Act, 42 U.S.C. 7414. The United States Code provides that, upon presentation of this credential, the Authorized Representative named herein: (1) shall have a right of entry to, upon, or through any premises in which an emission source is located or in which records required to be maintained under 42 U.S.C. 7414 (a) (1), are located, and (2) may at reasonable times have access to and copy any records, inspect any monitoring equipment or method required under 42 U.S.C. 7414 (a) (1), and sample any emissions that the owner or operator of such source is required to sample.

Authorized Representatives of the Administrator are subject to the provisions of 42 U.S.C. 7414 (c) respecting confidentiality of methods or processes entitled to protection as trade secrets, as implemented by 40 CFR 2.301 (h) (41 FR 36912, September 1, 1976).

Date: MAR 20 1998

Designation Expires: September 30, 2001

John S. Seitz
Director
Office of Air Quality Planning
and Standards

Enclosure 6

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Office of Air Quality Planning and Standards
Research Triangle Park, North Carolina 27711

December 1995

Summary of OAQPS Procedures for Safeguarding Clean Air Act (CAA) Confidential Business Information (CBI)

1. Purpose

This memorandum describes Agency policy and procedures pertaining to the handling and safeguarding of information that may be entitled to confidential treatment for reasons of business confidentiality by the OAQPS, Office of Air and Radiation, U.S. Environmental Protection Agency.

2. Other Applicable Documents:

a. Clean Air Act as amended.
b. 40 CFR, Chapter 1, Part 2, Subpart B - Confidentiality of Business Information.
c. EPA Security Manual, Part II, Chapters 8 and 9.
d. Clean Air Act Confidential Business Information Security Manual (June 1995 edition).

3. Exception:

This document was prepared as a summary of data gathering and handling procedures used by the OAQPS, EPA. Nothing in this document shall be construed as superseding or being in conflict with any applicable regulations, statutes, or policies to which EPA is subject.

4. Definition:

Confidential Business Information - Information claimed by the provider to be confidential. This information may be identified with such titles as trade secret, secret, administrative secret, company secret, secret proprietary, privileged, administrative confidential, company confidential, confidential proprietary, or proprietary. NOTE: These markings should not be confused with the classification markings of National Security information identified in Executive Order 11652.

5. Background

Section 114 (c) of the Clean Air Act as amended reads as follows:

> "Any records, reports, or information obtained under subsection (a) shall be available to the public, except that upon a showing satisfactory to the Administrator by any person that records, reports, or information, or particular part thereof, (other than emission data) to which the Administrator has access under this section if made public, would divulge methods or processes entitled to protection as trade secrets of such person, the Administrator shall consider such records, report, or information or particular portion thereof confidential in accordance with the purposes of Section 1905 of Title 18 of the United States Code, except that such record, report, or information may be disclosed to other officers, employees, or authorized representatives of the United States concerned with carrying out this Act or when relevant in any proceeding under this Act."

The treatment of CBI by the U.S. EPA, including data obtained under Section 114 of the Clean Air Act, is governed by Title 40, Part 2, of the Code of Federal Regulations. These regulations require EPA offices to include a notice with each request for information to inform the business of: (1) its right to assert a claim of confidentiality covering part or all of the information, (2) the method for asserting a claim, and (3) the effect of failure to assert a claim at time of submission. In addition, the regulations: (1) set forth procedures for the safeguarding of confidential information; (2) contain provisions for providing confidential information to authorize representatives; (3) contain provisions for the release of information to the Congress, Comptroller General, other Federal agencies, State and local governments, and Courts; (4) permit the disclosure of information within EPA to employees with an official need for the information; and (5) prohibit wrongful use of such information and cite penalties for wrongful disclosure. Further, the regulations contain the Agency's basic rule concerning the treatment of requests for information under the Freedom of Information Act (5 U.S.C. 552).

6. Procedures:

a. Request for Information

Each request for information made under the provisions of Section 114(a) is signed by the Division Director. The request includes standard enclosure "EPA's Information Gathering Authority Under Section 114 of the Clean Air Act," which was designed to meet the requirement of 40 CFR Part 2 discussed above.

b. Receipt of CAA Confidential Business Information

Upon receipt of information for which confidential treatment has been requested, the Office of the Director (OD) directs the logging of the material and the establishment of a

permanent file. If confidential treatment is requested, but is not specifically marked, the material will be stamped "Subject to Confidentiality Claim." If part of the material is claimed to be confidential, that portion is marked "Subject to Confidentiality Claim." In compliance with Sections 2.204 and 2.208 of 40 CFR Part 2, the Group Leader responsible for the requested information reviews the information to determine whether it is likely to be confidential in contrast to being available in the open literature, whether it is emission data, and whether it likely provides its holder with a competitive advantage. If the information is clearly not confidential, the Group Leader prepares a letter for signature of the Division Director, ESD, to notify the business of this finding. If the information is possibly confidential, the Group Leader sends a memorandum to inform the OD, ESD, of this finding, gives a brief description of the material (what it is, how many pages, etc.), identifies it with the correct ESD project number, and lists those persons who are authorized to have access to the information. The information and memorandum are hand carried to the OD and placed in the CBI files with the material. A record of who will see the information (Attachment A) is also filed with the folder containing the information. If CAA CBI is received from the owner via an authorized representative or a third party, the same procedure is followed, with the addition of clearly identifying the information and its source. By regulation, information for which confidential treatment is requested must be so marked or designated by the submitter. The EPA takes additional measures to ensure that the proprietary designation is uniformly indicated and immediately observable. All unmarked or undesignated information (except as noted below) is freely releasable.

c. Storage of CAA Confidential Business Information

Folders, documents, or material containing CAA CBI (as defined) shall be secured, at a minimum, in a combination-locked cabinet. Normal procedure is to secure this information is a cabinet equipped with a security bar and locked using a four-way, changeable combination padlock. In addition, the entrance door to the CBI storage room is equipped with a changeable combination simplex lock. The locked files are under the control of the OD.

Knowledge of the combinations of the locking devices is limited to the Document Control Officer (DCO) and the minimum number of persons required to effectively maintain normal business operations. Records of the locking device combination are stored elsewhere in conformance with the requirements of the EPA Security Manual.

Combinations of the locks are normally changed whenever a person with knowledge of the combinations is transferred, terminates employment, no longer authorized access, or whenever the possibility exists that the combinations may have been subject to compromise.

Files may be checked out upon confirmation that the requesting person is authorized to receive the information. All confidential files may be returned no later than 4:30 p.m. on the same day they are removed. The intended user must sign the CBI Control Record when the file is checked out.

The individual who signs out a confidential file is responsible for its safekeeping. The fil must not be left unattended. The information must not be disclosed to any non-authorized personnel.

Storage procedures for CAA CBI by an authorized representative of EPA (see Section d below) must be, at a minimum, as secure as those established for EPA offices within OAQPS. Whenever CBI is removed from the EPA files to be transmitted to an authorized representative, notation is placed in the file indicating what information was transmitted, the date, and the recipient. The authorized representative returns a signed receipt of the DCO.

d. Access to CAA Confidential Business Information

Only authorized EPA employees may open a distribute CAA CBI.

Only employees who require and are authorized access to CAA CBI in the performance of their official duties are permitted to review documents and, upon receiving a confidential document, must sign and date the form shown in Attachment A to certify their access to the document.

The CBI files are controlled by the OD, ESD, and managed by an authorized federal employee. Access to the information is limited to those persons having a need to know in performing their official duties.

The Group Leader having primary interest in the CAA CBI provides a memorandum for the record designating those personnel who are authorized to use CBI in a program under which CBI can be requested. No person is automatically entitled to access based solely on grade, position, or security clearance. The names of persons granted access to CAA CBI are placed on the Clean Air Act CBI access list, which indicates the "specific" CBI each person is permitted to see. The Access List is reviewed and updated periodically.

Companies under contract to perform work for the EPA may be designated authorized representatives of EPA if such designation is necessary in order for the contractor to carry out the work required by the contract. As authorized representatives, contractors may be granted access to CAA CBI by the Director, ESD. The following conditions apply when it has been determined that disclosure is necessary:

(1) The contractor designated as a representative and its employees (a) may use such confidential information only for the purpose of carrying out the work required, (b) must refrain from disclosing the information to anyone other than EPA without having received from EPA prior written approval of each affected business or of an EPA legal office, and (c) must return to EPA all copies of the information (and any abstracts or excerpts therefrom) upon request or whenever the information is no longer required for the performance of the work.

(2) The authorized contractor designated as a representative must obtain a written agreement from each of its employees who will have access to the information. A copy of each employee agreement (Attachment B) must be furnished to EPA before access is permitted.

(3) The contractor designated as an authorized representative must agree that the conditions in the contract concerning the use and disclosure of CAA CBI are included for the benefit of, and shall be enforceable by, both EPA and any affected business having a proprietary interest in the information.

Information may be released to or accessed by EPA employees other than OAQPS employees only upon approval of the Director, ESD.

Requests for CAA CBI from other Federal agencies, Congress, the Comptroller General, Courts, etc., are processed by the OD, ESD in accordance with 40 CFR 2, Subpart B.

Requests under the Freedom of Information Act are handled in accordance with 40 CFR 2, Subpart A. The Freedom of Information Act Coordinator must be consulted prior to responding to any request for information if a claim of confidentiality has been asserted or if there is reason to believe that a claim might be made if the business knew release was intended.

e. Use and Disclosure of CAA Confidential Business Information

The CAA CBI as defined may not be used in publications, supporting document, memoranda, etc., that become a part of the public domain, except as provided for in 40 CFR 2 Subpart B.

The CAA CBI may not be summarized without the approval of the Group Leader responsible for the CAA CBI. Any authorized reproductions must be logged into the CAA CBI document tracking system and treated according to the same procedures applicable to the original confidential material.

The EPA generated documents or material, or extracts of information containing CAA CBI, must be stamped "Subject to Confidentiality Claim" and a cover sheet must be attached to identify the material as CBI.

f. Handling of Other Information

Reports, memoranda, documents, etc., prepared by EPA or its authorized representatives are not normally circulated outside EPA for comment or review prior to publication except in such cases as described above (6.d.3) wherein CBI is expressly included. However, because

industrial-data-gathering visits, plant inspections, and source testing can involve inadvertent receipt of CAA CBI, it is the policy of OAQPS to protect all parties involved in the following manner.

Prior to or at the inception of a plant inspection, data-gathering visit, or source test, EPA or its authorized representative discusses with a responsible industry official the information sought, how it is to be used, and how it is to be protected. A copy of this summary is usually provided to the industry official being consulted.

Following an inspection, visit, or test, a trip report is prepared to include, as practicable, all information received by EPA or its authorized representative during the visit or test. The report may be prepared by either EPA or its authorized representative. The draft of that report is clearly identified, on an attached, colored cover sheet as "Confidential Pending Determination." A second copy of the draft trip report is forwarded by EPA to the responsible industry official for review. The responsible industry official is requested by cover letter to review the report, clearly mark any information considered to be confidential, and return the marked up-report to the responsible EPA employee within 2 weeks of receipt. The original draft is kept in the CBI "pending" file until the marked-up copy is returned by the business firm.

When the reviewed copy of the report, as marked by the responsible plant official, is received by EPA, information designated confidential is placed in the CBI files as described above. The original draft of the trip report is edited to delete the confidential information and to accommodate technical changes, and the trip report is issued.

2 Attachments

Attachment A

CAA CONFIDENTIAL BUSINESS INFORMATION CONTROL RECORD

DATE RECEIVED:	RESPONSIBLE BRANCH:	CONTROL NUMBER:
DATE OF DOCUMENT:	DOCUMENT AUTHOR:	
DESCRIPTION (Providing organization, title, subject, number of copies and number of pages)		
RETURN DATE:	DESTRUCTION DATE:	INITIALS:

Each person given access to this document must fill in the information below

CHECK-OUT			CHECK-IN		
SIGNATURE	DATE	TIME	SIGNATURE	DATE	TIME

CAA CBI Form 1 (Rev. 6/95)

I. AUTHORIZATION FOR ACCESS TO CAA CBI FOR CONTRACTOR EMPLOYEES		
FULL NAME	POSITION	
SSN	CONTRACTOR	

It is the responsibility of each Authorizing Official* to ensure that the employees under his/her supervision who require access to CAA CBI:

1. Sign the Confidentiality Agreement for EPA Employees
2. Are fully informed regarding their security responsibilities for CAA CBI.
3. Obtain access only to that CAA CBI required to perform their official duties

SIGNATURE OF AUTHORIZING OFFICIAL*	TELEPHONE NO.	DATE
TITLE	LOCATION	

II. CONFIDENTIALITY AGREEMENT FOR CONTRACTOR EMPLOYEES

I understand that I will have access to certain Confidential Business Information submitted to EPA or its authorized representatives under the Clean Air Act (CAA). This access is granted in accordance with my official duties as an employee of the Environmental Protection Agency contractor.

I understand that CAA CBI may not be disclosed except as authorized by CAA and Agency regulations. I understand that I am liable for a possible fine of up to $1,000 and/or imprisonment for up to 1 year if I willfully disclose CAA CBI to any person not authorized to receive it. In addition I understand that I may be subject to disciplinary action for violation of this agreement with penalties ranging up to and including dismissal.

I agree that I will treat any CAA CBI furnished to me as confidential and that I will follow the procedures set forth in the CAA Confidential Business Information Security Manual.

I have read and understand these procedures.

SIGNATURE	TELEPHONE NO.	DATE

III. HAVING COMPLETE REQUIRED TRAINING AND PASSED REQUIRED TEST, THE ABOVE-NAMED EMPLOYEE IS HEREBY AUTHORIZED TO HAVE ACCESS TO CAA CBI.

SIGNATURE CONTRACTOR/DCO	TELEPHONE NO.	DATE

* Must be Contractor Management

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
RESEARCH TRIANGLE PARK, NC 27711

MAR 1 1 1999

OFFICE OF
AIR QUALITY PLANNING
AND STANDARDS

RECEIVED
MAR 16 1999
ENVIRONMENTAL
PLANNING

Ms. Teresa J. L. Watley
Consulting Engineer
Tampa Electric Company
702 North Franklin Street
Post Office Box 111
Tampa, FL 33601-0000

Dear Ms. Watley:

The U.S. Environmental Protection Agency (EPA) has undertaken a program to acquire additional information related to emissions of mercury from electric utility steam generating units. As part of this activity, we have obtained general generating unit information from all known coal-fired electric utility steam generating units. From this universe of units, a subset has been selected for emissions testing to characterize speciated mercury emissions and the effectiveness of available control measures on such emissions.

This letter is to notify you that unit BB01, BB02, or BB03 at your Big Bend facility in North Ruskin, Florida, and unit 1 at your Polk Power facility in Mulberry, Florida, have been selected to perform speciated mercury emissions testing at the inlet and outlet of the last emission control device installed on the selected units. Such testing is described more fully in enclosure 1.

Selection of the above noted units was based on information provided by your company with regard to the method of sulfur dioxide (scrubber type) and particulate matter (electrostatic precipitator [ESP] type) control and the type of coal burned, which placed them in one of the matrix categories described in the material approved by the Office of Management and Budget (OMB) for this information collection effort. The information provided by your company lists for these units the following controls:

	Big Bend BB01, BB02, and BB03	Polk 1
Scrubber type:	wet scrubber	coal gasification
Coal type:	bituminous/subbituminous	bituminous/subbituminous
ESP type:	cold-side ESP	coal gasification

In the event that you have, at this site, multiple units meeting the same classification (i.e., scrubber type. coal type, and ESP type), you may select for speciated mercury emissions testing whichever unit you feel to be most suitable for testing. If another unit at this site is selected, please provide supporting rationale in the site-specific test plan.

As noted in enclosure 1, a site-specific test plan and a Quality Assurance Program Plan (QAPP) must be developed for each unit to be tested. Information on the preparation of the site-specific test plan may be found in the EPA document entitled "Preparation and Review of Site-specific Test Plans" (see enclosure 2 or the Internet at http://www.epa.gov/ttn/emc/guidlnd.html). Requirements for the QAPP may be found in the EPA document entitled "EPA Requirements for Quality Assurance Project Plans for Environmental Data Operations; EPA QA/R-5" (see enclosure 3 or the Internet at http://es.epa.gov/ncerqa/qa/qa_docs.html). Further guidance on the preparation of QAPPs may be found in the document entitled "EPA Guidance for Quality Assurance Project Plans; EPA QA/G-5" which may also be found on the Internet at http://es.epa.gov/ncerqa/qa/qa_docs.html. Both the site-specific test plan and QAPP for each unit to be tested should be submitted by June 1, 1999 to:

Mr. William Grimley/Ms. Lara Autry
Emission Measurement Center (MD-19)
U.S. Environmental Protection Agency
Research Triangle Park, North Carolina 27711

Attn: Electric Utility Steam Generating Unit Mercury Test Program

The EPA will review and approve the site-specific test plan and QAPP, or provide comments for revision if necessary, within 30 days of receipt. The site-specific test plan must include proposed test dates. The testing should not begin until EPA has approved the test plan and QAPP, so please plan for EPA's 30-day review period in scheduling test dates. The EPA would prefer to have test data submitted as soon as it is convenient for owners/operators to do so, but in any event owners/operators should complete all testing such that all final emission test reports are received at the above address within 90 days of completion of testing but no later than May 31, 2000.

If the unit noted above (or one of the same classification) has been tested since January 1, 1996, and the following conditions are met, the owner/operator may elect to submit the report of that testing in lieu of conducting additional testing. The conditions that must be met for the substituted test report to be accepted include:

1. Use of the "Standard Test Method for Elemental, Oxidized, Particle-Bound, and Total Mercury in Flue Gas Generated from Coal-Fired Stationary Sources (Ontario Hydro Method)" (see enclosure 4 or the Internet at http://www.epa.gov/ttn/emc/guidlnd.html).

If you have any questions regarding this authority or this letter, please contact Mr. William Maxwell at (919)541-5430 or Mr. William Grimley at (919)541-1065. Questions may also be directed to the Internet site established specifically for this effort at http://utility.rti.org.

As questions are received, a list of "frequently asked questions" with responses will be posted on the website.

Sincerely,

Sally L. Shaver
Director
Emission Standards Division

9 Enclosures

cc: Howard Rhodes, Florida Department of Environmental Protection/Air Resources Management (w/o enclosures)
Winston A. Smith, EPA/RO IV (w/o enclosures)
William Grimley, EPA/EMAD (w/o enclosures)
William Maxwell, EPA/ESD (w/o enclosures)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
RESEARCH TRIANGLE PARK, NC 2771 .

MAR 11 1999

OFFICE OF
AIR QUALITY PLANNING
AND STANDARDS

Ms. Teresa J. L. Watley
Consulting Engineer
Tampa Electric Company
702 North Franklin Street
Post Office Box 111
Tampa, FL 33601-0000

Dear Ms. Watley:

The United States Environmental Protection Agency has authorized the following contractors to access information that has been, or will be, submitted to the EPA under section 114 of the Clean Air Act (CAA), as amended:

Battelle Memorial Institute, 505 King Avenue, Columbus, Ohio 43201 (prime contractor; EPA Contract 68D99009)
ETS, Inc., 1401 Municipal Road NW, Roanoke, Virginia 24012 (subcontractor to Battelle; EPA Contract 68D99009)
Research Triangle Institute, Post Office Box 12194, Research Triangle Park, North Carolina 27709 (prime contractor; EPA Contract No. 68D60014)

Some of this information may be claimed to be confidential business information (CBI) by the submitter.

The EPA is issuing this notice to inform all submitters of information under section 114 of the CAA that the EPA may provide the above mentioned contractors access to these materials on a need-to-know basis. These contractors will be providing technical support to the Office of Air Quality Planning and Standards (OAQPS) of the EPA under the respective contracts in developing Federal Air Pollution Control Regulations.

In accordance with 40 CFR 2.301(h), the EPA has determined that these contractors require access to CBI submitted to the EPA under sections 112 and 114 of the CAA in order to perform work satisfactorily under the above noted contracts. The contractors' personnel will be given access to information submitted under section 114 of the CAA. The contractors' personnel will be required to sign nondisclosure agreements and will receive training on appropriate security procedures before they are permitted access to CBI. Clearance for access to CAA CBI for RTI will be scheduled to expire on September 30, 2001; clearance for access to CAA CBI for Battelle and ETS will be scheduled to expire on September 30, 2003.

Please provide any comments regarding the above contractors' access to CBI submitted by your company within ten working days of your receipt of this letter. Comments should be submitted to:

Ms. Melva Toomer
Document Control Officer
Office of Air Quality Planning and Standards (MD-11)
U.S. Environmental Protection Agency
Research Triangle Park, North Carolina 27711
(919) 541-0880.

Sincerely,

William H. Maxwell

William Maxwell
Task Order Project Officer
Combustion Group
Emissions Standards Division

cc: Melva Toomer (MD-11)
Ieva Spons (MD-11)
Kathy Weant, Project Officer (MD-14)
Carolyn Wigington, Project Officer (MD-13)

Enclosure 1

Form Approved 11/13/98
OMB Control No. 2060-0396
Approval Expires 06/30/00

PART III: SPECIATED MERCURY EMISSIONS TESTING DATA

For statistically selected sources from the category, testing is to be performed on a one-time basis at the inlet and outlet of the SO_2 control device or, for the category of "no SO_2 control," at the inlet and outlet of the particulate control device.

Prior to the test, a site-specific test plan is to be submitted by the owner/operator to the EPA for review and approval. In addition, any revisions suggested by the owner/operator and any plant-specific material that should be added to the generic Quality Assurance Project Plan (QAPP) provided by the EPA with the section 114 letter should be submitted for approval with the site-specific test plan. The EPA will provide the results of its review of the site-specific test plan, and any QAPP modifications suggested, to the facility within 30 days of receipt. The test plan is to be prepared according to the document entitled "Preparation and Review of Site Specific Test Plans," which can be electronically obtained from the Internet at

"http://www.epa.gov/ttn/emc/guidlnd.html".

Use the test method entitled "Standard Test Method for Elemental, Oxidized, Particle-Bound, and Total Mercury in Flue Gas Generated from Coal-Fired Stationary Sources (Ontario Hydro Method)," which can be electronically obtained from the Internet at

"http://www.epa.gov/ttn/emc/prelim.html".

Each test is to consist of three separate runs at each sampling location with inlet and outlet runs being run concurrently. Concurrent coal sampling and analysis of the coal fired during each of the three separate runs is to be done by taking three coal samples at intervals throughout each testing period, and the results are to be reported along with the emission results. Following the testing, submit the test report prepared according to the document entitled "Preparation and Review of Emission Test Reports," which can be electronically obtained from the Internet at

"http://www.epa.gov/ttn/emc/guidlnd.html".

Enclosure 2

GUIDEBOOK

PREPARATION AND REVIEW OF SITE-SPECIFIC TEST PLANS

U. S. EPA Contract No. 68D90055
EMB Work Assignment No. 2-98

Prepared by:

Entropy Environmentalists, Inc.
Research Triangle Park, North Carolina 27709

Prepared for:

Daniel G. Bivins

U. S. Environmental Protection Agency
Emission Measurement Branch, MD-14
Research Triangle Park, North Carolina 27711

December 1991

TABLE OF CONTENTS

The site-specific test plan must contain:

- Table of contents
- List figures
- List of tables

EXAMPLE: At a minimum, the table of contents must include the items shown below:

TABLE OF CONTENTS

1.0 INTRODUCTION

1.1 SUMMARY OF TEST PROGRAM

In this section, write a *brief summary* that identifies or states, as applicable, the following:

- Responsible groups or organizations
- Overall purpose of the emission test
- Regulations, if applicable
- Industry
- Name of plant
- Plant location
- Processes of interest
- Air pollution control equipment, if applicable
- Emission points and sampling locations
- Pollutants to be measured
- Expected dates of test

EXAMPLE:

1.1 SUMMARY

The U.S. Environmental Protection Agency (EPA), Office of Air Quality Planning and Standards (OAQPS), Emission Inventory Branch (EIB) is responsible for developing and maintaining air pollution emission factors for industrial processes. EIB in collaboration with the **[Trade Organization]** is presently studying the wood products industry. The purpose of this study is to develop emission factors for oriented strand board (OSB) production facilities. The Emission Measurement Branch (EMB) of OAQPS will coordinate the emission measurement activities. **[Contractor]** and **[Trade Organization]** will conduct the emission measurements.

EPA/EIB and **[Trade Organization]** considered the **[Plant]** in **[City, State]** to be one of four facilities that represent the diversity in wood species and dryer control devices. This test is the second of the four and is scheduled for **[Date]**. Plans are to conduct simultaneous measurements at the inlet and outlet of the electrified filter bed (EFB) for the No. 1 wood wafer dryer exhaust and at the press vents. Pollutants to be measured are: particulate matter (PM), condensible particulate matter (CPM), carbon monoxide (CO), nitrogen oxides (NO_x), hydrocarbons (HC), formaldehyde, other aldehydes, and ketones (F/A/K), and volatile and semivolatile organic compounds.

1.2 TEST PROGRAM ORGANIZATION

In this section, include the following:

- Test program organizational chart with lines of communication
- Names and phone numbers of responsible individuals
- If necessary, a discussion of the specific organizational responsibilities

EXAMPLE:

1.2 TEST PROGRAM ORGANIZATION

Figure 1-1 presents the OSB test program organization, major lines of communication, and names and phone numbers of responsible individuals.

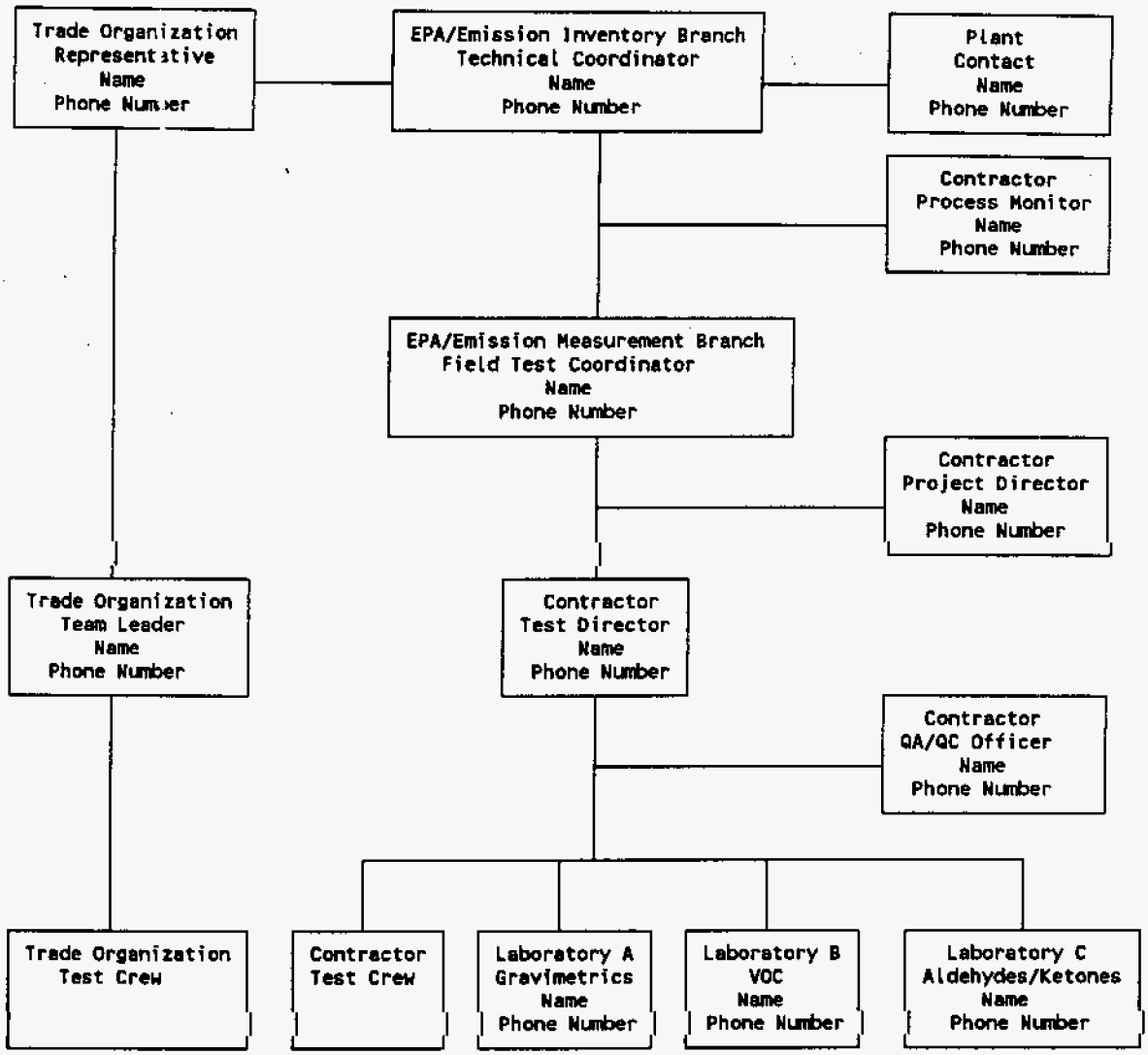


Figure 1-1. Example test program organization.

2.0 SOURCE DESCRIPTION

2.1 PROCESS DESCRIPTION

In this section, include the following:

- Flow diagram (indicate emission and process stream test points) and general description of the basic process
- Discussion of unit or equipment operations that might affect testing or test results, e.g., batch operations, high moisture or temperature effluents, presence of interfering compounds, and plant schedule
- List of key operating parameters and standard operating ranges, production rates, or feed rates, if available

In the flow diagram, trace the process from the beginning to the end. Identify the major operations. Show only those gas, liquid, and solid flow streams that relate to the emissions test.

EXAMPLE:

2.1 PROCESS DESCRIPTION

Figure 2-1 illustrates the basic processing steps for OSB production. The steps are:

- Logs are slashed, debarked, cut into shorter lengths, and sliced into thin wafers.
- The wafers are dried, classified, blended and mixed with resin, oriented, and formed into a mat.
- The formed mats are separated into desired lengths, heated, and pressed to activate the resin and bond the wafers into a solid sheet.
- Sheets are trimmed, edge treated, and packaged for shipping.

At this [Plant], the wood mix is about 60 percent soft wood (e.g., pine), 30 percent soft hardwood (e.g., sweet gum), and 10 percent hardwood. Two 12-foot diameter dryers process 30,000 to 32,000 lb/hr of flakes. The moisture content of the flakes leaving the dryer is about 3 to 4 percent. Inlet temperatures to the dryer run about 750 to 900°F and the exit temperatures about 235 to 255°F. A McConnel burner fired with recycled waste, such as wood trim, fines, and resinated sander dust, heats the dryers. An oil-fired Wellens burner serves as a backup.

The emission test points are EFB inlet and outlet (stack) and the roof vents from the press (see Figure 2-1).

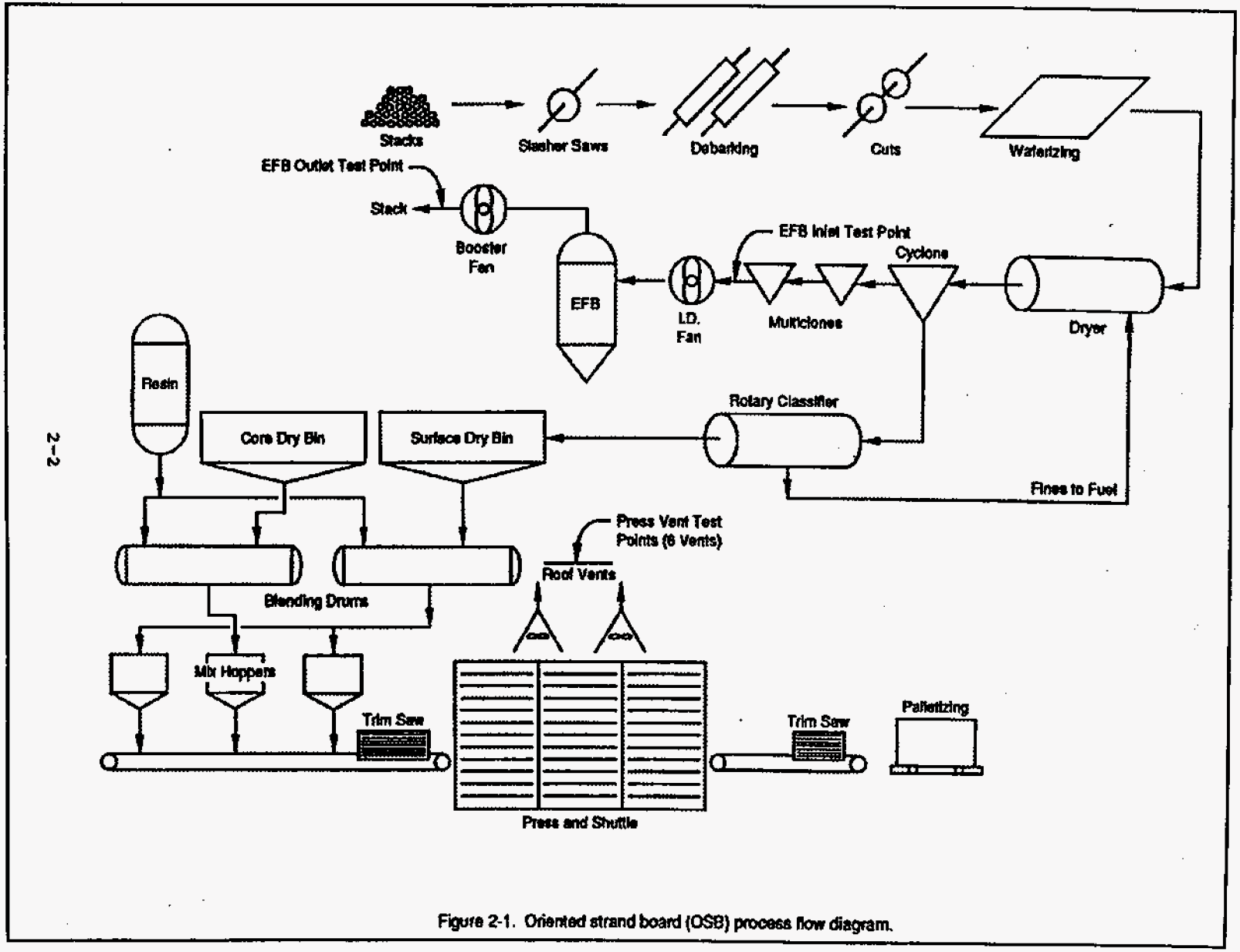


Figure 2-1. Oriented strand board (OSB) process flow diagram.

2.2 CONTROL EQUIPMENT DESCRIPTION

In this section, include the following:

- Description of all air pollution control systems
- Discussion of typical control equipment operation and, if necessary, a schematic
- Normal operating ranges of key parameters, if available

EXAMPLE: This example covers only the electrified filter bed. In the actual case, the cyclones would also be discussed.

2.2 CONTROL EQUIPMENT DESCRIPTION

Particulate matter from the wafer dryer is controlled by cyclones and an electrified filter bed (EFB) manufactured by **[Manufacturer]**. Figure 2-2 is a schematic of an ionizer and gravel bed assembly. The EFB is an electrostatic precipitator (ESP) that uses pea-gravel as its collection electrodes.

The gases enter the EFB into an annular region formed by two concentric cylinders. The inner cylinder is the ionizer. Ions formed by the ionizer stream toward the adjacent cylinder wall and impart electrostatic charges on dust particles.

After passing through the ionizer, the gas flows down the chamber into the filter bed section. The filter bed consists of pea-shaped gravel held between two cylindrical louvers. A high DC positive voltage polarizes the gravel and induces regions of positive and negative charge on the pebbles. As the gases pass through the pebble bed, the negatively charged dust particles are collected on the positively charged regions on the gravel.

As dust accumulates in the filter bed, the resistance to gas flow increases. To maintain constant flow and remove collected particles, the EFB slowly and continuously removes gravel from the bottom. The removed gravel is agitated to remove the dust particles and is recycled into the EFB at the top.

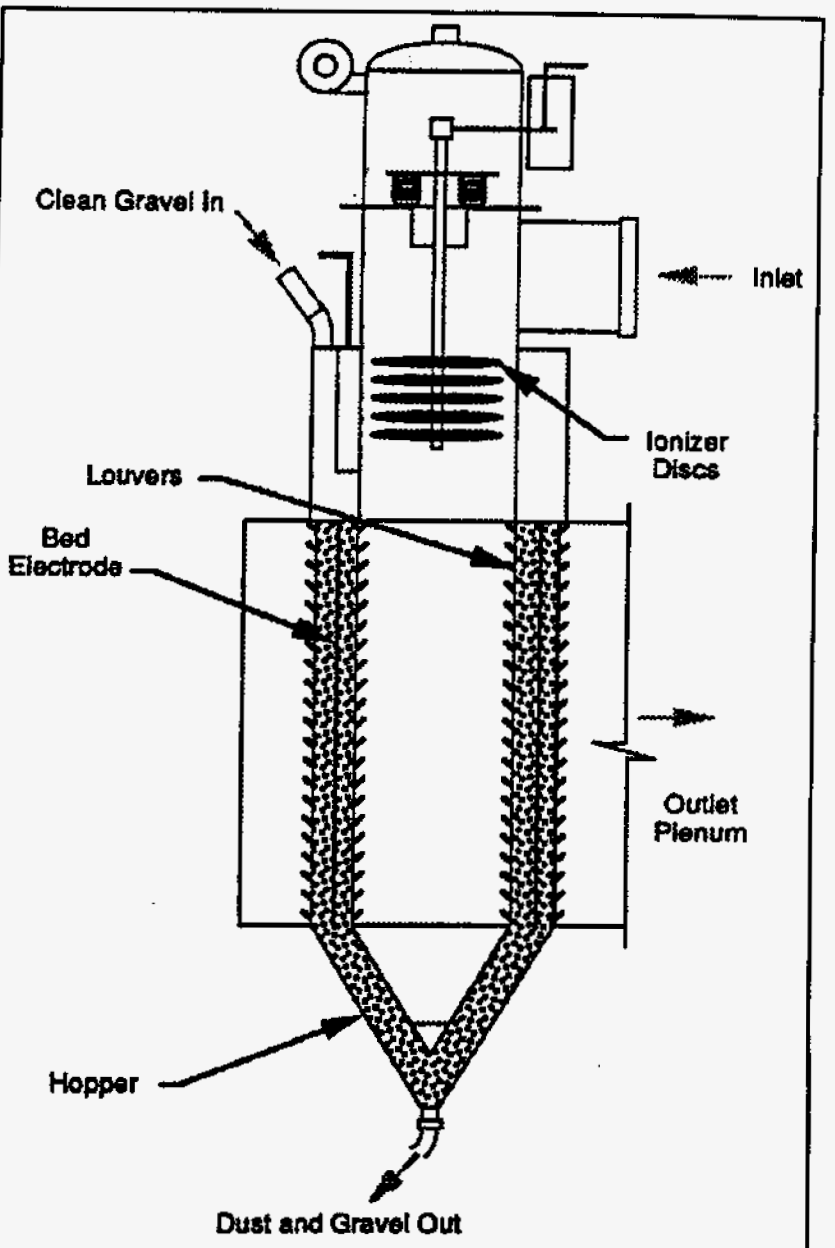


Figure 2-2. Ionizer and gravel bed assembly.

3.0 TEST PROGRAM

3.1 OBJECTIVES

In this section:

- Restate the overall purpose of the test program.
- List (in order of priority) the specific objectives for both emissions and process operation data.

EXAMPLE:

3.1 OBJECTIVES

The purpose of the test program is to develop emission factors for OSB production facilities from the wood products industry. The specific objectives in order of priority are:

- Measure simultaneously the emissions of PM, CPM, CO, NO_x, HC, formaldehyde (plus other aldehydes and ketones), and volatile and semi-volatile organics at the wood wafer dryer EFB inlet and outlet locations.
- Measure formaldehyde (plus other aldehydes and ketones) emissions from the press vents.
- During the test period, obtain production rates (number of press loads and belt speed), inlet and outlet dryer temperatures, drying rates, EFB bed voltage and current, and EFB voltage and ionizer current.
- Determine the relationship between Method 25 and Method 25A for HC, and between Method 202 and the Oregon Department of Environmental Quality (ODEQ) Method 7 for particulates (PM and CPM).
- Assess the suitability of deriving a correction factor for Method 25A.
- Obtain normal plant operation in hours/day, days/per week, and weeks/year, overall plant design capacity, and average production rates.

3.2 TEST MATRIX

Include a table showing the following (include schematics, if helpful):

- Sampling locations
- Number of runs
- Sample type/pollutant
- Sampling method
- Sample run time
- Analytical method
- Analytical laboratory

EXAMPLE:

3.2 TEST MATRIX

Table 3-1 presents the sampling and analytical matrix. Table 3-2 shows all the measurements being made at each test location.

TABLE 3-1. [PLANT, LOCATION] TEST MATRIX

Sampling Location	No. of Runs	Sample/Type Pollutant[a]	Sampling Method[b]	Sampling Org	Sample Run Time (min)	Analytical Method[c]	Analytical Laboratory
Outlet Stack	3	PM/CPM	M202 (M5 Filter and Backup Filter)[d]	Ctr-A	60	Gravimetric (PM-M5, CPM-M202, Backup Filter-ODEQ M7)	PM/CPM-Ctr A Backup Filter-Trade Org
Outlet Stack	3	O_2/CO_2	M3 (bag)	Ctr-A	60	Orsat (M3)	Ctr-A
Outlet Stack	3	CO	M10 (CEM)	Ctr-A	60	NDIR (M10)	Ctr-A
Outlet Stack	3	NO_x	M7E (CEM)	Ctr-A	60	Chemiluminescence (M7E)	Ctr-A
Outlet Stack	6[e]	THC	M25A (CEM)	Ctr-A	60	FID (M25A)	Ctr-A
Outlet Stack	6[e]	TGNMO (dual train)	M25	Trade Org	60	Catalysis, GC/FID, NDIR (M25)	Trade Org
Outlet Stack	3	Formaldehyde/ Aldehydes/ Ketones	SW-846 M0011	Ctr-A	60	HPLC (M0011)	Lab-A
Outlet Stack	3	VOC[f]	SW-846 M0010 (MM5)	Ctr-A	60	HRGC/LRMS (M8270), HPLC	Lab-B/ Lab-A
Outlet Stack	3	VOC[g]	SW-846 M0030 (VOST)	Ctr-A	60	HRGC/LRMS (M5040 and M8240)	Lab-B
Outlet Stack	3[h]	TOC	Evacuated Cylinder	Ctr-B	60	Catalytic FID	Ctr-B
Inlet	3	PM/CPM	M202 (M5 Filter and Backup Filter)[d]	Ctr-A	60	Gravimetric (PM-M5, CPM-M202, Backup Filter-ODEQ M7)	PM/CPM Ctr-A Backup Filter-Trade Org
Inlet	6[e]	O_2/CO_2	M3	Ctr-A	60	Orsat (M3)	Ctr-A
Inlet	6[e]	THC	M25A (CEM)	Ctr-A	60	FID (M25A)	Ctr-A
Inlet	3	TGNMO (dual train)	M25	Trade Org	60	Catalysis, GC/FID (M25)	Trade Org
Inlet	3	Formaldehyde/ Aldehydes/ Ketones	SW-846 M0011	Ctr-A	60	HPLC (M0011)	Lab-A

Sampling Location	No. of Runs	Sample/Type Pollutant[a]	Sampling Method[b]	Sampling Org	Sample Run Time (min)	Analytical Method[c]	Analytical Laboratory
Press Vents	3[i]	Formaldehyde/ Aldehydes/ Ketones	SW-846 M0011	Ctr-A	60	HPLC (M0011)	Lab-A
	3	O_2/CO_2	M3	Ctr-A	60	Orsat	Ctr-A

[a] PM-particulate matter, CPM - condensible particulate matter, TGNMO - total gaseous nonmethane organics, VOC - volatile organic compounds, TOC - total organic carbon.

[b] M - EPA Method, CEM - EPA Instrumental Method using continuous emission monitors.

[c] NDIR - Nondispersive infrared, FID - flame ionization detector, GC - gas chromatograph, HPLC - high performance liquid chromatography.

[d] Backup filter to approximate Oregon Department of Environmental Quality (ODEQ) Method 7.

[e] Three additional runs are tentatively planned following the main test program; if possible, the process parameters will be varied during this additional testing.

[f] Semivolatile organic compounds, including target compounds and tentatively identified compounds, plus oxygenated compounds caught in aqueous fractions.

[g] Volatile organic compounds.

[h] To be conducted with final three of six runs for M25 and M25A; sample acquisition to evaluate proposed analytical technique for total organic carbon measurements.

[i] Each run will be conducted on two of eight vents.

TABLE 3-2. MEASUREMENTS AT EACH TEST LOCATION

RUNS 1, 2, AND 3	
EFB Inlet	**EFB Outlet**
PM/CPM (M-202)	PM/CPM (M-202)
O_2/CO_2 (M-3)	O_2/CO_2 (M-3)
HC (M-25A)	HC (M-25A)
TGNMO (dual) (M-25)	TGNMO (dual) (M-25)
F/A/K (M-0011)	F/A/K (M-0011)
	CO (M-10)
	NO_x (M-7E)
	TOC (Evac. Cont.)
RUNS 4, 5, AND 6	
	HC (M-25A)
	TGNMO (dual) (M-25)

RUN 1	RUN 2	RUN 3
Press Vents 2 & 3	Press Vents 4 & 5	Press Vents 6 & 7
F/A/K (M-0011)	F/A/K (M-0011)	F/A/K (M-0011)
O_2/CO_2 (M-3)	O_2/CO_2 (M-3)	O_2/CO_2 (M-3)

Note: All sampling trains are to be conducted simultaneously within each run. For example, during Run 1, all trains under EFB inlet, EFB outlet, and Press Vents 2&3 are to be run simultaneously.

4.0 SAMPLING LOCATIONS

4.1 FLUE GAS SAMPLING LOCATIONS

In this section:

- Provide a schematic of each location. Include:
  - duct diameter
  - direction of flow
  - dimensions to nearest upstream and downstream disturbances (include number of duct diameters)
  - location and configuration of the sampling ports
  - nipple length and port diameters
  - number and configuration of traverse points
- Confirm that the sampling location meets EPA criteria. If not, give reasons and discuss effect on results.
- Discuss any special traversing or measurement schemes.

EXAMPLE:

4.1 FLUE GAS SAMPLING LOCATIONS

Emission sampling will be conducted at: (1) the EFB inlet on dryer No. 1, (2) the EFB outlet stack on dryer No. 1, and (3) the press vents. Figures 4-1, 4-2, and 4-3 are schematics of these sampling locations.

4.1.1 EFB Inlet. See Figure 4-1. Four 4-inch ports will be installed at Sections XX and YY as shown. Because of obstructions around the site, Section XX was the only practical location for Methods 202 and 0011. Method 1 requires that Section XX have 24 traverse points; each point will be sampled for 2.5 minutes for a total time of 60 minutes. One train will traverse into the duct while the other traverses out. At Section YY, about 2 feet below Section XX, one port will be used for the paired Method 25 single-point sampling and the second for Methods 25A and 3.

4.1.2 EFB Outlet. See Figure 4-2. The outlet stack for the EFB presently has two 4-inch sampling ports A and B. Additional 4-inch ports C through H will be installed as shown. Methods 202, 0011, and MM5 will be conducted at Section XX at 24 points (2.5 minutes at each point), the VOST train will be conducted at port E, and Methods 25 (dual), 10, 7E, and 3 will be conducted at Section YY.

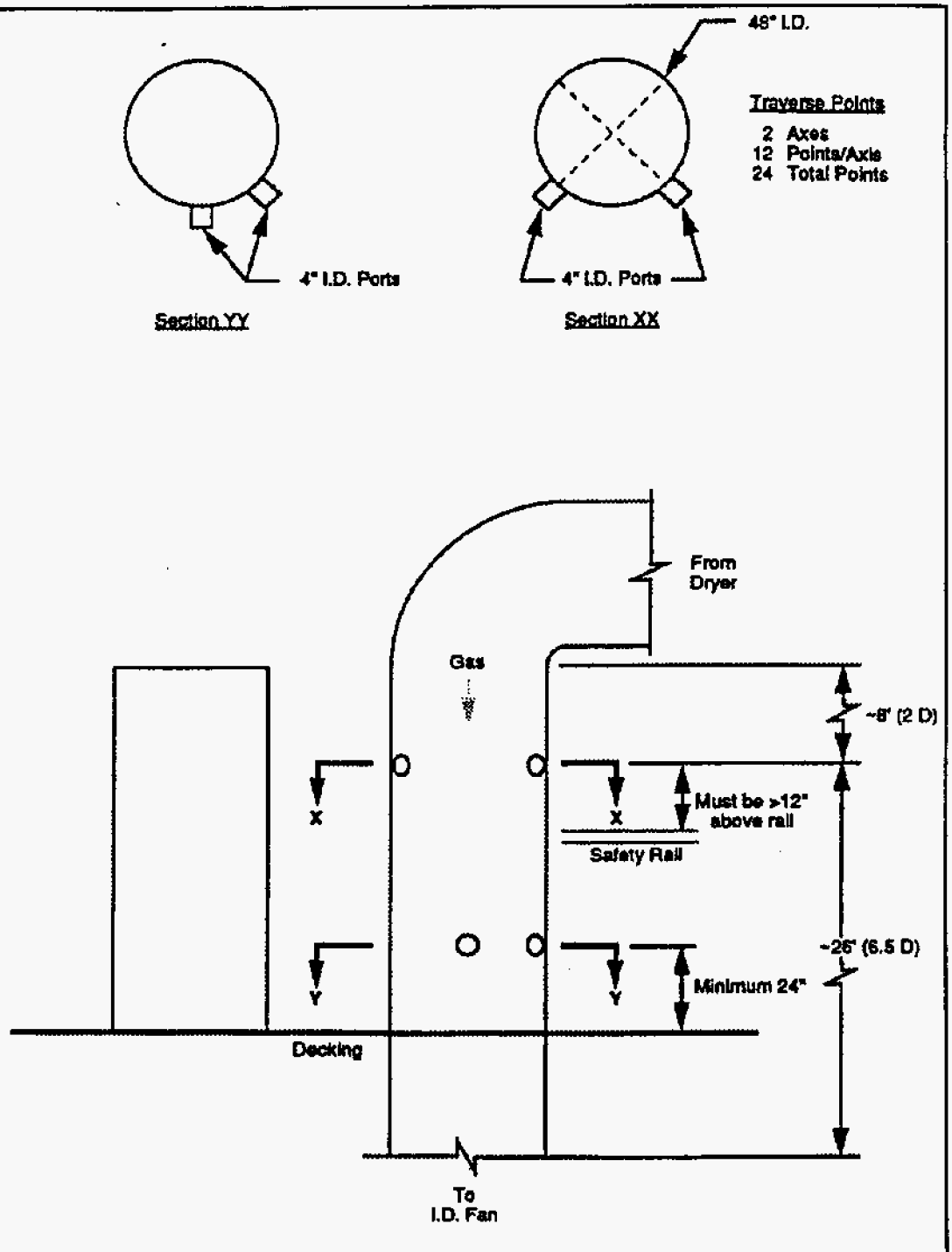


Figure 4-1. Schematic of Unit No. 1 EFB inlet sampling location.

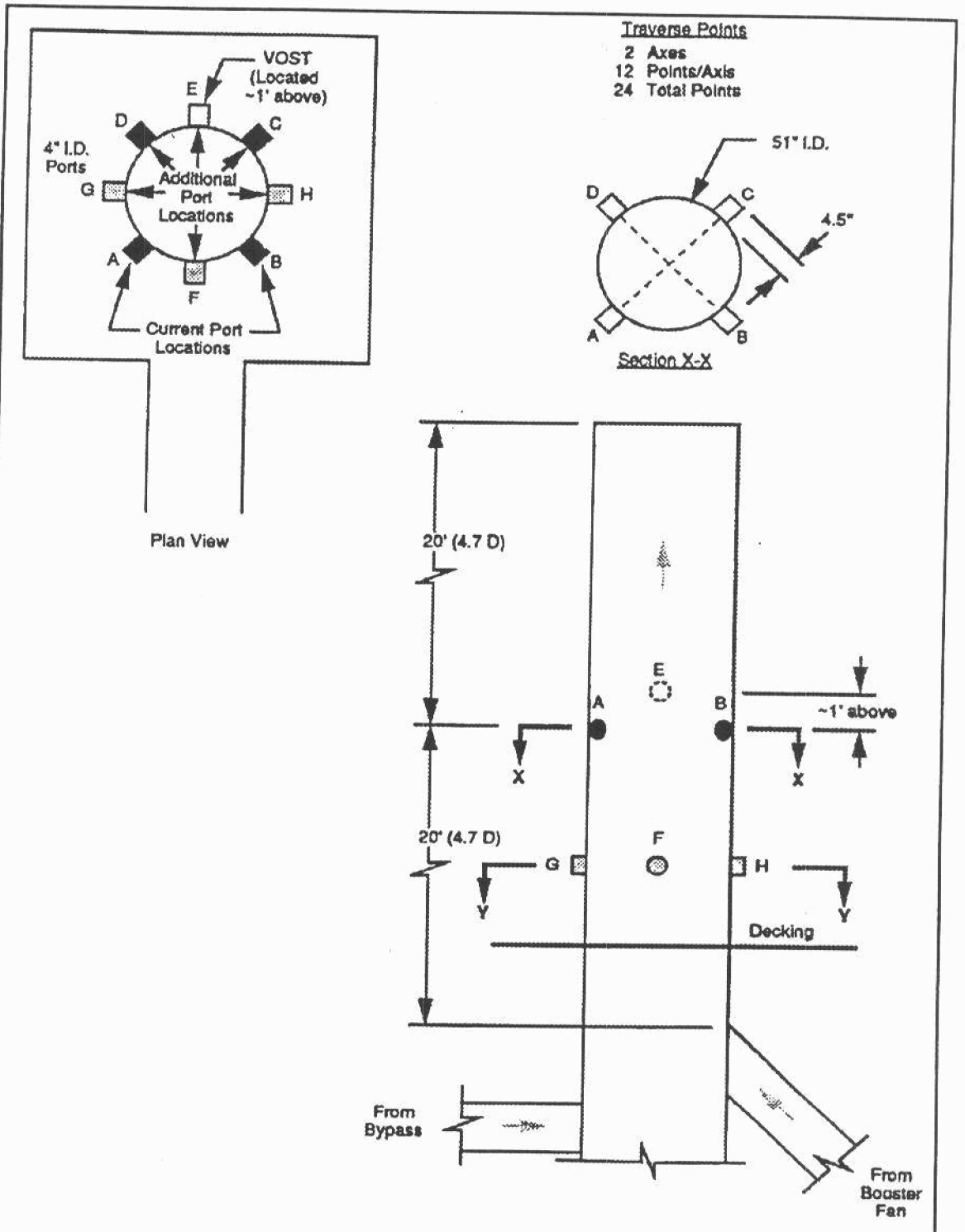


Figure 4-2. Schematic of Unit No. 1 EFB outlet stack sampling location.

4.1.3 Press Vents. See Figure 4-3. The press has eight roof vents as shown in the figure. The two vents on the ends (1 and 8) will not be tested because they are not directly over the press and little or no emissions are expected from these vents. Different pairs of the other six vents will be sampled for formaldehyde emissions (Method 0011) during each of the three test runs.

At this location, a 4-foot stack extension to improve flow conditions will be constructed. The extension will contain one 4-inch port. Each vent "stack" will be traversed (12 points) in only one direction. The traverse of the second vent of a pair will be in the direction perpendicular to the first vent traverse. Although the location does not meet Method 1 requirements, the results will not be affected since no particulate sampling is conducted at the press vents. The flow will be checked for non-parallel flow using the procedure in Section 2.5 of Method 1 before the tests to ensure that velocity can be measured accurately.

4.2 PROCESS SAMPLING LOCATIONS

If process stream samples will be taken, include the following:

- Schematic of locations, if helpful (location can be shown in figure in Section 2.0)
- Description of each sampling or measurement location
- Discussion on the representativeness of each of the process stream sampling locations

EXAMPLE: The OSB test plan did not require any process samples to be taken. Therefore, the example below was taken from a site-specific test plan for a drum mix asphalt plant. At this plant, a tank of waste fuel is used to supply the burners for the drum mixer. The plan required one grab sample per run of the waste fuel.

4.2 WASTE FUEL SAMPLE LOCATION

The sample for each test run will be taken from a tap at the outlet of the waste fuel supply tank to the burners. The sample is this point is expected to be homogeneous.

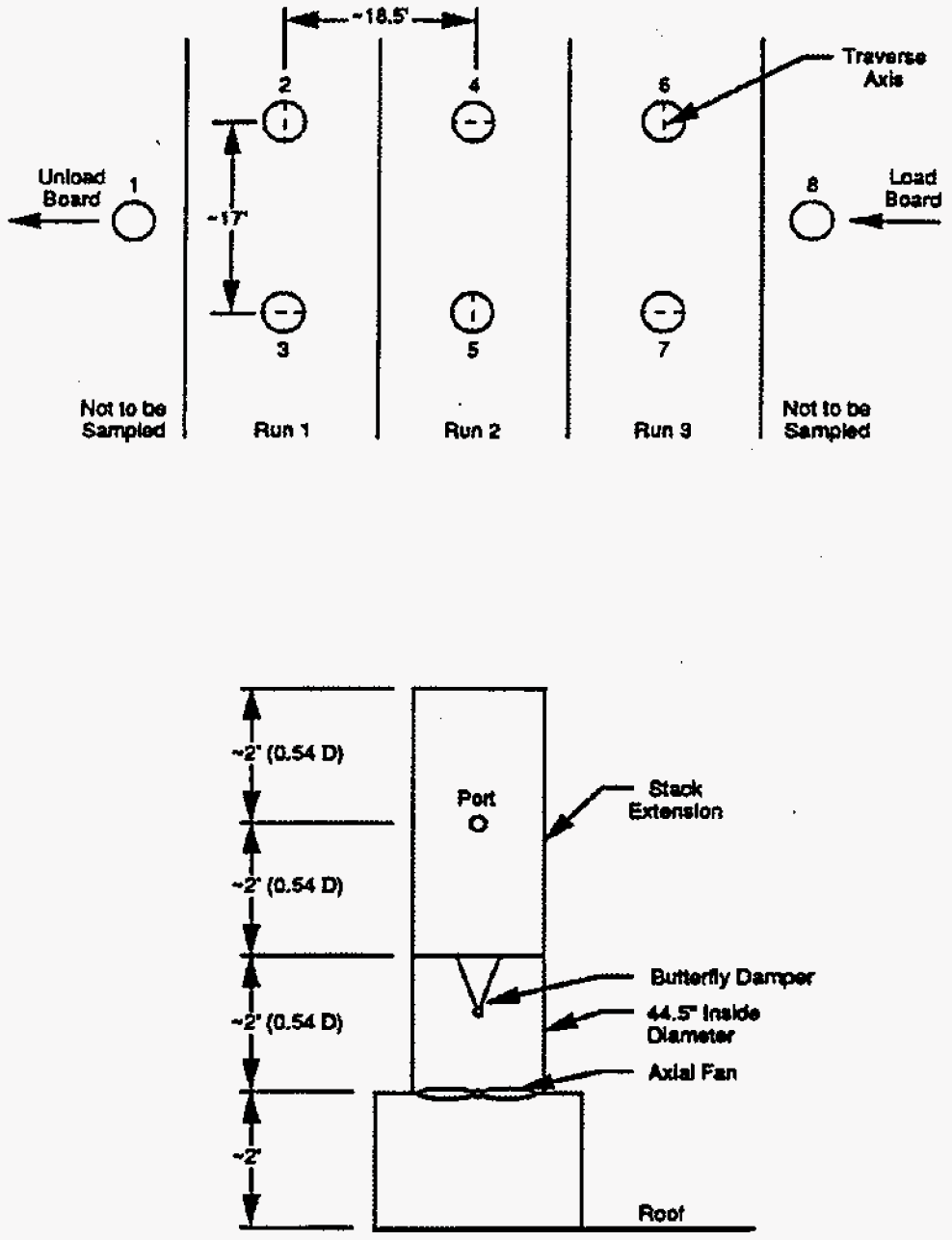


Figure 4-3. Press vents sampling location configuration and testing scheme.

5.0 SAMPLING AND ANALYTICAL PROCEDURES

5.1 TEST METHODS

In this section, include the following:

- Schematic of each sampling train
- Flow diagram of the sample recovery
- Flow diagram of sample analysis
- Description of any modifications and reasons for them
- Discussion of any problematic sampling or analytical conditions

If a non-EPA method is used instead of an EPA method, explain the reason. Place a copy of all methods in Appendix A. Be sure that non-EPA methods are written in detail similar to that of the EPA methods.

EXAMPLE: This example is for just one of the test methods. The site-specific test plan should include similar schematics and flow diagrams for each of the test methods.

5.1 TEST METHODS

5.1.1 Particulate Matter/Condensible Particulate Matter. PM/CPM at the inlet and outlet of the EFB will be determined by Method 202. One of the objectives of this test is to compare Method 202 with ODEQ Method 7, which is identical to Method 202 except for the following:

- A second filter is placed just before the silica gel impinger.
- Acetone rather than methylene chloride is used in the final rinse of the impingers and connecting glassware.
- An optional out-of-stack filter is used before the impingers.

Because of space limitations, Method 202 will be modified by inserting a second filter in the same position as that in the ODEQ Method 7. This back-up filter will be analyzed gravimetrically according to the ODEQ procedure. All other procedures will be those of Method 202. These modifications will not affect the results from Method 202. Figures 5-1 and 5-2 are schematics of Method 202 (showing modification) and ODEQ Method 7, respectively.

Figures 5-3 and 5-4 illustrate the sample recovery procedure and analysis schemes, respectively.

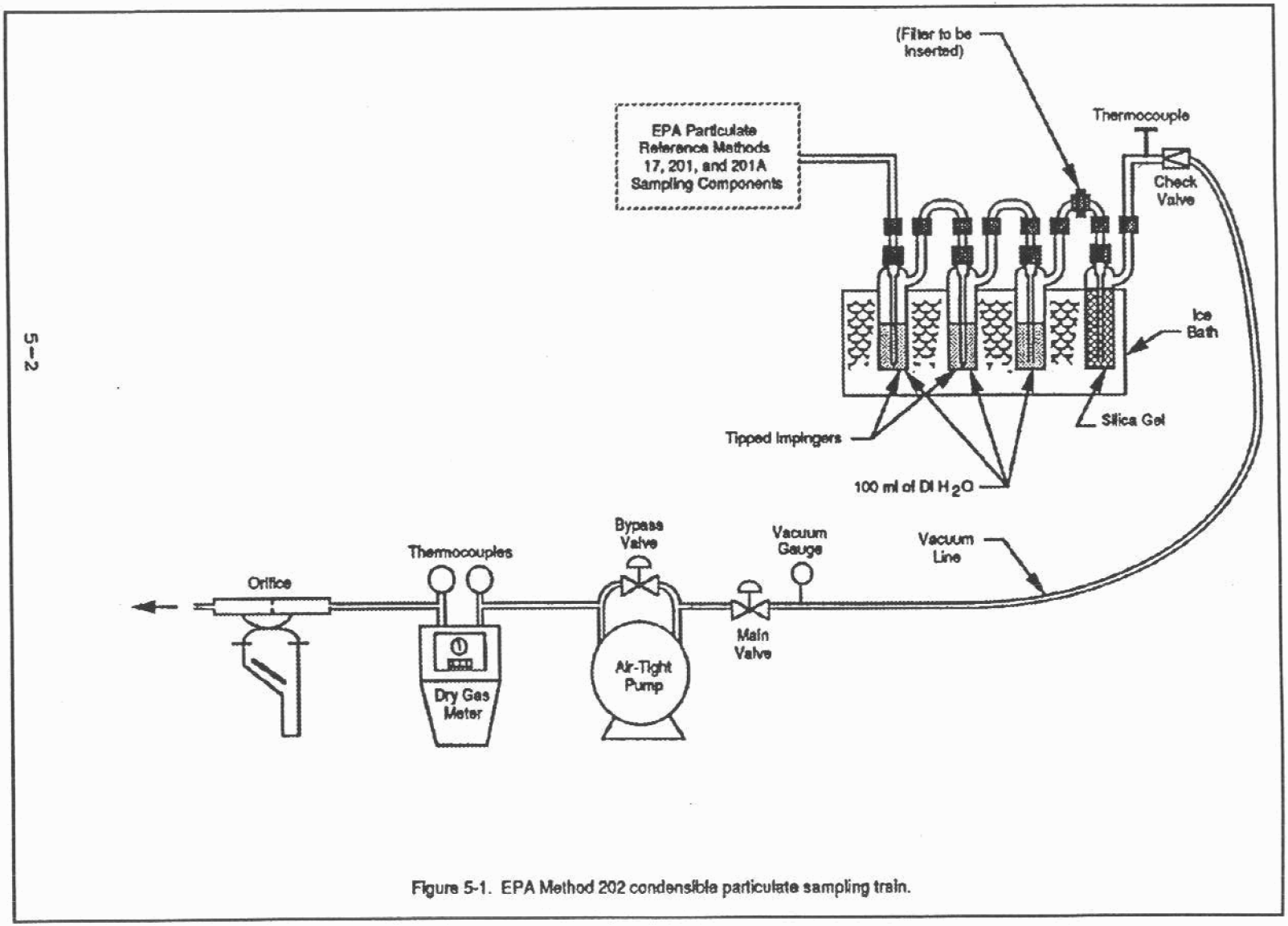


Figure 5-1. EPA Method 202 condensible particulate sampling train.

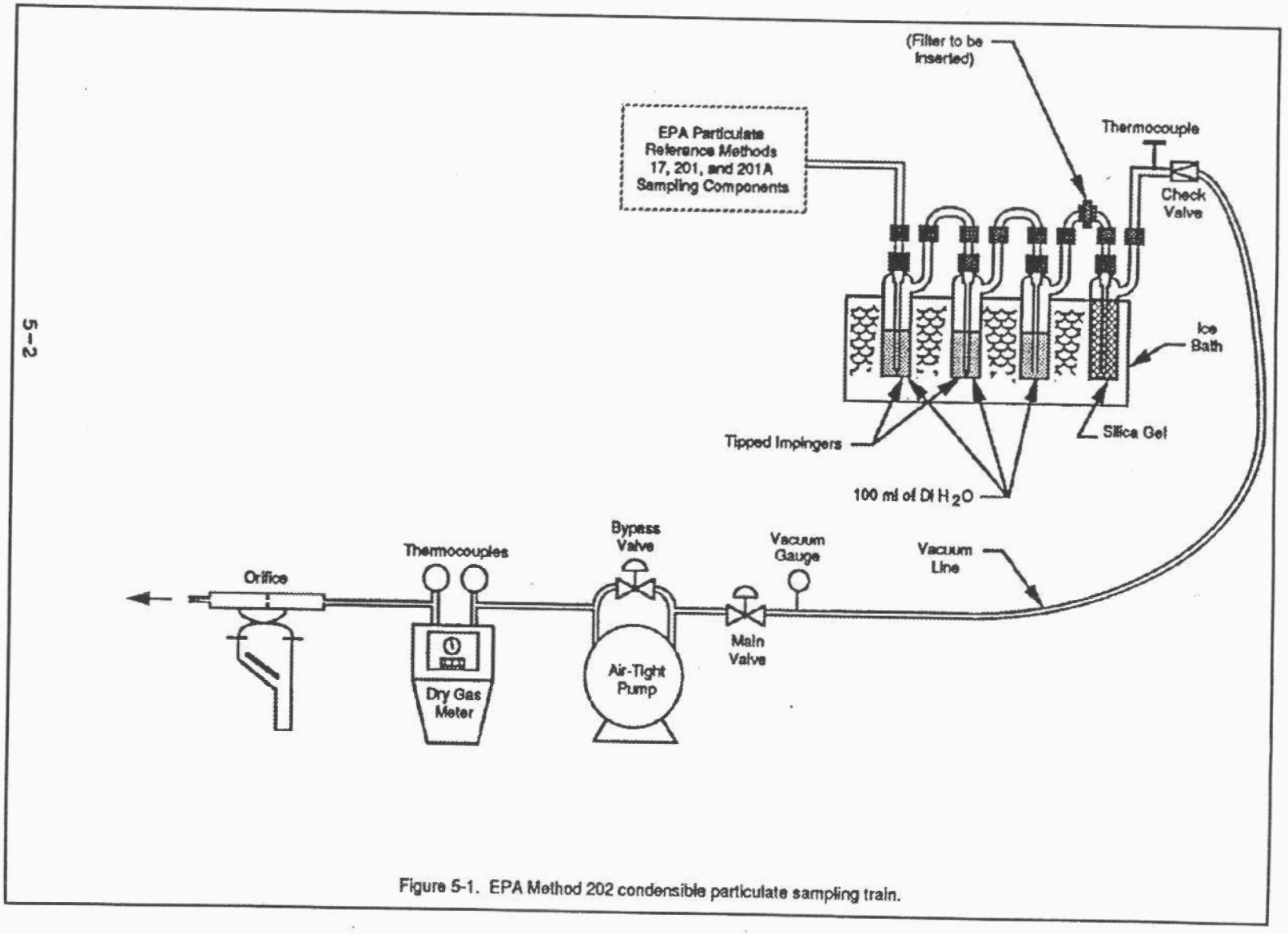


Figure 5-1. EPA Method 202 condensible particulate sampling train.

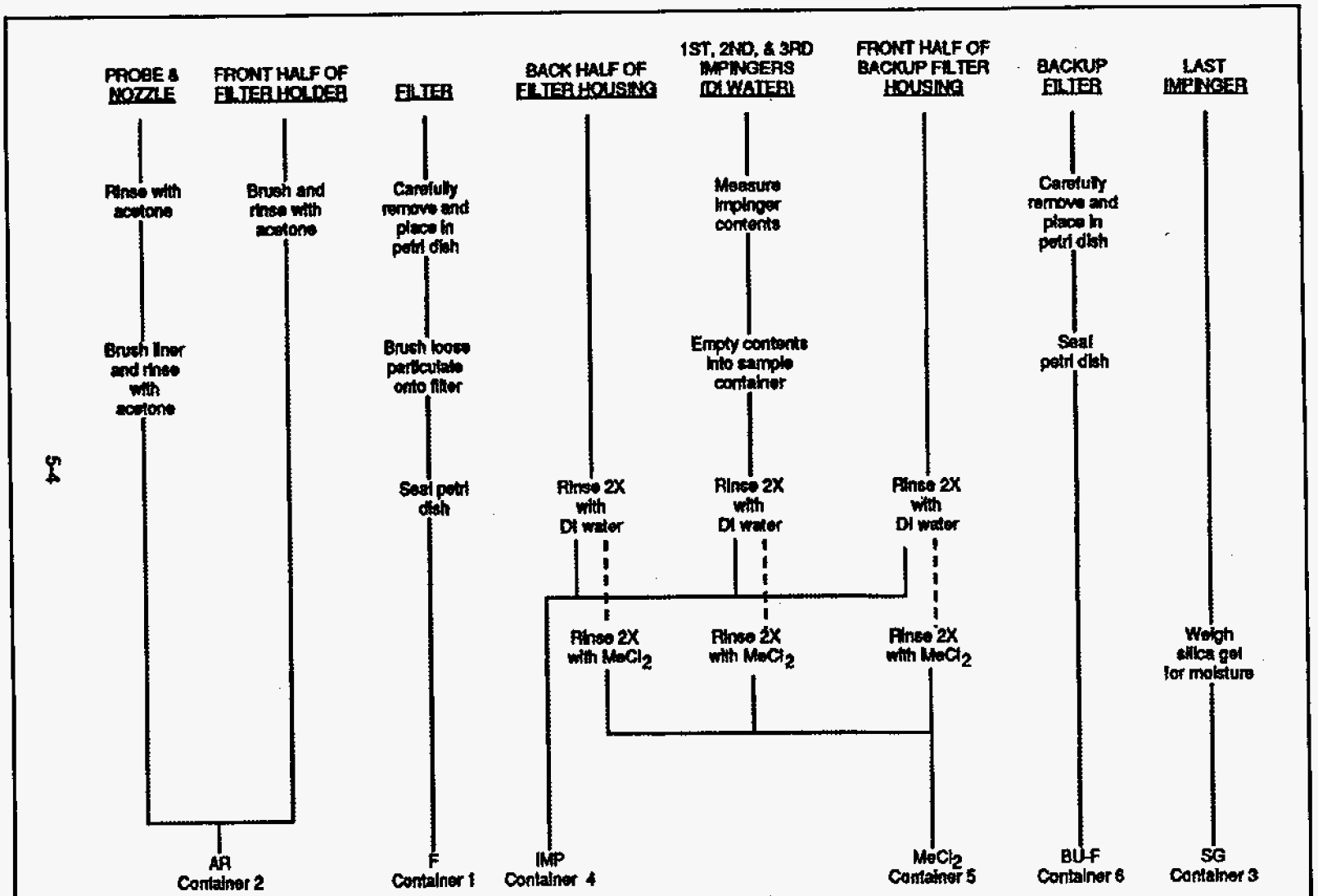


Figure 5-3. Sample recovery scheme for particulate/condensibles samples.

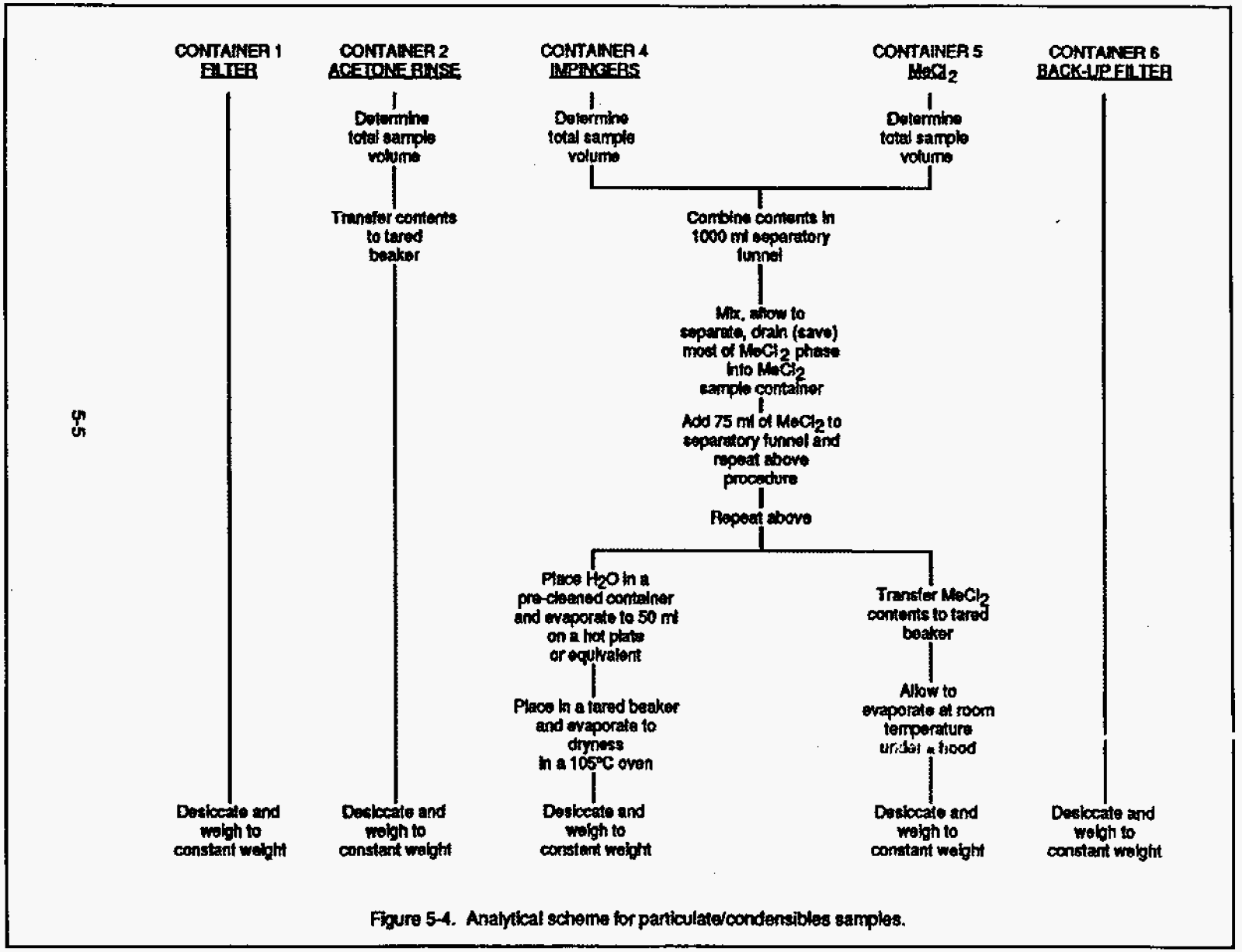


Figure 5-4. Analytical scheme for particulate/condensibles samples.

5.2 PROCESS DATA

In this section, include the following:

•Description of analytical, sampling, or other procedures for obtaining process stream and control equipment data

EXAMPLE:

5.2 PROCESS DATA

The following process operation data will be collected:

- Number of press loads during EFB inlet/outlet testing
- Number of press loads during press vent testing
- Dryer inlet and outlet temperatures
- Belt speed
- EFB bed voltage and current
- EFB ionizer voltage and current

The **[Process Monitor]** will count the number of press loads, and obtain the dryer data from the central control panel and the EFB data from the EFB control panel.

6.0 QA/QC ACTIVITIES

6.1 QC PROCEDURES

In this section, provide the following for each test method:

- Data sheets
- QC check lists, which could be part of the data sheets
- QC control limits
- Discussion of any special QC procedures

Examples of QC checks would be calibration of instruments, matrix spikes, duplicate analyses, internal standards, blanks, linearity checks, drift checks, response time checks, and system bias checks.

EXAMPLE: Examples for Method 1 and Method 2 are provided below. Other examples of data sheets/QC check lists may be obtained through EMTIC.

6.1 QC PROCEDURES

Data sheets that also act as QC check lists and include QC control limits for Methods 1 and 2 are shown in Figures 6-1 and 6-2.

6.2 QA AUDITS

For each of the test methods for which an audit is to be conducted, list (if applicable) the following:

- Type of audits to be conducted
- Limits of acceptability
- Supplier of audit material
- Audit procedure
- Audit data sheet/QC check list

EXAMPLE: An example for Method 5 dry gas meter is provided below. Other examples of data audit sheets/QC check lists may be obtained from EMTIC.

6.2 QA AUDITS

Calibrated critical orifices (about 0.5 cfm) supplied by EPA will be used to audit the Method 5 dry gas meter calibration. The dry gas meter value must agree to within ±5 percent of the critical orifice value. The procedure in Section 7.2 of Method 5 will be used. The data sheet provided by EPA will be used.

Sampling and Velocity Traverse Point Determination
EPA Method 1

PLANT NAME _____

CITY, STATE _____

SAMPLING LOCATION _____

NO. OF PORTS AVAILABLE _____

NO. OF PORTS USED _____

PORT INSIDE DIAMETER _____

DISTANCE FROM FAR WALL TO OUTSIDE OF PORT _____

NIPPLE LENGTH AND/OR WALL THICKNESS _____

DEPTH OF STACK OR DUCT _____

STACK OR DUCT WIDTH (IF RECTANGULAR) _____

EQUIVALENT DIAMETER:

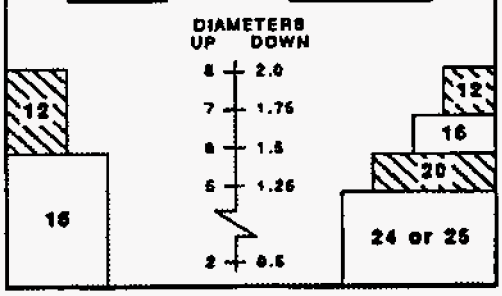
$D_E = \frac{2 \times \text{DEPTH} \times \text{WIDTH}}{\text{DEPTH} + \text{WIDTH}} = \frac{2 (\quad)(\quad)}{(\quad + \quad)} =$ _____

DISTANCE FROM PORTS TO FLOW DISTURBANCES	UPSTREAM	DOWNSTREAM
DIAMETERS	_____	_____

STACK/DUCT AREA = _____ = _____ IN^2
(must be > 113 $in.^2$)

DRAW HORIZONTAL LINE THROUGH DIAMETERS

If more than 8 and 2 diameters and if duct dia. is 12 - 24, use 8 or 6 points.



POINT	% OF DUCT DEPTH	DISTANCE FROM INSIDE WALL	DISTANCE FROM OUTSIDE OF PORT
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			

Do not place points closer to stack walls than
1.0 in. for stack dia. >24 in.
0.5 in. for stack dia. 12 to <24 in.

For rectangular stacks, use only the following matrices:

No. Pts.	Matrix
9	3 x 3
12	4 x 3
16	4 x 4
25	5 x 5

LOCATION OF POINTS IN CIRCULAR STACKS OR DUCTS

	2	3	5	10	12
1	14.7	4.4	3.2	2.5	2.1
2	85.3	14.6	10.5	8.2	6.7
3	75.0	29.5	19.4	14.6	11.8
4	93.3	70.4	32.3	22.6	17.7
5		85.4	67.7	34.2	25.0
6		95.6	80.6	65.8	35.6
7			89.5	77.4	64.4
8			96.8	85.4	75.0
9				91.8	82.3
10				97.4	88.2
11					93.3
12					97.9

LOCATION OF POINTS IN RECTANGULAR STACKS OR DUCTS

	3	4	5
1	16.7	12.5	10.0
2	50.0	37.5	30.0
3	83.3	62.5	50.0
4		87.5	70.0
5			90.0

Check for completeness_____

Checked by (Signature)_____

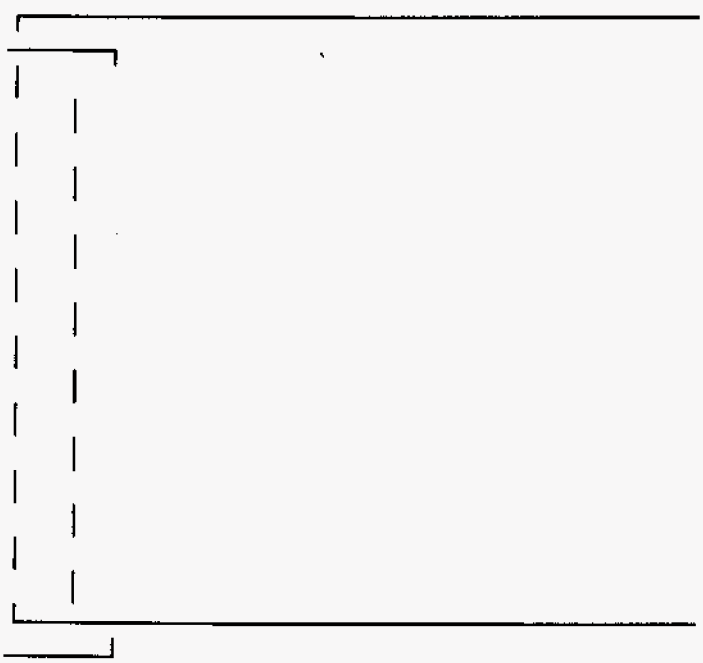
Figure 6-1.

FIGURE 6-2. EXAMPLE VELOCITY DATA SHEET

Date _____ Run No. _____ Test Location _____

Plant _____

Operator _____ Start Time: _____



Schematic: Cross-Section

Pitot ID No. _____

Pitot coeff: C_p = _____

Last calibrated: Date: _____

Pitot condition: _____

_____

Gauge sensitivity:
Req'd _____ in. H_2O
Actual _____ in. H_2O

Calibration:
Pre-test _____
Post-test _____

Leak check: (None)
Pre-test: _____
Post-test: _____

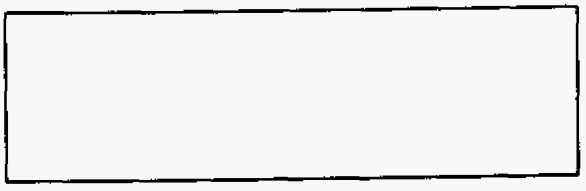
Port/ Trav. Pt.	Δp in. H_2O	Stk temp. °F

Temp. ID No. _____
Temp. calibration: (1.5% abs)
Pre-test _____
Post-test _____

Barometric presssure gauge calibration:
(0.1 in. Hg)
Pre-test _____
Post-test _____
Barometric pressure: P_b = _____ in. Hg

Static pressure: P_s = _____ in. Hg

Pitot configuration/assembly:
Sketch/dimensions



Checked for completeness by (Signature/Title)
_____

6.3 QA/QC CHECKS OF DATA REDUCTION

In this section, describe the following:

- Procedure for assuring accurate transfer of raw data and accuracy of calculations
- Data quality indicators, such as
  - Using F_o factors to validate Orsat, CEM CO_2/O_2 data
  - Comparing process O_2 monitor and CEM O_2 data
  - Comparing flow rates measured at different locations or by different sampling trains
  - Comparing relative concentrations at different sampling locations
  - Comparison of data with previous field test results (if applicable)
  - Running mass balances

EXAMPLE:

6.3 QA/QC CHECKS OF DATA REDUCTION

The **[QA Officer]** will run an independent check (using a validated computer program) of the calculations with predetermined data before the field test. This will ensure that calculations done in the field are accurate. The **[QA Officer]** will also conduct a spot check on-site to assure that data are being recorded accurately. After the test, the **[QA Officer]** will check the data input to assure that the raw data have been transferred to the computer accurately.

The F_o factors from Method 3 will be used to validate the CO_2/O_2 data. Since the fuel consists of wood trim, fines, and resinated sander dust, the F_o factor is expected to be within 1.000 and 1.120.

The inlet and outlet volumetric flow rates will be compared. In addition, the volumetric flow rates from the Method 202 and MM5 trains will be compared. Agreement within these two trains should be ±10 percent.

6.4 SAMPLE IDENTIFICATION AND CUSTODY

- Person responsible
- Sample identification and chain-of-custody procedure
- Sample identification label
- Chain-of-custody form
- Sample log sheet

EXAMPLE: The scheme for identifying samples should be logical and easily deciphered, e.g., 2I-PM-F means Run No. 2, inlet, particulate matter sample, filter.

6.4 SAMPLE IDENTIFICATION AND CUSTODY

The **[Task Leader]** is responsible to ensure that all samples are accounted for and that proper custody procedures are followed. After collecting and recovering the sample, the **[QA Officer]** will supply sample labels and integrity seals, maintain inventory records of all the samples taken, and ensure that chain-of-custody forms are filled. Figures 6-3 through 6-6 show some examples.

PLANT:
JOB #: DATE: / /

RUN #:

MATRIX:
LOT #

FINAL WT._____

TARE WT._____

FV, mls.=

PLANT:
JOB #: DATE: / /

RUN #:

MATRIX: 200ml 5% HNO3 / 10% H2O2
LOT #

FINAL WT._____

TARE WT._____

FV, mls.=

PLANT:
JOB #: DATE: / /

RUN #:

MATRIX:
LOT #

FINAL WT._____

TARE WT._____

FV, mls.=

PLANT:
JOB #: DATE: / /

RUN #:

MATRIX: 200 ml 5% H2O2
LOT #

FINAL WT._____

TARE WT._____

FV, mls.=

RINSE ADDED IN FIELD? _____YES _____NO

MARK LIQUID LEVEL IF APPLICABLE
T-- = tared vol. of reagent
RV-- = reagent vol. after use
(does not include rinse)
FV-- = final volume (reagent + rinse)

Figure 6-3. Example sample labels.

FIELD SAMPLE QUALITY CONTROL
50-CAPACITY CONTAINER, BOX NO. ________

Assembly Date ____________ Assembled By ____________ Job No. ____________

Plant Name/Address ____

Individual Tare Of Reagent ________ (mL)(gm) of ______________________

Individual Tare Of Reagent ________ (mL)(gm) of ______________________

Individual Tare Of Reagent ________ (mL)(gm) of ______________________

Individual Tare Of Sil. Gel ________ Gm ______________________
Other (specify)

Run/Sample I.D.	Samp. Method	Recovery Date	Recovery Time	Init

Run/Sample I.D.	Samp. Method	Recovery Date	Recovery Time	Init

All liquid levels at mark (check)? ___ Yes ___ No (estimate loss of not at mark; use REMARKS section).

Remarks ____

____

____

Custodian ____________________ Date __________ Time ________

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Figure 6-4. Example field sample quality control sheet.

VOST SAMPLES USAGE INVENTORY, CONTAINER NO. ________

Plant Name ______________________________ Job No. ________

City/State ______________________________ Packed By ________

Total No. Tenax Tubes ______ Tenax/Charcoal Tubes ______ (SHOW TOTALS ON PAGE 1 ONLY)

PAGE _____ OF _____

Date	Sampling Location	Run Number	Sample I.D.	Tenax Tube No.	Tenax/Charcoal Tube No.	Condensate Vial No.
Personnel ________						
Remarks*						
Personnel ________						
Remarks*						
Personnel ________						
Remarks*						
Personnel ________						
Remarks*						
Personnel ________						
Remarks*						

*INCLUDE LISTING OF TUBES NOT USED DUE TO BREAKAGE AND ABORTED RUNS.

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Figure 6-5. Example sample inventory sheet.

RECORD OF CUSTODY, CONTAINER NO. _____

Container Type (check) ___Reagent Box ___Cooler ___Other_____

Plant Name/Address _____

Job No. _____ Sampling Method _____ (EPA, NIOSH, etc.)

Seal ID	Date	Time	*	Full Signature	Reason for Breaking Seal**
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		

* S = Sealed By; B = Broken By ** Use "REMARKS" Section if more space needed.

Received by Sample Custodian **Seal Intact?

_____ _____ _____ ___Yes ___No

Signature Date Time

As Applicable:
All liquid levels at mark (check)? ___ YES ___ NO (Estimate loss if not at mark; describe in "REMARKS")

As Applicable:
TUBE SAMPLES put in freezer by _____ Date _____ Time _____

CONDENSATE SAMPLES put in refrige. by _____ Date _____ Time _____

REMARKS _____

_____

_____

I-0023 rev. 10-91 Figure 6-6. Example chain-of-custody form.

7.0 REPORTING AND DATA REDUCTION REQUIREMENTS

7.1 REPORT FORMAT

In this section, include:

- Table of contents for the test report

EXAMPLE:

7.1 REPORT FORMAT

The Table of Contents for the report will be:

TABLE OF CONTENTS

7.2 DATA REDUCTION AND SUMMARY

In this section, include:

- Data summary tables; include units (e.g., lb/mmBtu, lb/ton of product, dscm corrected to 6% O_2)

EXAMPLE: The example is for only one of the sets of measurements. Similar tables should be made for all sets of data.

7.2 DATA REDUCTION AND SUMMARY

Table 7-1 shows the format to be used to summarize the data.

TABLE 7-1. SUMMARY TABLE FORMAT OF EMISSION DATA

Method/Component	Units	EFB Inlet				EFB Outlet				Press Vents			
		Run 1	Run 2	Run 3	Avg	Run 1	Run 2	Run 3	Avg	Run 1	Run 2	Run 3	Avg
Method 202													
PM	mg/dscm												
CPM	mg/dscm												
Back-up Filter	mg/dscm												
Total	mg/dscm												
Method 25A, HC	ppm C												
Method 25 - A													
TGNMO	ppm C												
Condensibles	ppm C												
Non-condensibles	ppm C												
Method 25 - B													
TGNMO	ppm C												
Condensibles	ppm C												
Non-condensibles	ppm C												
M0011													
Formaldehyde	mg/dscm												
Other aldehydes	mg/dscm												
Ketones	mg/dscm												
Total	mg/dscm												
Method 3													
O_2	%												
CO_2	%												
Method 10, CO	ppm												
Method 7E, NO_x	ppm												
TOC	ppm C												

8.0 PLANT ENTRY AND SAFETY

8.1 SAFETY RESPONSIBILITIES

Identify the following individuals:

- Person responsible for ensuring compliance with plant entry, health, and safety requirements
- Facility person or safety officer who has the authority to impose or waive facility restrictions
- Tester who has authority to negotiate with facility person any deviations from the facility restrictions

EXAMPLE:

8.1 SAFETY RESPONSIBILITIES

The **[Test Director]** is responsible for ensuring compliance with plant entry, health, and safety requirements. The **[Facility Person]** has the authority to impose or waive facility restrictions. The **[Project Director]** has the authority to negotiate with facility person any deviations from the facility restrictions.

8.2 SAFETY PROGRAM

Briefly describe:

- Test contractor's health and safety program

EXAMPLE:

8.2 SAFETY PROGRAM

[Contractor] has a comprehensive health and safety program that satisfies Federal OSHA requirements. The basic elements include: (1) written policies and procedures, (2) routine training of employees and supervisors, (3) medical monitoring, (4) use of personal protection equipment, (5) hazard communication, (6) pre-mobilization meetings with **[facility]** personnel and **[contractor]** test team personnel, and (7) routine surveillance of the on-going test work.

8.3 SAFETY REQUIREMENTS

In this section:

- List the facility's safety requirements and emergency response plan.
- Note any deviations from the safety requirements, discussions with the plant, and outcome of the discussions concerning the deviations.

Requirements may include such items as personnel safety equipment, first aid gear, smoking restrictions, vehicle traffic rules, escorts, entrance and exit locations, required communications during and after business hours, e.g., times when testing crew arrives and leaves site, or evacuation procedure for various alarms.

EXAMPLE:

8.3 SAFETY REQUIREMENTS

All test personnel will adhere to the following standard safety and precautionary measures as follows:

- Confine selves to test area only.
- Wear hard hats at all times on-site, except inside sample recovery trailers and mobile CEM laboratory.
- Wear protective shoes or boots in test area.
- Wear protective glasses or goggles at the EFB inlet and outlet test sites, and other areas as designated.
- Have readily available first aid equipment and fire extinguishers.

Before or on the first day on-site, the **[Test Director]** will fill out the Emergency Response Procedure form (see Figure 8-1) and provide copies to be posted at each test site.

Figure 8-1. On-Site Emergency Response Procedures*

Project:_____ Date:_____

Location:_____ By:_____

Evacuation Signal:_____

When it sounds:_____

_____

_____

_____

Gather with other test personnel at (location):_____

_____

_____

All clear signal: _____

_____

First aid station location and phone number:_____

Ambulance phone number:_____

Fire Department phone number:_____

Hospital phone number:_____

* Post or secure at your work station for easy reference in the event of an emergency.

9.0 PERSONNEL RESPONSIBILITIES AND TEST SCHEDULE

9.1 TEST SITE ORGANIZATION

In this section:

- List the key tasks and task leaders.

EXAMPLE:

9.1 TEST SITE ORGANIZATION

The key tasks and task leaders are:

- Management: **[Name]**
- Test Preparation/Site Restoration: **[Name]**
- Modifications to Facility/Services: **[Name]**
- Sampling Site Accessibility: **[Name]**
- Sample Recovery: **[Name]**
- Daily Sampling Schedule: **[Name]**

9.2 TEST PREPARATIONS

In this section, describe or identify the following:

- Construction of special sampling and analytical equip-ment
  - Description
  - Dates for completion of work
  - Responsible group
- Modifications to the facility, e.g., adding ports, building scaffolding, installing instrumentation, and calibrating and maintaining existing equipment
  - Description
  - Dates for completion
  - Responsible group
- Services provided by the facility, such as electrical power, compressed air, and water
  - List of all services to be provided by the facility
  - Description of modifications or added requirements, if necessary
- Access to sampling sites
  - Description
  - If modifications are required, requirements and responsible group
- Sample recovery area
  - Description
  - If a mobile recovery area or laboratory is used, installation location, dates for installation, and responsible group

EXAMPLE:

9.2 TEST PREPARATIONS

9.2.1 Construction of Special ... and Analytical Equipment. There are no equi... t r... ...cations or special analytical equipment requi... fo... ...s site.

9.2.2 Modifications to Facil... Th... ...ant] crew will install additional 4-inch ID s... ing ... ...s as shown in Figures 4-1 and 4-2. In additi... he ... ...ng at the outlet stack will be extended to c... ven... ...e stack to allow access to the new sampling ... lc... ...ons. All work will be completed during ... sc... ...led plant shutdowns on July 11 and 25, 1991.

9.2.3 Services Provided by ... ity. ...e [Plant] agreed to furnish additional tempo... 110 ...s, 20 amp power as follows:

- EFB inlet
  5 outlets
- EFB outlet stack
  5 outlets
- Press vents
  2 outlets
- Mobile CEM lab
  5 outlets

[Contractor] will provide ll ... ser... ...s.

9.2.4 Access to Sampl... S... T... are ... special problems or safety i... ...es ...ainin... ...ccess t... the testing locations.

9.2.5 Sample Recovery ...eas... ...ontr... ...r] will provide an office trailer (3... ...t, ...ot to...) and a smaller trailer for sample r... ...ver... ...as. office trailer requires a single pha... 220 ... power ...ply for lighting and air conditioni... and ... small ...trailer requires two 110 volt, 20 ... cir... s. ... sample recovery task leader will b... espo... ...le fo... ...cating both sample recovery units i... ...ceas... ...ree a... ...ssible from ambient dust contaminati... The ...ce un... ...ill be used for recovering the M20... nd MM... ...amples ...d the smaller unit will be used f... ...he M... (form... ...hyde) samples.

9.3 TEST PERSONNEL RESPONSIBILITIES AND DETAILED SCHEDULE

In this section:

- Describe pre-test activities.
- Provide a table that lists staff assignments and responsibilities.
- Provide a table or text detailing the test schedule.

EXAMPLE:

9.3 TEST PERSONNEL RESPONSIBILITIES AND DETAILED SCHEDULE

[Contractor] personnel will arrive at the plant about 1.5 hours before the start of the first test run on each of the two days scheduled for sampling. Pre-test activities on these days will include:

- Meet with the plant contact and the EPA WAM to review the daily test objectives.
- Prepare and set-up (including leak checks) the manual method trains at all test locations.
- Calibrate instrumental analyzers and verify that the data acquisition systems are functioning properly.
- Verify communication links between team members/leaders/plant personnel.

Table 9-1 lists the test personnel and their specific responsibilities. Figure 9-1 and Table 9-2 present a detailed test schedule.

TABLE 9-1. TEST PERSONNEL AND RESPONSIBILITIES

Staff Assignment	Responsibility
1. Project Manager/Field Coordinator	Coordinate all test activities. Maintain communications between all test participants, plant personnel, and the EPA Work Assignment Manager. Collect EFB process data.
2. Sampling Location Leader (EFB inlet)	Coordinate and monitor all testing activities at the EFB inlet location. Ensure all field calculations are completed. Prepare and operate the M0011 train.
3. Sampling Team Leader (EFB inlet)	Prepare and operate the M202 train at the inlet. Record data. Assist in sample recovery as required.
4. Field Technician (EFB inlet)	Assist in preparation and operation of M202 and M0011 trains as required at EFB inlet location.
5. Sampling Location Leader (EFB outlet)	Coordinate and monitor all testing activities at outlet stack location. Ensure all field calculations and data are completed. Prepare and operate the MM5 train.
6. Sampling Team Leader (EFB outlet)	Prepare and operate the M202 train. Record data. Assist in sample recovery as required.
7. Sampling Team Leader (EFB outlet)	Prepare and operate the M0011 train. Record data. Assist in sample recovery as required.
8. Sampling Team Leader (EFB outlet)	Prepare and operate VOS train. Record data. Recover VOST samples.
9. Field Technician (EFB outlet)	Assist in preparation and operation of the MM5, M0011, M202, and VOS trains as required.
10. Field Technician (EFB outlet)	Assist in preparation and operation of the MM5, M0011, M202, and VOS trains as required.
11. CEM Inorganics Team (EFB outlet)	Prepare and operate M7E and M10 monitoring systems at EFB outlet stack location. Coordinate with M25A and manual methods testing efforts.
12. CEM Organics Team (EFB inlet and outlet)	Prepare and operate the M25A monitoring systems at EFB inlet and outlet locations. Coordinate with other CEM and the manual methods testing efforts.
13. Sampling Location Leader (press vents)	Coordinate testing activities at the press vents. Ensure all field calculations are completed. Prepare and operate the M0011 train.
14. Field Technician (press vents)	Assist in preparation and operation of M0011 at press vents.
15. Field Laboratory Team Leader	Coordinate preparation and recovery of sampling trains. Maintain sample chain of custody. Coordinate field repairs.
16. Field Laboratory Technician	Assist in preparation and recovery of sampling trains and sample inventory.
17. Process Data Collector (control room)	Record required process parameters at appropriate intervals.

TABLE 9-2. DETAILED TEST SCHEDULE

Crew Member	Activity
Monday, July 29	
1 - 17	Travel to [City, State]
1	Contact [Plant Contact] EPA Work Assignment Manager, and [Trade Organization] representative.
1	Establish communications between the test team, EPA, [Trade Organization], and the plant.
2,3,4	Prepare the inlet sampling location for testing and set-up the equipment. Conduct preliminary measurements.
5,6,7,8,9,10	Prepare the outlet stack sampling location for testing and set-up the equipment. Conduct preliminary measurements.
13,14	Prepare the press vent sampling location for testing and set-up the equipment. Conduct preliminary measurements.
11	Set-up and calibrate the M7E and M10 monitoring equipment at the outlet stack. Warm up and check all monitoring and data acquisition systems for M7E and M10. Coordinate with M25A team leader and manual methods testing team.
12	Set-up and calibrate the monitoring systems for Method 25A at the inlet and outlet stack locations. Coordinate with M7E/M10 team leader and manual methods testing team.
15,16	Set-up the sample recovery areas and inventory all reagents and glassware.
17	Locate points for gathering process data. Establish communications with appropriate plant personnel.
Tuesday, July 30	
SET-UP	
1	Contact [Plant Contact] and EPA Work Assignment Manager. Review plant and testing status. Prepare for tests.
2,3,4,5,6,7,8,9, 10,13,14	Perform initial calibrations and daily QC checks. Set-up trains and leak check. Warm-up all equipment and prepare for testing.
11,12	Perform all initial calibrations and QC checks. Check all probe locations, condensers, etc. Verify that the data acquisition system is functioning properly.
15,16	Prepare sampling trains for first run.
17	Prepare to collect process data. Assist others as needed.
TESTING	
2,4	M0011 train - 2 runs at the inlet.

7,9	M0011 train - 2 runs at the outlet.

Table 9-2 (Continued)

13,14	M0011 train - 2 runs at the press vents.
3,4	M202 train - 2 runs at the inlet.
6,9	M202 train - 2 runs at the outlet.
5,10	MM5 train - 2 runs at the outlet.
8,10	VOS train - 2 runs at the outlet.
11,12	Methods 7E, 10, 25A - 2 runs at inlet and outlet.
15,16	Support sampling teams, sample recovery and train preparation. Review paperwork for completeness.
17,1	Collect process data.
1	Coordinate testing effort with plant, EPA, and test personnel. At end of day, secure area and communicate with the plant and the EPA on the testing status.

Wednesday, July 31

Assignments and responsibilities will be the same as for Tuesday, July 30 for the third run. If possible, three additional runs of Method 25 and 25A will be conducted on Wednesday afternoon and Thursday morning. These will involve [Contractor] crew members 11,12,17, and 1 and the [Trade Organization] staff. The remaining [Contractor] staff will pack samples, unneeded equipment, restore the sampling sites, and travel home. If due to testing or plant conditions, the schedule is not completed as planned, Thursday, August 1 will be used as a contingency test day. At the conclusion of the test, there will be a brief informational meeting with the plant and EPA personnel to resolve any questions before the remaining test team members leave the site.

MONDAY July 29, 1991	TUESDAY July 30, 1991	WEDNESDAY July 31, 1991	THURSDAY August 1, 1991
•Travel to site •Establish test team/ Plant communications •Set up test locations •Conduct preliminary measurements •Set up lab for sample recovery	•Complete 2 test runs	•Complete 3rd test run •Pack up all but Methods 25 and 25A equipment •Conduct 2 additional Method 25/25A runs •Collect 2 evacuated cylinder samples •Rest of staff drive home •Afternoon: contingency test day	•Conduct 1 additional Method 25/25A run •Collect 1 evacuated cylinder sample •Restore sites •Remaining staff drive home •Contingency test day

Figure 9-1. Proposed daily test schedule for [Plant] test program.

Enclosure 3

EPA REQUIREMENTS FOR QUALITY ASSURANCE PROJECT PLANS FOR ENVIRONMENTAL DATA OPERATIONS

EPA QA/R-5

United States Environmental Protection Agency
Quality Assurance Division

Washington, DC 20460

EXTERNAL REVIEW DRAFT FINAL

OCTOBER 1998

FOREWORD

The U.S. Environmental Protection Agency (EPA) has developed the Quality Assurance Project Plan (QAPP) as an important tool for project managers and planners to document the type and quality of data needed for environmental decisions and to provide a blueprint for collecting and assessing those data from environmental programs. The development, review, approval, and implementation of the QAPP is part of the mandatory Agency-wide Quality System that requires all organizations performing work for EPA to develop and operate management structures and processes for ensuring that data collected or compiled for use in Agency decisions are of the type and quality needed and expected for their intended use. The QAPP is an integral part of the fundamental principles and practices that form the foundation of the EPA Quality System.

This document contains the same requirements as Chapter 5 of EPA Order 5360 (July 1998), *The EPA Quality Manual for Environmental Programs*, which has been developed for internal use by EPA organizations. This document provides the QAPP requirements for organizations that conduct environmental data operations in behalf of EPA through contracts, financial assistance agreements, and inter-agency agreements. A companion document, *EPA Guidance for Quality Assurance Project Plans (QA/G-5)* (EPA 1998c) provides suggestions on preparing, reviewing, and implementing QAPPs. The guidance is intended for use by both EPA and non-EPA organizations.

This document is one of the *U.S. Environmental Protection Agency Quality System Series* requirements and guidance documents. These documents describe the EPA policies and procedures for planning, implementing, and assessing the effectiveness of the Quality System. Requirements documents (identified as EPA QA/R-x) establish criteria and mandatory specifications for quality assurance (QA) and quality control (QC) activities. Guidance documents (identified as EPA QA/G-x) provide suggestions and recommendations of a non-mandatory nature for using the various components of the Quality System.

Questions regarding this document or other *Quality System Series* documents should be directed to:

U.S. EPA
Quality Assurance Division (8724R)
401 M Street, SW
Washington, DC 20460
Phone: (202) 564-6830
FAX: (202) 565-2441
e-mail: ord-qad@epa.gov

Copies of EPA *Quality System Series* documents may be obtained from the Quality Assurance Division or by downloading them from the QAD Home Page at:

URL Address: http://es.epa.gov/ncerqa/qa/index.html

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CHAPTER 1

INTRODUCTION

1.1 BACKGROUND

The Environmental Protection Agency (EPA) annually spends more than several hundred million dollars in the collection of environmental data.[1] In addition, the regulated community may spend as much as an order of magnitude more each year in complying with Agency requirements. There are several important concerns common to environmental data operations[2] for both the EPA and the regulated community. Both groups want to make decisions using the right data collected properly the first time.

The complexity of environmental data operations demands that a systematic process and structure for quality must be established if decision makers are to have the necessary confidence in the quality of data that support their decisions. This process and structure must include the means to determine when the data are not fully usable and what to do about the situation. This process and structure is provided by the quality system for the organization conducting the environmental data operations. EPA Order 5360.1 CHG 1 requires that the collection of environmental data by and on behalf of the Agency be supported by a mandatory quality system. Moreover, EPA Order 5360.1 CHG 1 requires that all environmental data used in decision making be supported by an approved Quality Assurance Project Plan (QAPP). These requirements are externalized through several mechanisms, including:

- 48 CFR Part 46, for contractors;
- 40 CFR Parts 30, 31, and 35 for assistance agreement recipients;
- and other mechanisms, such as consent agreements in enforcement actions.

The QAPP integrates all technical and quality aspects for the life-cycle of the project, including planning, implementation, and assessment. The purpose of the QAPP is to document planning results for environmental data operations and to provide a project-specific "blueprint" for obtaining the type and quality of environmental data needed for a specific decision or use. The QAPP documents how quality assurance (QA) and quality control (QC) are applied to an

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[1] Environmental data include any measurements or information that describe environmental processes, location, or conditions; ecological or health effects and consequences; or the performance of environmental technology. For EPA, environmental data include information collected directly from measurements, produced from models, and compiled from other sources such as data bases or the literature.

[2] This term is used throughout this document to refer to activities involving the acquisition, analysis, and evaluation of environmental data. See Appendix B for a more complete definition.

environmental data operation to assure that the results obtained are of the type and quality needed and expected.

The ultimate success of an environmental program or project depends on the quality of the environmental data collected and used in decision-making, and this may depend significantly on the adequacy of the QAPP and its effective implementation. This planning must include the "stakeholders" (i.e., the data users, data producers, decision makers, etc.) to ensure that all needs are defined adequately and that the planning for quality addresses the specific needs defined. While time spent on such planning may seem unproductive and costly, the penalty for ineffective planning includes greater cost and lost time. In the chapters to follow, the elements of the QAPP are discussed in detail. These elements represent the information that EPA believes to be necessary for data operations involving the characterization of environmental processes and conditions.

This document presents specifications and instructions for the information that must be contained in a QAPP for environmental data operations performed on behalf of the EPA by extramural organizations. The document also discusses the procedures for review, approval, implementation and revision of QAPPs. Users of this document should assume that all of the elements described herein are required in the QAPPs unless otherwise directed by EPA.

1.2 QAPPs, THE EPA QUALITY SYSTEM, AND ANSI/ASQC E4

EPA Order 5360.1 CHG 1 establishes a mandatory Agency-wide Quality System that applies to all organizations performing work for EPA as well as to EPA. (The authority for the requirements defined by the Order are contained in the applicable regulations for extramural agreements.) These organizations must ensure that data collected for the characterization of environmental processes and conditions are of the appropriate type and quality for their intended use and that environmental technologies are designed, constructed, and operated according to defined expectations. The QAPP is a key component of the EPA Quality System as shown in Figure 1.

EPA policy is based on the national consensus standard, ANSI/ASQC E4-1994, *Specifications and Guidelines for Environmental Data Collection and Environmental Technology Programs*. The ANSI/ASQC E4-1994 provides the basis for the quality system for an organization's environmental programs. The document provides the requisite management and technical elements necessary for developing and implementing a quality system. The document first describes the quality management elements that are generally common to environmental problems, regardless of their technical scope. The document then discusses the specifications and guidelines that apply to project-specific environmental activities involving the generation, collection, analysis, evaluation, and reporting of environmental data. Finally, the document contains the minimum specifications and guidelines that apply to the design, construction, and operation of environmental technology.

The ANSI/ASQC E4 standard requires two principal forms of quality system documentation: the quality management plan (QMP), which addresses the Part A requirements, and the quality assurance project plan (QAPP), which addresses the Part B requirements. The QMP documents how an organization structures its quality system, defines and assigns QA and QC responsibilities, and describes the processes and procedures used to plan, implement, and assess the effectiveness of the quality system. The QMP may be viewed as the "umbrella" document under which individual projects are conducted. The requirements defined by EPA for QMPs are given in *EPA Requirements for Quality Management Plans (QA/R-2)* (EPA 1998a).

The QAPP is the "blueprint" by which individual projects are implemented and assessed. The QAPP documents the results of the systematic planning process used to design the work activity and the performance measures for its successful completion. This document defines the EPA requirements for QAPPs. Figure 1 shows the relationship between the QMP and the QAPP in the EPA Quality System.

1.3 SUPERSESSION

This document replaces QAMS-005/80, *Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans* (EPA 1980) in its entirety.

1.4 PERIOD OF APPLICABILITY

Per EPA Order 5360, this document shall be valid for a period of five years from the official date of publication. After five years, this document shall either be reissued, revised, or removed from the EPA Quality System.

1.5 ADDITIONAL RESOURCES

Guidance on developing, preparing, reviewing, and approving QAPPs may be found in a companion document, *EPA Guidance for Quality Assurance Project Plans (QA/G-5)* (EPA 1998c). This guidance discusses the application of the QAPP requirements given in this document to data collection activities and provides examples of the QAPP requirements along with helpful checklists. Other documents that are useful for the development of a QAPP include:

- *Guidance for the Data Quality Objectives Process (QA/G-4)*, (EPA 1994)
- *Guidance for the Preparation of Standard Operating Procedures for Quality-Related Documents (QA/G-6)*, (EPA 1995)
- *Guidance for Data Quality Assessment: Practical Methods for Data Analysis (QA/G-9)*, (EPA 1998b)

These documents provide guidance on activities critical to successful environmental data operations and complement the QAPP preparation effort.

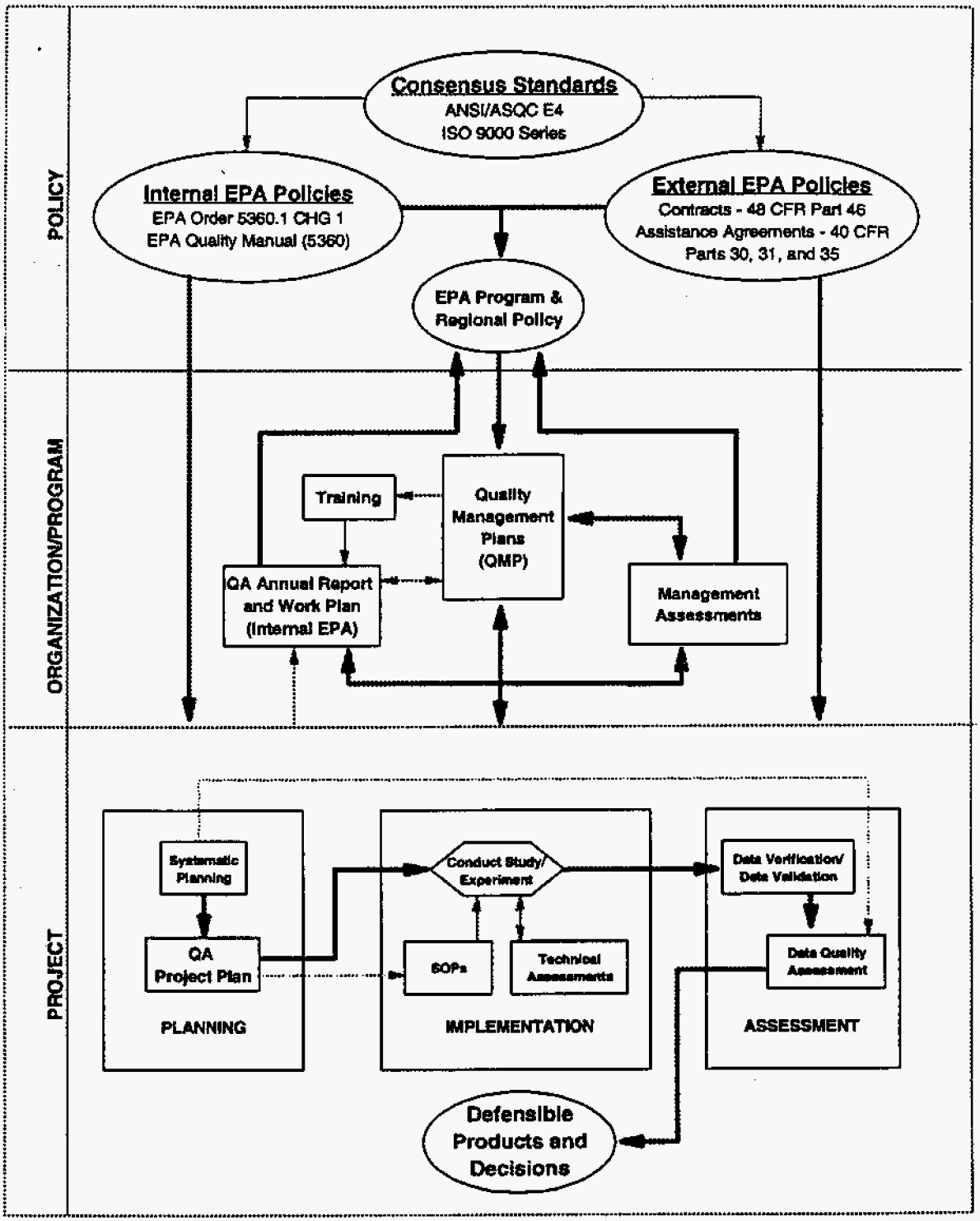

Figure 1. The EPA Quality System

CHAPTER 2

QUALITY ASSURANCE PROJECT PLAN REQUIREMENTS

2.1 POLICY

All work performed by extramural organizations on behalf of or funded by EPA that involves the acquisition of environmental data generated from direct measurement activities, collected from other sources, or compiled from computerized data bases and information systems shall be implemented in accordance with an approved QAPP developed using a systematic planning process based on the "graded approach"[3]. Work performed on behalf of EPA includes activities performed under contracts (including work assignments, task orders, delivery orders, etc.), assistance agreements, or interagency agreements. No work covered by this requirement and funded by EPA shall be implemented without an approved QAPP available prior to the start of the work except under circumstances requiring immediate action to protect human health and the environment or operations conducted under police powers. These requirements will be negotiated into interagency agreements, including sub-agreements, and, in some cases, included in enforcement consent agreements and orders.

2.2 PURPOSE

The QAPP is a critical planning document for any environmental data operation. The QAPP documents how environmental data operations are *planned, implemented, and assessed* with respect to quality during the life cycle of a program, project, or task. The purpose of the QAPP is to define in detail how specific QA and QC activities will be applied during a particular project operation.

2.3 APPLICABILITY

These QAPP requirements apply to all environmental programs that acquire, generate, or compile environmental data and that are performed on behalf of or funded by EPA. These operations include work performed through contracts, work assignments, deliver orders, task orders, cooperative agreements, interagency agreements, State-EPA agreements, State, local and Tribal Financial Assistants/Grants, Research Grants, and in response to statutory or regulatory requirements and consent agreements negotiated as part of enforcement actions. These requirements will be negotiated into interagency agreements, including sub-agreements, and, in some cases, included in enforcement consent agreements and orders. Where specific Federal regulations require QA and QC, QAPPs shall be prepared, reviewed, and approved in accordance

[3] A graded approach is the process of basing the level of application of managerial controls applied to an item or work according to the intended use of the results and the degree of confidence needed in the quality of the results.

with the specifications contained in this document for the acquisition of environmental data unless explicitly superseded by the regulation.

2.4 GENERAL CONTENT AND DETAIL REQUIREMENTS

The QAPP must be composed of standardized, recognizable elements covering the entire project from planning, through implementation, to assessment. Chapter 3 of this document describes specific content requirements for QAPPs submitted to EPA. Each EPA organization will define their QAPP requirements in their QMP. All applicable elements defined by the EPA organization sponsoring the work must be addressed in the QAPP.

In some cases, it may be necessary to add special requirements to the QAPP. The EPA organization sponsoring the work has the authority to define any special requirements beyond those listed in this document. If no additional requirements are specified, the QAPP shall, at least, address all required elements.

The "graded approach" concept recognizes that a "one size fits all" concept of QAPPs will not be appropriate for most environmental programs. Environmental data collection operations encompass diverse and complex activities, including rule making, long-term monitoring, research and development, compliance and enforcement, and human health and ecological effects studies. As a result, some environmental data operations may only require a qualitative discussion of the experimental process and its objectives while others may require extensive documentation in order to adequately describe a complex environmental program. Consequently, the content and level of detail in each QAPP will vary according to the nature of the work being performed and the intended use of the data. The decision on QAPP content and level of detail belongs to the EPA organization responsible for the work to be done. This is necessary to acknowledge and accommodate regulatory authorities that may exist and that may take some precedence over the results of the planning process.

2.5 QAPP PREPARATION RESPONSIBILITIES AND APPROVALS

The QAPP may be prepared by a contractor, an assistance agreement holder, or another Federal agency under an interagency agreement. Except where specifically delegated, all QAPPs prepared by non-EPA organizations must be approved by EPA before implementation.

It is EPA policy that the QAPP be reviewed and approved by an authorized EPA reviewer to ensure that the QAPP contains the appropriate content and level of detail. This may be the EPA project manager[4] with the assistance and approval of the EPA QA Manager or by the EPA QA Manager alone, as defined by the organization's QMP. In some cases, the authority to

[4] This term refers to the responsible EPA official for the project and includes such descriptors as Project Officer, Delivery Order Project Officer, Work Assignment Manager, and Principal Investigator.

review and approve QAPPs is delegated to a QA Coordinator in another part of the EPA organization covered by the same QMP. In other cases, the authority to review and approve QAPPs is delegated in writing by EPA to another organization (i.e., a Federal agency or a State under an EPA-approved QMP) when the environmental data collection program itself has been delegated to the other organization for implementation. In such cases, it is possible that the EPA project manager and EPA QA Manager may not be involved in the review and approval steps.

2.6 QAPP IMPLEMENTATION

None of the environmental work addressed by the QAPP shall be started until the initial QAPP has been approved and distributed to project personnel except under limited special circumstances. These include situations requiring immediate action to protect human health and the environment or operations conducted under police powers. Conditional approval to a QAPP may be granted to permit some work to begin while non-critical deficiencies in the QAPP are being resolved. Subject to these exceptions, it is the responsibility of the organization performing the work to assure that no environmental data are acquired before the QAPP is approved and received by project personnel.

All QAPPs shall be implemented as approved for the intended work. The organization performing the work is responsible for implementing the approved QAPP and to ensure that all personnel involved in the work have copies of the approved QAPP and all other necessary planning documents. These personnel should understand the requirements prior to the start of data generation activities.

2.7 QAPP REVISION

The approved QAPP must be implemented as prescribed; however, it is not inflexible. When conditions or requirements change during environmental data operations, the QAPP must be revised, then reviewed and approved in the same manner as the original QAPP. Because of the complex and diverse nature of environmental data operations, changes to original plans are often needed. When such changes occur, the approving official will determine if the change significantly impacts the technical and quality objectives of the project. When a substantive change is warranted, the originator of the QAPP shall modify the QAPP to document the change and submit the revision for approval by the same authorities that performed the original review. Only after the revision has been approved and received (at least verbally with written follow-up) by project personnel, shall the change be implemented.

It is absolutely essential that the QAPP be kept current and that all personnel involved in the work effort have easy access to a current version of the QAPP. For programs or projects of long duration, such as multi-year monitoring programs, the QAPPs shall be reviewed at least annually by the Project Manager. When revisions are necessary to reflect current needs, the QAPP must be revised and resubmitted for review and approval.

2.8 QAPPS AND PQAPS

As indicated earlier, environmental data operations vary widely in complexity and not all QAPPs should demand the same level of comprehensiveness. Two general types of QAPP formats are generally acceptable when submitting QAPPs to EPA for review and approval:

- **Quality Assurance Project Plan (QAPP) Document:** The QAPP document is the most frequently used format and applies to most environmental data collection work. Chapter 3 of this document contains the specific requirements for the QAPP Document. It will apply to contracts, work assignments, inter-agency agreements, large cooperative agreements and assistance agreements, etc., that include post-award environmental monitoring, sampling and analysis activities, and long-term studies.

- **Proposal Quality Assurance Plan (PQAP) (formerly QA Narrative Statement):** The PQAP is a brief 2-3 page document that provides in a narrative form the necessary documentation of QA and QC elements to be applied to small projects and tasks. The PQAP has been also called the "QA Narrative Statement." Chapter 4 of this document contains the specific requirements for PQAP. Typically, PQAPs will be submitted as part of proposal or financial assistance application in order to provide evidence of the offeror/applicant's capabilities to satisfy QA and QC requirements in the applicable extramural agreement regulations. In some cases, a full QAPP Document will be required after an award is made. The PQAP may be applied as an official QAPP to small tasks (including short duration tasks), research assistance agreements, and related work in which the scope of work is broadly defined. This will be determined by the EPA project manager.

The choice of format is made by the EPA project manager (or award official).

CHAPTER 3

QAPP ELEMENTS

3.1 CONTENT REQUIREMENTS

The QAPP is a formal document describing in comprehensive detail the necessary QA, QC, and other technical activities that must be implemented to ensure that the results of the work performed will satisfy the stated performance criteria. The QAPP provides the "road map" for QA and QC for a specific project. The QAPP must provide sufficient detail to demonstrate that:

- the project technical and quality objectives are identified and agreed upon;
- the intended measurements or data acquisition methods are appropriate for achieving project objectives;
- assessment procedures are sufficient for confirming that data of the type and quality needed and expected are obtained; and
- any limitations on the use of the data can be identified and documented.

Most environmental data operations require the coordinated efforts of many individuals, possibly including managers, engineers, scientists, statisticians, and others. The QAPP must integrate the contributions and requirements of everyone involved into a clear, concise statement of what is to be accomplished, how it will be done, and by whom. It must provide understandable instructions to those who must implement the QAPP, including the field sampling team, the analytical laboratory, and the data reviewers. The use of national standards and practices and inclusion of standard operating procedures is encouraged in all aspects of the QAPP.

In order to be effective, the QAPP must specify the level or degree of QA/QC needed for the particular environmental data operations. Because this will vary according to the purpose and type of work being done, EPA believes that the graded approach should be used in planning the work. This means that the QA and QC applied to a project will be commensurate with:

- the purpose of the environmental data collection (e.g., enforcement, research and development, rulemaking),
- the type of work to be done (e.g., pollutant monitoring, site characterization, bench level proof of concept experiments), and
- the intended use of the results (e.g., compliance determination, selection of remedial technology, development of environmental regulation).

The QAPP must be composed of standardized, recognizable elements covering the entire project from planning, through implementation, to assessment. The QAPP elements that follow are presented in that order and have been arranged for convenience into four general groups. The four groups of elements and their intent are summarized as follows:

A Project Management - This group of QAPP elements covers the basic area of project management, including the project history and objectives, roles and responsibilities of the participants, etc. These elements ensure that the project has a defined goal, that the participants understand the goal and the approach to be used, and that the planning outputs have been documented.

B Measurement/Data Acquisition - This group of QAPP elements covers all aspects of measurement systems design and implementation, ensuring that appropriate methods for sampling, analysis, data handling, and QC are employed and are properly documented.

C Assessment/Oversight - This group of QAPP elements addresses the activities for assessing the effectiveness of the implementation of the project and associated QA and QC. The purpose of assessment is to ensure that the QAPP is implemented as prescribed.

D Data Validation and Usability - This group of QAPP elements covers the QA activities that occur after the data collection phase of the project is completed. Implementation of these elements ensures that the data conform to the specified criteria, thus achieving the project objectives.

All applicable elements defined by the EPA organization sponsoring the work must be addressed in the QAPP. If an element is not applicable, state this in the QAPP. Documentation, such as an approved Work Plan, Standard Operating Procedures (SOPs), etc., may be referenced in response to a particular required QAPP element to reduce the size of the QAPP and the time required for preparation and review. All referenced documents must be attached to the QAPP itself or be placed on file with the appropriate EPA office and available for routine referencing when needed. Such references must be kept current by the submittor. The QAPP shall also address related QA planning documentation (e.g., Quality Management Plans) from subcontractors or suppliers of services critical to the technical and quality objectives of the project or task.

3.2 GROUP A: PROJECT MANAGEMENT

This group of QAPP elements (Table 1) covers the basic area of project management, including the project history and objectives, roles and responsibilities of the participants, etc.

These elements ensure that the project has a defined goal, that the participants understand the goal and the approach to be used, and that the planning outputs have been documented.

Table 1. Group A: Project Management Elements	
A1	Title and Approval Sheet
A2	Table of Contents
A3	Distribution List
A4	Project/Task Organization
A5	Problem Definition/Background
A6	Project/Task Description
A7	Quality Objectives and Criteria for Measurement Data
A8	Special Training Requirements/Certification
A9	Documentation and Records

3.2.1 A1 - Title and Approval Sheet

On the Title and Approval Sheet, list the title of the plan, the name of the organization(s) implementing the project, and the names, titles, signatures of appropriate approving officials and their approval dates. Approving officials include:

- Organization's Project Manager
- Organization's Quality Assurance Manager
- EPA Project Manager
- EPA Quality Assurance Manager
- Others Offices, as needed (e.g., field operations manager, laboratory managers, State and other Federal Agency officials)

3.2.2 A2 - Table of Contents

List the table of contents for the document, including sections, figures, tables, references, and appendices. Document control format (Figure 2) may be required by the EPA Project Manager and QA Manager. When required, apply the document control format in the upper

right-hand corner of each page following the Title and Approval Sheet. An example document control format is contained in Figure 2.

Section No. _____
Revision No. _____
Date _____
Page ___ of ___

Figure 2. Example Document Control Format

3.2.3 A3 - Distribution List

List the individuals and their organizations who will receive copies of the approved QAPP and any subsequent revisions. Include all persons responsible for implementation (including managers), the QA managers, and representatives of all groups involved.

3.2.4 A4 - Project/Task Organization

Identify the individuals or organizations participating in the project and discuss their specific roles and responsibilities. Include the principal data users, the decision-makers, the project QA manager, and all persons responsible for implementation. The project quality assurance manager must be independent of the unit generating the data. (This does not include being independent of senior officials, such as corporate managers or agency administrators, who are nominally, but not functionally, involved in data generation, data use, or decision-making.)

Provide a concise organization chart showing the relationships and the lines of communication among all project participants. Include other data users who are outside of the organization generating the data, but for whom the data are nevertheless intended. The organization chart must also identify any subcontractor relationships relevant to environmental data operations.

3.2.5 A5 - Problem Definition/Background

State the specific problem to be solved or decision to be made. Include sufficient background information to provide a historical and scientific perspective for this particular project.

3.2.6 A6 - Project/Task Description

Provide a description of the work to be performed and the schedule for implementation. This discussion may not need to be lengthy or overly detailed, but it should give an overall

picture of how the project will resolve the problem or question described in A5. Describe in general terms the following, as needed:

- Measurements that will be made during the course of the project.
- Applicable technical, regulatory, or program-specific quality standards, criteria, or objectives.
- Any special personnel and equipment requirements.
- The assessment tools needed (i.e., program technical reviews, peer reviews, surveillances, and technical audits) for the project.
- A schedule for the work to be performed.
- Project and quality records required, including the types of reports needed.

3.2.7 A7 - Quality Objectives and Criteria for Measurement Data

The QAPP must include a statement of the project quality objectives and measurement performance criteria. EPA requires the use of a systematic planning process to define these quality objectives and performance criteria. To support this requirement, EPA has developed a systematic planning process based on a graded approach for environmental decision making called the Data Quality Objectives (DQO) Process. The DQO Process is the Agency's preferred planning process and provides quality objectives and performance criteria based on the user's determination of tolerable error in the results. For details on the DQO Process and guidance on how and when it may be used, see the *Guidance for the Data Quality Objectives Process (QA/G-4)* (EPA 1994).

3.2.8 A8 - Special Training Requirements/Certification

Identify and describe any specialized training or certification requirements needed by personnel in order to successfully complete the project or task. Discuss how such training will be provided and how the necessary skills will be assured and documented.

3.2.9 A9 - Documentation and Records

Describe the process and responsibilities for ensuring that the most current approved version of the QAPP is available.

Itemize the information and records which must be included in the data report package and specify the desired reporting format for hard copy and electronic forms, when used. Records

can include raw data, field logs, instrument printouts, and results of calibration and QC checks. Identify any other records and documents applicable to the project, such as audit reports, interim progress reports, and final reports, that will be produced. Specify the level of detail of the field sampling and/or laboratory analysis narrative needed to provide a complete description of any difficulties encountered during sampling or analysis. The narrative refers to an annotated summary of the analytical work performed by a laboratory that describes in narrative form what activities were performed and identifies any problems encountered. This information is important to the data user when interpreting the data received.

Specify or reference all applicable requirements for the final disposition of records and documents, including location and length of retention period.

3.3 GROUP B: MEASUREMENT/DATA ACQUISITION

This group of QAPP elements (Table 2) covers all aspects of measurement systems design and implementation, ensuring that appropriate methods for sampling, analysis, data handling, and QC are employed and are documented. The following QAPP elements describe the requirements related to the actual methods to be used for the:

- collection, handling, and analysis of samples;
- measured parameters obtained from other sources (e.g., data contained in a computer data base from previous sampling activities, data compiled from surveys, data taken from the literature); and
- the management (i.e., compiling, handling) of the data.

The methods described in these elements should have been summarized earlier in element A6. The purpose here is to provide detailed information on the methods. If the designated methods are well documented and are readily available to all project participants, citations are adequate. If these methods are not well documented, detailed copies of the methods and/or SOPs must accompany the QAPP either in the text or as attachments.

Table 2. Group B: Measurement/Data Acquisition Elements	
B1	Sampling Process Design (Experimental Design)
B2	Sampling Methods Requirements
B3	Sample Handling and Custody Requirements
B4	Analytical Methods Requirements

Table 2. Group B: Measurement/Data Acquisition Elements	
B5	Quality Control Requirements
B6	Instrument/Equipment Testing, Inspection, and Maintenance Requirements
B7	Instrument Calibration and Frequency
B8	Inspection/Acceptance Requirements for Supplies and Consumables
B9	Data Acquisition Requirements (Non-direct Measurements)
B10	Data Management

3.3.1 B1- Sampling Process Design (Experimental Design)

Describe the experimental design or data collection design for the project, including as appropriate:

- the types and numbers of samples required,
- the design of the sampling network,
- the sampling locations and frequencies,
- sample matrices,
- measurement parameters of interest, and
- the rationale for the design.

Classify all measurements as critical (i.e., required to achieve project objectives) or non-critical (informational purposes only).

3.3.2 B2 - Sampling Methods Requirements

Describe the procedures for collecting samples and identify the sampling methods and equipment, including any implementation requirements, sample preservation requirements, decontamination procedures, and materials needed. Identifying sampling methods by number, date, and regulatory citation (as appropriate) is often sufficient. If a method allows the user to select from various options, then the method citations should state exactly which options are being selected. Describe specific performance requirements for the method. For each sampling method, identify any support facilities needed. The discussion should also address what to do when a failure in the sampling or measurement system occurs, who is responsible for corrective action, and how the effectiveness of the corrective action shall be determined and documented.

Describe the process for the preparation and decontamination of sampling equipment, including the disposal of decontamination by-products; the selection and preparation of sample containers, sample volumes, preservation methods, and maximum holding times to sample extraction and/or analysis.

3.3.3 B3 - Sample Handling and Custody Requirements

Describe the requirements and provisions for sample handling and custody in the field, laboratory, and transport, taking into account the nature of the samples, the maximum allowable sample holding times before extraction or analysis, and available shipping options and schedules. Sample handling includes preservation, packaging, shipment from the site, and storage at the laboratory. Examples of sample labels, custody forms, and sample custody logs should be included.

3.3.4 B4 - Analytical Methods Requirements

Identify the analytical methods and equipment required, including sub-sampling or extraction methods, laboratory decontamination procedures and materials (such as in the case of hazardous or radioactive samples), waste disposal requirements (if any), and any specific performance requirements for the method. Address what to do when a failure in the analytical system occurs and who is responsible for corrective action and how the effectiveness of the corrective action shall be determined and documented. Specify the laboratory turnaround time needed, if important to the project schedule.

Identifying analytical methods by number, date, and regulatory citation (as appropriate) is often sufficient. If a method allows the user to select from various options, then the method citations should state *exactly* which options are being selected. For non-standard methods, such as unusual sample matrices and situations, appropriate method performance study information is needed to confirm the performance of the method for the particular matrix. If previous performance studies are not available, they must be developed during the project and included as part of the project results.

3.3.5 B5 - Quality Control Requirements

Identify the QC procedures needed for each sampling, analysis, or measurement technique. For projects at or beyond the "proof-of-concept" stage and projects employing well-characterized methods, this section should list each required QC procedure, along with the associated acceptance criteria and corrective action. Because standard methods are often vague or incomplete in specifying QC requirements, simply relying on the cited method to provide this information is usually insufficient. In any case, QC procedures must frequently be modified on a project-specific basis in order to meet data specifications.

Identify required measurement QC checks for both the field and the laboratory; for example, blanks, duplicates, matrix spikes, laboratory control samples, surrogates, or second column confirmation. State the frequency of analysis for each type of QC check, and the spike compounds sources and levels. State or reference the required control limits for each QC check and corrective action required when control limits are exceeded and how the effectiveness of the corrective action shall be determined and documented.

Describe or reference the procedures to be used to calculate each of the QC statistics, including the QC checks described in the preceding paragraph as well as precision and bias. Copies of the formulas are acceptable as long as the accompanying narrative or explanation specifies clearly how the calculations will address potentially difficult situations such as missing data values, "less than" or "greater than" values, and other common data qualifiers.

3.3.6 B6 - Instrument/Equipment Testing, Inspection, and Maintenance Requirements

Describe how inspections and acceptance testing of environmental sampling and measurement systems and their components will be performed and documented to assure their intended use as specified by the design. Identify and discuss the procedure by which final acceptance will be performed by independent personnel (e.g., personnel other than those performing the work) and/or by the EPA project manager. Describe how deficiencies are to be resolved, when re-inspection will be performed, and how the effectiveness of the corrective action shall be determined and documented.

Describe or reference how periodic preventive and corrective maintenance of measurement or test equipment shall be performed to ensure availability and satisfactory performance of the systems. Identify the equipment and/or systems requiring periodic maintenance. Discuss how the availability of critical spare parts, identified in the operating guidance and/or design specifications of the systems, will be assured and maintained.

3.3.7 B7 - Instrument Calibration and Frequency

Identify all tools, gauges, instruments, and other sampling, measuring, and test equipment used for data collection activities affecting quality that must be controlled and, at specified periods, calibrated to maintain performance within specified limits. Describe or reference how calibration will be conducted using certified equipment and/or standards with known valid relationships to nationally recognized performance standards. If no such nationally recognized standards exist, document the basis for the calibration. Identify the certified equipment and/or standards used for calibration. Indicate how records of calibration shall be maintained and be traceable to the instrument.

3.3.8 B8 - Inspection/Acceptance Requirements for Supplies and Consumables

Describe how and by whom supplies and consumables (e.g., sample bottles, calibration gases, reagents, hoses, deionized water, potable water) shall be inspected and accepted for use in the project. State acceptance criteria for such supplies and consumables.

3.3.9 B9 - Data Acquisition Requirements (Non-direct Measurements)

Identify any types of data needed for project implementation or decision making that are obtained from non-measurement sources such as computer data bases, programs, literature files, and historical data bases. Define the acceptance criteria for the use of such data in the project and discuss any limitations on the use of the data resulting from uncertainty in its quality. Document the rationale for the original collection of data and indicate its relevance to this project.

3.3.10 B10 - Data Management

Describe the project data management scheme, tracing the path of the data from their generation in the field or laboratory to their final use or storage. Describe or reference the standard record-keeping procedures, document control system, and the approach used for data storage and retrieval on electronic media. Discuss the control mechanism for detecting and correcting errors and for preventing loss of data during data reduction, data reporting, and data entry to forms, reports, and databases. Provide examples of any forms or checklists to be used.

Identify and describe all data handling equipment and procedures to process, compile, and analyze the data. This includes procedures for addressing data generated as part of the project as well as data from other sources. Include any required computer hardware and software and address any specific performance requirements for the hardware/software configuration used. Describe the procedures that will be followed to demonstrate acceptability of the hardware/software configuration required.

Describe the process for assuring that applicable Agency information resource management requirements (EPA Directive 2100) are satisfied. Agency policy requires that locational data be collected and reported with environmental data. If other Agency data management requirements are applicable, discuss how these requirements are addressed. Such requirements may include:

- use of Chemical Abstract Service Registry numbers (EPA Order 2180.1),
- electronic transfer of laboratory data (EPA Order 2180.2), and
- use of minimum data elements for ground water quality (EPA Order 7500.1A).

3.4 GROUP C: ASSESSMENT/OVERSIGHT

This group of QAPP elements (Table 3) addresses the activities for assessing the effectiveness of the implementation of the project and associated QA and QC. The purpose of assessment is to ensure that the QAPP is implemented as prescribed.

Table 3. Group C: Assessment/Oversight Elements	
C1	Assessments and Response Actions
C2	Reports to Management

3.4.1 C1 - Assessments and Response Actions

List and describe the assessments to be used in the projec including the frequency and type of assessment activities needed for this project. Assessments include, but are not limited to surveillance, management systems reviews, readiness reviews, technical systems audits, performance evaluations, audit of data qualitys, and data quality assessments. Discuss the information expected and the success criteria (i.e., goals, performance objectives, acceptance criteria specifications, etc.) for each assessment proposed. List the approximate schedule of activities. For any planned self-assessments (utilizing personnel from within the project groups), identify potential participants and their exact relationship within the project organization. For independent assessments, identify the organization and person(s) that shall perform the assessments if this information is available. Describe how and to whom the results of the assessments shall be reported.

Define the scope of authority of the assessors, including stop work orders. Define explicitly the unsatisfactory conditions under which the assessors are authorized to act and provide an approximate schedule for the assessments to be performed.

Discuss how response actions to assessment findings, including corrective actions for deficiencies and other non-conforming conditions are to be addressed and by whom. Identify who is responsible for implementing response actions and describe how the response actions are to be verified and documented.

3.4.2 C2 - Reports to Management

Identify the frequency and distribution of reports issued to inform management of the status of the project; results of performance evaluations and system audits; results of periodic data quality assessments; and significant quality assurance problems and recommended

solutions. Identify the preparer and the recipients of the reports, and the specific actions management is expected to take as a result of the reports.

3.5 GROUP D: DATA VALIDATION AND USABILITY

This group of QAPP elements (Table 4) covers the QA activities that occur after the data collection phase of the project is completed. Implementation of these elements determines whether or not the data conform to the specified criteria, thus satisfying the project objectives.

Table 4. Group D: Data Validation and Usability	
D1	Data Review, Validation, and Verification Requirements
D2	Validation and Verification Methods
D3	Reconciliation with User Requirements

3.5.1 D1 - Data Review, Validation, and Verification Requirements

State the criteria used to review and validate - that is, accept, reject, or qualify - data, in an objective and consistent manner. Provide examples of any forms or checklists to be used. Identify any project-specific calculations required.

3.5.2 D2 - Validation and Verification Methods

Describe the process to be used for validating and verifying data, including the chain of custody for data throughout the life cycle of the project or task. Discuss how issues shall be resolved and the authorities for resolving such issues. Describe how the results are conveyed to data users. Precisely define and interpret how validation issues differ from verification issues for this project.

3.5.3 D3 - Reconciliation with User Requirements

Describe how the results obtained from the project or task will be reconciled with the requirements defined by the data user or decision maker. Outline the proposed methods to analyze the data and determine possible anomalies or departures from assumptions established in the planning phase of data collection. Describe how issues will be resolved and discuss how limitations on the use of the data will be reported to decision makers.

CHAPTER 4

PQAP ELEMENTS

The Proposal Quality Assurance Plan (PQAP) is a document that encompasses elements of the Quality Management Plan (QMP) and the more detailed QA Project Plan (QAPP), and presents these elements in a less formal format, including a narrative. Previously, the PQAP was called the QA Narrative Statement. Its purpose is to provide information to the EPA project manager (or award official) on an offeror's or applicant's capabilities to provide sufficient and adequate QA and QC for proposed work in a shorter, less rigorous document than the QAPP. As noted earlier, the PQAP may also be applied to small data collection tasks, small assistance agreements for basic or exploratory research, and similar work of limited scope and duration, that do not require the level of detail of the QAPP. The decision to accept the PQAP for environmental data collection work in lieu of the QAPP belongs to the EPA project manager.

When used in a proposal or application evaluation, a full QAPP may be required after an award is made in order to provide sufficient and adequate detail on the environmental data collection activities. In the case of the small projects discussed earlier, the PQAP may contain sufficient detail and may be substituted for the QAPP. Such small projects may include research assistance agreements (under 40 CFR Part 30), small assistance agreements to states or municipalities (under 40 CFR Parts 31 and 35), and small tasks in level-of-effort contracts (under 48 CFR Part 46). This decision is made by the EPA project manager (or award official). When accepted as such, the PQAP becomes the official QAPP for the work.

The use of the PQAP is left flexible deliberately. It is not EPA's intention to arbitrarily define "small" or "large" projects, or "complex" and "simple" projects. The EPA project manager, in consultation with the EPA QA Manager, is the best person to decide when to use the PQAP or the QAPP, because some small projects may be very complex and need extensive QA and QC documentation while other, larger projects may not need that level of QA and QC documentation. In general, the options are as follows:

- Assistance Agreements:
  - use the PQAP with application. A formal, more detailed QAPP may be required after award, or
  - require a formal QAPP with the application.
- Contracts, Work Assignments, Interagency Agreements:
  - use PQAP with proposals for contracts and interagency agreements. A formal, more detailed QAPP is required after award,

- use PQAP or QAPP for work assignments, delivery orders, or task orders, as appropriate and as determined by the Work Assignment Manager.

The PQAP shall include or address:

- a project description, including the purpose of the work (including the hypothesis to be tested, if appropriate), the data collection activities to be performed, and how the environmental data produced will be used;

- a statement of the project objectives, including the primary goals, expected level of confidence in the resulting data, and criteria for successful completion of the work;

- a description of the sampling and analytical design (experimental design) of the project, including identification of critical and non-critical aspects of the project, sampling and analytical method to be used, calibration requirements for instruments (as appropriate), and relevant method performance criteria;

- a description of the process for the handling and custody of samples, including sample identification, preservation, transportation, storage, and final disposal;

- a listing of the proposed start and ending dates for the project with key milestones and interim deliverables, as appropriate, identified;

- a listing of the key project staff and their roles and responsibilities;

- a description of how quality will be assured during the project, including the use of performance evaluations, audits, surveillance, and other assessment procedures; procedures for data validation and verification (including statistical analyses used), and the how corrective actions will be implemented and their effectiveness confirmed; and

- identification of any needed special reports on the QA and QC activities performed, as appropriate.

In conclusion, the PQAP may an acceptable choice of QA and QC planning documentation for small projects. The PQAP may also be used when both the organizational capabilities of the offeror/applicant relative to QA and QC and some project-specific details are key to the successful performance of the work. In all cases, either the PQAP or QAPP must be used.

REFERENCES

Title 40, Part 30, Code of Federal Regulations, "Grants and Agreements With Institutions of Higher Education, Hospitals, and Other Non-Profit Organizations."

Title 40, Part 31, Code of Federal Regulations, "Uniform Administrative Requirements for Grants and Cooperative Agreement to State and Local Governments."

Title 40, Part 35, Code of Federal Regulations, "State and Local Assistance."

Title 48, CFR, Part 46, Code of Federal Regulations, "Federal Acquisition Regulations."

ANSI/ASQC E4-1994, *Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology Programs*, American National Standard, January 1995.

EPA Directive 2100 (1998), *Information Resources Management Policy Manual*, U.S. Environmental Protection Agency, Washington, DC.

EPA Directive 2182 (December 1996), *EPA System Design and Development Guidance*, U.S. Environmental Protection Agency, Washington, DC.

EPA Order 2180.1 (June 1987), *Chemical Abstract Service Registry Number Data Standard*, U.S. Environmental Protection Agency, Washington, DC.

EPA Order 2180.2 (December 1998), *Data Standards for the Electronic Transmission of Laboratory Measurement* Results, U.S. Environmental Protection Agency, Washington, DC.

EPA Order 5360, July 1998. *EPA Quality Manual for Environmental Programs*, U.S. Environmental Protection Agency, Washington, DC.

EPA Order 5360.1 CHG 1 (July 1998), *Policy and Program Requirements to Implement the Mandatory Quality Assurance Program*, U.S. Environmental Protection Agency, Washington, DC.

EPA Order 7500.1A (October 1992), *Minimum Set of Data Elements for Ground-Water Quality*, U.S. Environmental Protection Agency, Washington, DC.

ISO 8402-1994, *Quality Management and Quality Assurance - Vocabulary* (April 1994).

U.S. Environmental Protection Agency, 1998a. *EPA Requirements for Quality Management Plans (QA/R-2)*, EPA/600/R-98/???, Office of Research and Development.

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U.S. Environmental Protection Agency, 1998c. *Guidance for Quality Assurance Project Plans (QA/G-5)*, EPA/600/R-98/018, Office of Research and Development.

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U.S. Environmental Protection Agency, 1994. *Guidance for the Data Quality Objectives Process (QA/G-4)*, EPA/600/R-96/055, Office of Research and Development.

U.S. Environmental Protection Agency, 1980. *Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans*, QAMS-005/80, Office of Research and Development.

APPENDIX A

CROSSWALKS AMONG QUALITY ASSURANCE DOCUMENTS

A.1 BACKGROUND

This appendix contains crosswalks between this document and other QA planning documents. The first crosswalk compares this requirements document with its predecessor document, QAMS 005/80, *Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans* (EPA 1980). The second crosswalk compares the elements of the QAPP defined in this document with the steps defined in *Guidance for the Data Quality Objectives Process (QA/G-4)* (EPA 1994), the Agency's preferred systematic planning process for environmental decision making. This crosswalk is provided to assist the reader in determining how the outputs from the DQO Process can be integrated into a QAPP

A.2 CROSSWALK BETWEEN EPA QA/R-5 AND QAMS-005/80

QAMS 005/80 ELEMENTS		QA/R-5 ELEMENTS	
1.0	Title Page with Provision for Approval Signatures	A1	Title and Approval Sheet
2.0	Table of Contents	A2	Table of Contents
3.0	Project Description	A5	Problem Definition/Background
		A6	Project/Task Description
4.0	Project Organization and Responsibility	A4	Project/Task Organization
		A9	Documentation and Records
5.0	QA Objectives for Measurement Data (PARCC)	A7	Quality Objectives and Criteria for Measurement Data
6.0	Sampling Procedures	B1	Sampling Process Design
		B2	Sampling Methods Requirements
7.0	Sample Custody	A8	Special Training Requirements/ Certification
		B3	Sample Handling and Custody Requirements

A.2 CROSSWALK BETWEEN EPA QA/R-5 AND QAMS-005/80

QAMS-005/80 ELEMENTS		QA/R-5 ELEMENTS	
8.0	Calibration Procedures and Frequency	B7	Instrument Calibration and Frequency
9.0	Analytical Procedures	B4	Analytical Methods Requirements
10.0	Data Reduction, Validation, and Reporting	D1	Data Review, Validation, and Verification Requirements
		D2	Validation and Verification Methods
		B9	Data Acquisition Requirements
		B10	Data Management
11.0	Internal Quality Control Checks and Frequency	B5	Quality Control Requirements
12.0	Performance and Systems	C1	Assessments and Response Actions
13.0	Preventive Maintenance	B6	Instrument/Equipment Testing, Inspection, and Maintenance Requirements
		B8	Inspection/Acceptance Requirements for Supplies and Consumables
14.0	Specific Routine Procedures Measurement Parameters Involved	D3	Reconciliation with User Requirements
15.0	Corrective Action	C1	Assessments and Response Actions
16.0	QA Reports to Management	A3	Distribution List
		C2	Reports to Management

A.3 CROSSWALK BETWEEN THE DQO PROCESS AND THE QAPP

Elements		Requirements	DQO Overlap
PROJECT MANAGEMENT			
A1	Title and Approval Sheet	Title and approval sheet.	N/A
A2	Table of Contents	Document control format.	N/A
A3	Distribution List	Distribution list for the QAPP revisions and final guidance.	Step 1: State the Problem
A4	Project/Task Organization	Identify individuals or organizations participating in the project and discuss their roles, responsibilities and organization.	Step 1: State the Problem
A5	Problem Definition/ Background	1) State the specific problem to be solved or the decision to be made. 2) Identify the decision maker and the principal customer for the results.	Step 1: State the Problem Step 2: Identify the Decision
A6	Project/Task Description	1) Hypothesis test, 2) expected measurements, 3) ARARs or other appropriate standards, 4) assessment tools (technical audits), 5) work schedule and required reports.	Step 1: State the Problem Step 2: Identify the Decision Step 3: Identify the Inputs Step 6: Specify Limits on Decision Errors
A7	Quality Objectives and Criteria for Measurement Data	Decision(s), population parameter of interest, action level, summary statistics and acceptable limits on decision errors. Also, scope of the project (domain or geographical locale).	Step 4: Define the Boundaries Step 5: Develop a Decision Rule Step 6: Specify Limits on Decision Errors
A8	Special Training Requirements/ Certification	Identify special training that personnel will need.	Step 3: Identify the Inputs to the Decision
A9	Documentation and Records	Itemize the information and records that must be included in a data report package, including report format and requirements for storage, etc.	Step 3: Identify the Inputs to the Decision Step 7: Optimize the Design for Obtaining Data
MEASUREMENT/DATA ACQUISITION			
B1	Sampling Process Design (Experimental Design)	Outline the experimental design, including sampling design and rationale, sampling frequencies, matrices, and measurement parameter of interest.	Step 7: Optimize the Design for Obtaining Data Step 5: Develop a Decision Rule.
B2	Sampling Methods Requirements	Sample collection method and approach.	Step 7: Optimize the Design for Obtaining Data
B3	Sample Handling and Custody Requirements	Describe the provisions for sample labeling, shipment, chain-of-custody forms, procedures for transferring and maintaining custody of samples.	Step 3: Identify the Inputs to the Decision
B4	Analytical Methods Requirements	Identify analytical method(s) and equipment for the study, including method performance requirements.	Step 3: Identify the Inputs to the Decision Step 7: Optimize the Design for Obtaining Data

A.3 CROSSWALK BETWEEN THE DQO PROCESS AND THE QAPP

Elements	Requirements	DQO Overlap
B5 Quality Control Requirements	Describe routine (real-time) QC procedures that should be associated with each sampling and measurement technique. List required QC checks and corrective action procedures.	Step 3: Identify the Inputs to the Decision
B6 Instrument/Equipment Testing, Inspection, and Maintenance Reqs.	Discuss how inspection and acceptance testing, including the use of QC samples, must be performed to ensure their intended use as specified by the design.	Step 3: Identify the Inputs to the Decision
B7 Instrument Calibration and Frequency	Identify tools, gauges and instruments, and other sampling or measurement devices that need calibration. Describe how the calibration should be done.	Step 3: Identify the Inputs to the Decision
B8 Inspection/Acceptance Requirements for Supplies and Consumables	Define how and by whom the sampling supplies and other consumables will be accepted for use in the project.	N/A
B9 Data Acquisition Requirements (Non-direct Measurements)	Define the criteria for the use of non- measurement data such as data that come from databases or literature.	Step 1: State the Problem Step 7: Optimize the Design for Obtaining Data
B10 Data Management	Outline the data management scheme including the path and storage of the data and the data record-keeping system. Identify all data handling equipment and procedures that will be used to process, compile, and analyze the data.	Step 3: Identify the Inputs to the Decision Step 7: Optimize the Design for Obtaining Data
ASSESSMENT/OVERSIGHT		
C1 Assessments and Response Actions	Describe the assessment activities needed for this project. These may include DQA, PE, TSA, MSR/ PR/RR	Step 5: Develop a Decision Rule Step 6: Specify Limits on Decision Errors
C2 Reports to Management	Identify the frequency, content and distribution of reports issued to keep management informed.	N/A
DATA VALIDATION AND USABILITY		
D1 Data Review, Validation, and Verification Requirements	State the criteria used to accept or reject the data based on quality.	Step 7: Optimize the Design for Obtaining Data
D2 Validation and Verification Reqs.	Describe the process to be used for validating and verifying data, including the chain-of-custody for data throughout the lifetime of the project.	Step 3: Identify the Inputs to the Decision
D3 Reconciliation With User Requirements	Describe how results will be evaluated to determine if performance criteria have been satisfied.	Step 7: Optimize the Design for Obtaining Data

APPENDIX B

TERMS AND DEFINITIONS

activity - an all-inclusive term describing a specific set of operations or related tasks to be performed, either serially or in parallel (e.g., research and development, field sampling, analytical operations, equipment fabrication), that in total result in a product or service.

assessment - the evaluation process used to measure the performance or effectiveness of a system and its elements. As used here, assessment is an all-inclusive term used to denote any of the following: audit, performance evaluation, management systems review, peer review, inspection, or surveillance.

audit (quality) - a systematic and independent examination to determine whether quality activities and related results comply with planned arrangements and whether these arrangements are implemented effectively and are suitable to achieve objectives.

bias - the systematic or persistent distortion of a measurement process which causes errors in one direction (i.e., the expected sample measurement is different from the sample's true value).

calibration - comparison of a measurement standard, instrument, or item with a standard or instrument of higher accuracy to detect and quantify inaccuracies and to report or eliminate those inaccuracies by adjustments.

chain of custody - an unbroken trail of accountability that ensures the physical security of samples, data, and records.

completeness - a measure of the amount of valid data obtained from a measurement system compared to the amount that was expected to be obtained under correct, normal conditions.

configuration - the functional, physical, and procedural characteristics of an item, experiment, or document.

contractor - any organization or individual that contracts to furnish services or items or perform work.

client - any individual or organization for whom items or services are furnished or work performed in response to defined requirements and expectations.

data quality assessment - a statistical and scientific evaluation of the data set to determine the validity and performance of the data collection design and statistical test, and to determine the adequacy of the data set for its intended use.

data quality objectives process - a systematic planning tool to facilitate the planning of environmental data collection activities.

data usability - the process of ensuring or determining whether the quality of the data produced meets the intended use of the data.

design - specifications, drawings, design criteria, and performance requirements. Also the result of deliberate planning, analysis, mathematical manipulations, and design processes.

entity - that which can be individually described and considered, such as a process, product, item, organization, or combination thereof.

environmental conditions - the description of a physical medium (e.g., air, water, soil, sediment) or biological system expressed in terms of its physical, chemical, radiological, or biological characteristics.

environmental data - any measurements or information that describe environmental processes, location, or conditions; ecological or health effects and consequences; or the performance of environmental technology. For EPA, environmental data include information collected directly from measurements, produced from models, and compiled from other sources such as data bases or the literature.

environmental data operations - work performed to obtain, use, or report information pertaining to environmental processes and conditions.

environmental monitoring - the process of measuring or collecting environmental data.

environmental processes - manufactured or natural processes that produce discharges to or that impact the ambient environment.

environmental programs - work or activities involving the environment, including but not limited to: characterization of environmental processes and conditions; environmental monitoring; environmental research and development; the design, construction, and operation of environmental technologies; and laboratory operations on environmental samples.

environmental technology - an all-inclusive term used to describe pollution control devices and systems, waste treatment processes and storage facilities, and site remediation technologies and their components that may be utilized to remove pollutants or contaminants from or prevent them from entering the environment. Examples include wet scrubbers (air), soil washing (soil), granulated activated carbon unit (water), and filtration (air, water). Usually, this term will apply to hardware-based systems; however, it will also apply to methods or techniques used for pollution prevention, pollutant reduction, or containment of contamination to prevent further

movement of the contaminants, such as capping, solidification or vitrification, and biological treatment.

EPA project manager - the responsible EPA official for the project and includes such descriptors as Project Officer, Delivery Order Project Officer, Work Assignment Manager, and Principal Investigator.

extramural agreement - a legal agreement between EPA and an organization outside EPA for items or services to be provided. Such agreements include contracts, work assignments, delivery orders, task orders, cooperative agreements, research grants, state and local grants, and EPA-funded interagency agreements.

financial assistance - the process by which funds are provided by one organization (usually government) to another organization for the purpose of performing work or furnishing services or items. Financial assistance mechanisms include grants, cooperative agreements, and government interagency agreements.

graded approach - the process of basing the level of application of managerial controls applied to an item or work according to the intended use of the results and the degree of confidence needed in the quality of the results.

guideline - a suggested practice that is non-mandatory in programs intended to comply with a standard.

hazardous waste - any waste material that satisfies the definition of "hazardous waste" as given in 40 CFR Part 261, "Identification and Listing of Hazardous Waste."

independent assessment - an assessment performed by a qualified individual, group, or organization that is not a part of the organization directly performing and accountable for the work being assessed.

inspection - examination or measurement of an item or activity to verify conformance to specific requirements.

item - an all-inclusive term used in place of the following: appurtenance, facility, sample, assembly, component, equipment, material, module, part, product, structure, subassembly, subsystem, system, unit, documented concepts, or data.

management - those individuals directly responsible and accountable for planning, implementing, and assessing work.

management system - a structured non-technical system describing the policies, objectives, principles, organizational authority, responsibilities, accountability, and implementation plan of an organization for conducting work and producing items and services.

management systems review (MSR) - the qualitative assessment of a data collection operation and/or organization(s) to establish whether the prevailing quality management structure, policies, practices, and procedures are adequate for ensuring that the type and quality of data needed are obtained.

measurement and testing equipment - tools, gauges, instruments, sampling devices or systems used to calibrate, measure, test, or inspect in order to control or acquire data to verify conformance to specified requirements.

method - a body of procedures and techniques for performing an activity (e.g., sampling, chemical analysis, quantification) systematically presented in the order in which they are to be executed.

objective evidence - any documented statement of fact, other information, or record, either quantitative or qualitative, pertaining to the quality of an item or activity, based on observations, measurements, or tests which can be verified.

organization - a company, corporation, firm, enterprise, or institution, or part thereof, whether incorporated or not, public or private, that has its own functions and administration.

participant - when used in the context of environmental programs, an organization, group, or individual that takes part in the planning and design process and provides special knowledge or skills to enable the planning and design process to meet its objective.

peer review - a documented critical review of work by qualified individuals (or organizations) who are independent of those who performed the work, but are collectively equivalent in technical expertise. A peer review is conducted to ensure that activities are technically adequate, competently performed, properly documented, and satisfy established technical and quality requirements. The peer review is an in-depth assessment of the assumptions, calculations, extrapolations, alternate interpretations, methodology, acceptance criteria, and conclusions pertaining to specific work and of the documentation that supports them.

performance evaluation - a type of audit in which the quantitative data generated in a measurement system are obtained independently and compared with routinely obtained data to evaluate the proficiency of an analyst or laboratory.

precision - a measure of mutual agreement among individual measurements of the same property, usually under prescribed similar conditions, expressed generally in terms of the standard deviation.

process - a set of interrelated resources and activities which transforms inputs into outputs. Examples of processes include analysis, design, data collection, operation, fabrication, and calculation.

quality - the totality of features and characteristics of a product or service that bear on its ability to meet the stated or implied needs and expectations of the user.

quality assurance (QA) - an integrated system of management activities involving planning, implementation, documentation, assessment, reporting, and quality improvement to ensure that a process, item, or service is of the type and quality needed and expected by the client.

quality assurance manager (QAM) - the individual designated as the principal manager within the organization having management oversight and responsibilities for planning, documenting, coordinating, and assessing the effectiveness of the quality system for the organization.

quality assurance project plan (QAPP) - a document describing in comprehensive detail the necessary QA, QC, and other technical activities that must be implemented to ensure that the results of the work performed will satisfy the stated performance criteria.

quality control (QC) - the overall system of technical activities that measures the attributes and performance of a process, item, or service against defined standards to verify that they meet the stated requirements established by the customer; operational techniques and activities that are used to fulfill requirements for quality.

quality improvement - a management program for improving the quality of operations. Such management programs generally entail a formal mechanism for encouraging worker recommendations with timely management evaluation and feedback or implementation.

quality management - that aspect of the overall management system of the organization that determines and implements the quality policy. Quality management includes strategic planning, allocation of resources, and other systematic activities (e.g., planning, implementation, documentation, and assessment) pertaining to the quality system.

quality management plan (QMP) - a document that describes the quality system in terms of the organizational structure, functional responsibilities of management and staff, lines of authority, and required interfaces for those planning, implementing, and assessing all activities conducted.

quality system - a structured and documented management system describing the policies, objectives, principles, organizational authority, responsibilities, accountability, and implementation plan of an organization for ensuring quality in its work processes, products (items), and services. The quality system provides the framework for planning, implementing, documenting, and assessing work performed by the organization and for carrying out required QA and QC.

readiness review - a systematic, documented review of the readiness for the start-up or continued use of a facility, process, or activity. Readiness reviews are typically conducted before proceeding beyond project milestones and prior to initiation of a major phase of work.

record - a completed document that provides objective evidence of an item or process. Records may include photographs, drawings, magnetic tape, and other data recording media.

research (applied) - a process, the objective of which is to gain knowledge or understanding necessary for determining the means by which a recognized and specific need may be met.

research (basic) - a process, the objective of which is to gain fuller knowledge or understanding of the fundamental aspects of phenomena and of observable facts without specific applications toward processes or products in mind.

research development/demonstration - systematic use of the knowledge and understanding gained from research and directed toward the production of useful materials, devices, systems, or methods, including prototypes and processes.

self-assessment - assessment of work conducted by individuals, groups, or organizations directly responsible for overseeing and/or performing the work.

service - the result generated by activities at the interface between the supplier and the customer, and by supplier internal activities to meet customer needs. Such activities in environmental programs include design, inspection, laboratory and/or field analysis, repair, and installation.

specification - a document stating requirements and which refers to or includes drawings or other relevant documents. Specifications should indicate the means and the criteria for determining conformance.

standard operating procedure (SOP) - a written document that details the method for an operation, analysis, or action with thoroughly prescribed techniques and steps, and that is officially approved as the method for performing certain routine or repetitive tasks.

supplier - any individual or organization furnishing items or services or performing work according to a procurement document or financial assistance agreement. This is an all-inclusive

term used in place of any of the following: vendor, seller, contractor, subcontractor, fabricator, or consultant.

surveillance (quality) - continual or frequent monitoring and verification of the status of an entity and the analysis of records to ensure that specified requirements are being fulfilled.

technical review - a documented critical review of work that has been performed within the state of the art. The review is accomplished by one or more qualified reviewers who are independent of those who performed the work, but are collectively equivalent in technical expertise to those who performed the original work. The review is an in-depth analysis and evaluation of documents, activities, material, data, or items that require technical verification or validation for applicability, correctness, adequacy, completeness, and assurance that established requirements are satisfied.

technical systems audit (TSA) - a thorough, systematic, on-site, qualitative audit of facilities, equipment, personnel, training, procedures, record keeping, data validation, data management, and reporting aspects of a system.

user - an organization, group, or individual that utilizes the results or products from environmental programs or a customer for whom the results or products were collected or created.

validation - confirmation by examination and provision of objective evidence that the particular requirements for a specific intended use are fulfilled. In design and development, validation concerns the process of examining a product or result to determine conformance to user needs.

verification - confirmation by examination and provision of objective evidence that specified requirements have been fulfilled. In design and development, validation concerns the process of examining a result of a given activity to determine conformance to the stated requirements for that activity.

Standard Test Method for Elemental, Oxidized, Particle-Bound, and Total Mercury in Flue Gas Generated from Coal-Fired Stationary Sources (Ontario Hydro Method)[1] DRAFT

1. Scope

1.1 This method applies to the determination of elemental, oxidized, particle-bound, and total mercury emissions from coal-fired stationary sources.

1.2 This method is applicable to elemental, oxidized, particle-bound, and total mercury concentrations ranging from approximately 0.5 to 100 $\mu g/m^3$.

1.3 This method describes equipment and procedures for obtaining samples from effluent ducts and stacks, equipment and procedures for laboratory analysis, and procedures for calculating results.

1.4 This method is applicable for sampling elemental, oxidized, and particle-bound mercury at the inlet and outlet of emission control devices and for calculating control device mercury collection efficiency.

1.5 Method applicability is limited to flue gas stream temperatures within the thermal stability range of the sampling probe and filter components.

1.6 The values stated in SI units are to be regarded as the standard. The values in parentheses are for information only.

1.7 This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

2. Referenced Documents

2.1 *ASTM Standards:*
D 1193 Specification for Reagent Water[2]
D1356 Definitions of Terms Relating to Atmospheric Sampling and Analysis[3]
D 2986 Evaluation of Air-Assay Media by the Monodisperse DOP (Dioctyl Phthalate) Smoke Test[3]
D 3154 Test Method for Average Velocity in a Duct (Pitot Tube Method)[3]
D 3685 Particulates Independently or for Particulates and Collected Residue Simultaneously in Stack Gases[3]
E 1 Specification for ASTM Thermometers[4]

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[1] This test method is being currently being review by ASTM Committee D-22 on Sampling and Analysis of Atmospheres, Subcommittee D22.03 on Ambient Atmospheres and Source Emissions.

[2] *Annual Book of ASTM Standards*, Vol 11.01.

[3] *Annual Book of ASTM Standards*, Vol 11.03.

[4] *Annual Book of ASTM Standards, Vol 14.02.*

.2 *Other Standards:*[5]

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EPA Method 1 – Sample and Velocity Traverses for Stationary Sources
EPA Method 2 – Determination of Stack Gas Velocity and Volumetric Flow Rate (Type S Pitot Tube)
EPA Method 3 – Gas Analysis for the Determination of Dry Molecular Weight
EPA Method 4 – Determination of Moisture Content in Stack Gases
EPA Method 5 – Determination of Particulate Emissions from Stationary Sources
EPA Method 12 – Determination of Inorganic Lead Emissions from Stationary Sources
EPA Method 17 – Determination of Particulate Emissions from Stationary Sources (In-Stack Filtration Method)
EPA Method 29 – Determination of Metals Emissions from Stationary Sources
EPA Method 101A – Determination of Particle-Bound and Gaseous Mercury Emissions from Sewage Sludge Incinerators
EPA Method 301 – Field Validation of Pollutant Measurement Methods from Various Waste Media

3. Terminology

3.1 Definitions other than those given below in Sections 3.2, 3.3, and 3.4 are listed in ASTM D 1356.

3.2 *Definitions:*

3.2.1 *elemental mercury*—mercury in its zero oxidation state, Hg^0.

3.2.2 *oxidized mercury*—mercury in its mercurous or mercuric oxidation states; Hg_2^{2+} and Hg^{2+}, respectively.

3.2.3 *elemental mercury catch*—mercury collected in the acidified peroxide and potassium permanganate impinger solutions employed in this method. This is gaseous Hg^0.

3.2.4 *oxidized mercury* catch—mercury collected in the aqueous potassium chloride impinger solution employed in this method. This is gaseous Hg^{2+}.

3.2.5 *particle-bound mercury* catch—mercury associated with the particulate matter collected in the front-half of the sampling train.

3.2.6 *front half of the sampling train*—all mercury collected in the nozzle, probe, any connecters, and the front half of the sample filter holder and the sample filter.

3.2.7 *total mercury*— all mercury (solid-bound, liquid, or gaseous) however generated or entrained in the flue gas stream (i.e., summation of elemental, oxidized, and particle-bound mercury).

3.3 *Symbols:*

A = cross-sectional area of stack, m^2 (ft^2)

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[5] Available from the U.S. Environmental Protection Agency's Emission Measurement Technical Information Center or Code of Federal Regulations (40 CFR Part 60, Appendix A or 40 CFR Part 61, Appendix B).

E B_{ws} = water vapor in the gas stream, proportion by volume

C C_p = pitot tube coefficient, dimensionless

Δ Δp = velocity head of stack gas, mm H_2O (in. H_2O)

Δ ΔH = average pressure differential across the orifice meter, mm H_2O (in. H_2O)

I I = variation from isokinetic sampling rate

K K_p = pitot tube constant

L L_p = leakage rate observed during the posttest leak check, m^3/min (cfm)

L L_a = maximum acceptable leakage rate

M M_s = molecular weight of stack gas, wet basis, g/g-mole (lb/lb-mole)

M M_w = molecular weight of water, 18.0 g/g-mole (18.0 lb/lb-mole)

P P_{bar} = barometric pressure at the sampling site, mm Hg (in. Hg)

P P_s = absolute stack gas pressure, mm Hg (in. Hg)

P_{std} = standard absolute pressure, 760 mm Hg (29.92 in. Hg)

R = ideal gas constant, 0.06236 mm Hg-m^3/K-g-mole (21.85 in. Hg-ft^3/°R-lb-mole)

T_m = absolute average dry gas meter temperature, K (°R)

T_s = absolute stack temperature, K (°R)

T_{std} = standard absolute temperature, 293 K (528 °R)

V_m = volume of gas sample as measured by dry gas meter, dcm (dscf)

$V_{m(std)}$ = volume of gas sample measured by the dry gas meter, corrected to standard conditions, dscm (dscf)

$V_{w(std)}$ = volume of water vapor in the gas sample, corrected to standard conditions, scm(scf)

v_s = average stack gas velocity, m/sec (ft/sec)

W_{lc} = total weight of liquid collected in impingers and silica gel, g (lb)

Y = dry gas meter calibration factor

θ = total sampling time, minute

θ_1 = sampling time interval, from the beginning of a run until the first component change, minute

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4. Summary of Test Method

4.1 A sample is withdrawn from the flue gas stream isokinetically through a probe/filter system, maintained at 393 K (120°C) or the flue gas temperature, whichever is greater, followed by a series of impingers in an ice bath. Particle-bound mercury is collected in the front half of the sampling train. Oxidized mercury is collected in impingers containing a chilled aqueous potassium chloride solution. Elemental mercury is collected in subsequent impingers (one impinger containing a chilled aqueous acidic solution of hydrogen peroxide and three impingers containing chilled aqueous acidic solutions of potassium permanganate). Samples are recovered, digested, and then analyzed for mercury using cold-vapor atomic absorption (CVAAS) or fluorescence spectroscopy (CVAFS).

5. Significance and Use

5.1 The measurement of particle-bound, oxidized, elemental, and total mercury in stationary-source flue gases provides data that can be used for dispersion modeling, deposition evaluation, human health and environmental impact assessments, emission reporting, compliance determinations, etc. Particle-bound, oxidized, and elemental mercury measurements before and

after control devices may be necessary for optimizing and evaluating the mercury removal efficiency of emission control technologies.

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6. Interferences

There are no known interferences, but certain biases may be encountered (See Section 15.

7. Apparatus

7.1 *Sampling Train*—similar to ASTM D 3685, EPA Method 5, and EPA Method 29 trains, as illustrated in Fig. 1.

7.1.1 *Probe Nozzle (Probe Tip) and Borosilicate or Quartz Glass Probe*—Glass nozzles are required unless alternate nozzles are constructed of materials that are free from contamination and will not interact with the sample. Probe fittings constructed of Teflon, polypropylene, etc., are required instead of metal fittings to prevent contamination. A single glass piece consisting of a combined probe tip and probe liner may also be used.

7.1.2 *Pitot Tube*—Type S pitot tube. Refer to Section 2.2 of EPA Method 2 for a description.

7.1.3 *Differential Pressure Gauges*—inclined manometers or equivalent devices. Refer to Section 2.1 of EPA Method 2 for a description.

7.1.4 *Filter Holder*—constructed of borosilicate glass or Teflon-coated stainless steel with a Teflon filter support or other nonmetallic, noncontaminating support. Do not use a glass frit or stainless steel wire screen. A silicone rubber or Teflon gasket, designed to provide a positive seal against leakage from outside or around the filter, may be used.

7.1.5 *Probe and Filter Heating System*—any heating system capable of maintaining a sample gas temperature exiting the probe and the filter to within ±15°C (±27°F) of the flue gas temperature, or 120°C, whichever is greater. Temperature sensors capable of measuring temperature to within 3°C (5.4°F) are used to regulate and monitor sample gas temperatures during sampling.

7.1.6 *Condensing/Absorbing System*—consists of eight impingers immersed in an ice bath and connected in series with leak-free ground glass fittings or other noncontaminating leak-free, fittings. The first, second, fourth, fifth, sixth, and eighth impingers are of the Greenburg–Smith design modified by replacing the standard tip with a 1.3-cm (0.5-in.)-ID straight glass tube extending to about 1.3 cm (0.5 in.) from the bottom of the flask. The third and seventh impingers are also Greenburg–Smith design, but with the standard tip including the glass impinging plate. The first, second, and third impingers contain aqueous 1 mol/L potassium chloride (KCl) solution. The fourth impinger contains an aqueous solution of 5%$^{V}/_{V}$ nitric acid (HNO_3) and 10% $^{V}/_{V}$ hydrogen peroxide (H_2O_2). The fifth, sixth, and seventh impingers contain an aqueous solution of 4%$^{W}/_{V}$ potassium permanganate ($KMnO_4$) and 10%$^{V}/_{V}$ sulfuric acid (H_2SO_4). The last impinger contains silica gel or an equivalent desiccant. Refer to Note 1.

Note 1—When flue gas streams are sampled with high moisture content (>20%), additional steps must be taken to eliminate carryover of impinger contents from one sample type to the next. These steps must include use of oversized impinger(s) or use of an empty impinger between the

KCl and HNO_3/H_2O_2 and after the HNO_3/H_2O_2 impinger. If dry impingers are used, they must be rinsed as discussed in Section 13.2 of this method and the rinse added to the preceding impinger. DRAFT

7.1.7 *Metering System*—vacuum gauge, leak-free pump, thermometers capable of measuring temperature to within 3°C (5.4°F), and a dry gas meter or controlled orifice capable of measuring volume to within 2%.

7.1.8 *Barometer*—mercury aneroid or other barometer capable of measuring atmospheric pressure to within 2.5 mm Hg (0.1 in. Hg). In many cases, the barometric reading may be obtained from a nearby National Weather Service station, in which case, the station value (which is the absolute barometric pressure) shall be requested. An adjustment for elevation differences between the weather station and sampling point shall be applied at a rate of negative 2.5 mm Hg (0.1 in. Hg) per 30 m (100 ft) elevation increase or vice versa for elevation decrease.

7.1.9 *Gas Density Determination Equipment*—temperature sensor and pressure gauge, as described in Section 2.3 and 2.4 of EPA Method 2. The temperature sensor shall, preferably, be permanently attached to the pitot tube or sampling probe in a fixed configuration, such that the sensor tip extends beyond the leading edge of the probe sheath and does not touch any metal. Alternative temperature sensor configurations are described in Section 2.1.10 of EPA Method 5. If necessary, a gas analyzer will be used to determine dry molecule weight of the gas (refer to EPA Method 3).

7.2 *Digestion Apparatus:*

7.2.1 *Dry Block Heater or Hot Water Bath*—a heater capable of maintaining a temperature of 95°C is required for digestion of samples, similar to that described in EPA SW846 Method 7470.

7.2.2 *Ice Bath.*

7.2.3 *Digestion Flasks*—Use 50- to 70-mL tubes or flasks with screw caps that will fit a dry block heater. For a water bath, 300-mL biological oxygen demand bottles for SW846 Method 7470 are to be used. In addition, borosilicate glass test tubes, 35- to 50-mL volume, with rack are needed.

7.2.4 *Microwave or Convection Oven and Teflon Digestion Vessels*—120 mL, or equivalent digestion vessels with caps equipped with pressure relief valves for the dissolution of ash, along with a capping station or the equivalent to seal the digestion vessel caps. A vented microwave or convection oven for heating. In addition, polymethylpentene (PMP) or equivalent volumetric flasks are recommended for the digested ash solutions.

7.3 *Analytical Equipment*—dedicated mercury analyzer or equivalent apparatus for the analysis of mercury via CVAAS. Alternatively, CVAFS may be used. CVAAS is a method based on the absorption of radiation at 253.7 nm by mercury vapor. The mercury is reduced to the elemental state and aerated from solution in a closed system. The mercury vapor passes through a cell positioned in the light path of an atomic absorption spectrometer. Absorbance is measured as a function of mercury concentration. A soda–lime trap and a magnesium perchlorate trap must be used to precondition the gas before it enters the absorption cell.

8. Reagents and Materials

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8.1 *Purity of Reagents*—Reagent-grade chemicals shall be used in all tests. Unless otherwise indicated, it is intended that all reagents conform to the specifications of the Committee on Analytical Reagents of the American Chemical Society, where such specifications are available.[6] Other grades may be used, provided it is first ascertained that the reagent is of sufficiently high purity to permit its use without lessening the accuracy of the determination.

8.2 *Purity of Water*—Unless otherwise indicated, references to water shall be understood to mean reagent water as defined by Type II in ASTM Specification D 1193.

8.3 *Reagents:*

8.3.1 *Boric Acid (H_3BO_3)*—purified reagent grade.

8.3.2 *Hydrochloric Acid (HCl)*—trace metal-grade concentrated hydrochloric acid, with a specific gravity of 1.18.

8.3.3 *Hydrofluoric Acid (HF)*—concentrated hydrofluoric acid, 48%–50%.

8.3.4 *Hydrogen Peroxide (H_2O_2)*—30%$^{v}/_{v}$ hydrogen peroxide.

8.3.5 *Hydroxylamine Sulfate ($NH_2OH \cdot H_2SO_4$)*—solid.

8.3.6 *Mercury Standard Solution*—a certified (1000 µg/mL) mercury standard.

8.3.7 *Nitric Acid (HNO_3)*—trace metal-grade concentrated nitric acid with a specific gravity of 1.42.

8.3.8 *Potassium Chloride (KCl)*—solid.

8.3.9 *Potassium Permanganate ($KMnO_4$)*—solid.

8.3.10 *Potassium Persulfate ($K_2S_2O_8$)*—solid.

8.3.11 *Stannous Chloride ($SnCl_2 \cdot 2H_2O$)*—solid.

8.3.12 *Sulfuric Acid (H_2SO_4)*—trace metal-grade concentrated sulfuric acid, with a specific gravity of 1.84.

8.4 *Materials:*

8.4.1 *Indicating Silica Gel*—with a size of 6–16 mesh.

8.4.2 *Crushed Ice.*

8.4.3 *Sample Filters*—quartz fiber filters, without organic binders, exhibiting at least 99.95% efficiency (<0.05% penetration) for 0.3-µm dioctyl phthalate smoke particles and containing less than 0.02 µg/cm^2 of mercury. Test data provided by filter manufacturers and

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[6] "Reagent Chemicals, American Chemical Society Specifications," Am. Chemical Soc., Washington, DC. For suggestions on the testing of reagents not listed by the American Chemical Society, see "Reagent Chemicals and Standards," by Joseph Rosin, D. Van Nostrand Co., Inc., New York, NY, and the "United States Pharmacopeia."

supplier stating filter efficiency and mercury content are acceptable. However, if no such results are available, determine filter efficiency using ASTM Test Method D 2986, and analyze filter blanks for mercury prior to emission testing. Filter material must be unreactive to sulfur dioxide (SO_2) or sulfur trioxide (SO_3).[7] Glass fiber filters that meet these requirements may be used.

8.4.4 *Whatman 40 and 541 Filter Papers (or equivalent)*—for filtration of digested samples.

8.4.5 *Nitrogen Gas (N_2)*—carrier gas of at least 99.998% purity. Alternatively, argon gas may be used.

8.4.6 *Anhydrous Magnesium Perchlorate [$Mg(ClO_4)_2$]*—desiccant-grade solid.

8.4.7 *Soda Lime*—indicating 4- to 8-mesh absorbent for trapping carbon dioxide.

8.4.8 *Sample Containers*—glass with Teflon-lined lids.

8.5 *Sampling Reagents:*

8.5.1 *KCl Absorbing Solution* (1 mol/L)—Dissolve 74.56 g of KCl in 500 mL of reagent water in a 1000-mL volumetric flask, swirl to mix, and dilute to volume with water. Mix well.

8.5.2 *HNO_3–H_2O_2 Absorbing Solution* (5%$^{V}/_{V}$ HNO_3, 10%$^{V}/_{V}$ H_2O_2)—Add slowly, with stirring, 50 mL of concentrated HNO_3 to a 1000-mL volumetric flask containing approximately 500 mL of water, and then add carefully, with stirring, 333 mL of 30%$^{V}/_{V}$ H_2O_2. Dilute to volume with water. Mix well.

8.5.3 *Acidic $KMnO_4$ Absorbing Solution* (4%$^{W}/_{V}$ $KMnO_4$, 10%$^{V}/_{V}$ H_2SO_4)— Prepare fresh daily before each use (**Warning**—See Note 2). Mix carefully, with stirring, 100 mL of concentrated H_2SO_4 into approximately 800 mL of water. When mixing, be sure to follow standard acid to water addition procedures and safety precautions associated with strong acids. Then add water, with stirring, to make 1 L. This solution is 10%$^{V}/_{V}$ H_2SO_4. Dissolve, with stirring, 40 g of $KMnO_4$ into 10%$^{V}/_{V}$ H_2SO_4, and add 10%$^{V}/_{V}$ H_2SO_4, with stirring, to make 1 L. Prepare and store in brown-glass bottles to prevent degradation.

Note 2—Filter the permanganate solution through Whatman 541 filter paper (or equivalent) to prevent autocatalytic decomposition. Pressure may build up in the solution storage bottle because of a potential reaction between potassium permanganate and acid. Therefore, these bottles should not be fully filled and should be vented to relieve excess pressure and prevent explosion. Venting must be in a manner that will not allow contamination of the solution.

8.6 *Sample Digestion Reagents:*

8.6.1 *Boric Acid Solution (4%$^{W}/_{V}$*—Dissolve 4 g H_3BO_3 in water, and dilute to 100 mL.

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[7] Felix, L.G.; Clinard, G.I.; Lacey, G.E.; McCain, J.D. "Inertial Cascade Impactor Substrate Media for Flue Gas Sampling," U.S. Environmental Protection Agency, Research Triangle Park, NC 27711, Publication No. EPA-600/7-77-060; June 1977, 83 p.

8.6.2 *Aqua Regia (HCl:HNO_3 3:1)*—Add 3 parts concentrated HCl to 1 part concentrated HNO_3. Note that this should be made up in advance and allowed to form a dark orange color. This mixture should be loosely capped, as pressure will build as gases form.

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8.6.3 *Saturated Potassium Permanganate Solution (5%$^{W}/_{V}$*—Mix 5 g $KMnO_4$ into water, dilute to 100 mL, and stir vigorously.

8.6.4 *Potassium Persulfate Solution (5%$^{W}/_{V}$*—Dissolve 5 g $K_2S_2O_8$ in water, and dilute to 100 mL.

8.7 *Analytical Reagents*:

8.7.1 *Hydrochloric Acid Solution 10%$^{V}/_{V}$*—Add 100 mL concentrated HCl to water, and dilute to 1 L.

8.7.2 *Stannous Chloride Solution (10%$^{W}/_{V}$*–Dissolve 100 g in 10%$^{V}/_{V}$ HCl, and dilute with 10%$^{V}/_{V}$ HCl to 1 L. Difficulty in dissolving the stannous chloride can be overcome by dissolving in a more concentrated HCl solution (such as 100 mL of 50%$^{V}/_{V}$ HCl) and diluting to 1 L with water. Note that care must be taken when adding water to a strong acid solution. Add a lump of mossy tin (~0.5 g) to this solution.

8.7.3 *Mercury Standards*:

8.7.3.1 *10 mg/L Hg Stock Solution*—Dilute 1 mL of 1000 mg/L Hg standard solution to 100 mL with 10%$^{V}/_{V}$ HCl.

8.7.3.2 *100 µg/L Hg Stock Solution*—Dilute 1 mL of 10 mg/L Hg stock solution to 100 mL with 10%$^{V}/_{V}$ HCl.

8.7.3.3 *Working Hg Standards*—Prepare working standards of 1.0, 5.0, 10.0, and 20.0 µg/L Hg from the 100-µg/L stock solution by diluting 1, 5, 10, and 20 mL each to 100 mL with 10%$^{V}/_{V}$ HCl.

Note 3—If samples to be analyzed are less than 1.0 µg/L Hg, working standards should be prepared at 0.05, 0.1, 0.5, and 1.0 µg/L Hg from a 10-µg/L Hg standard solution.

8.7.3.4 *Quality Control Standard (QC)*—A quality control standard is prepared from a separate Hg standard solution. The QC should be prepared at a concentration of approximately one-half the calibration range.

8.8 *Glassware Cleaning Reagents*—Glassware should be cleaned according to the guidelines outlined in EPA Water and Waste 600/4-79-019, Section 4, pages 4–5. It is recommended that an acidic cleaning solution be used, such as Citranox®.

9. Hazards

9.1 *Warning*:

9.1.1 Hazards to personnel exist in the operation of the cold-vapor atomic absorption spectrophotometer. Refer to the manufacturer's instruction manual before operating the instrument.

9.1.2 Sample digestion with hot concentrated acids creates a safety problem. Observe appropriate laboratory procedures for working with concentrated acids.

9.2 *Precaution:*

9.2.1 The determination of microquantities of mercury species requires meticulous attention to detail. Good precision is generally unattainable without some experience with stack-sampling procedures. Precision may be improved by knowledge of, and close adherence to, the suggestions that follow.

9.2.1.1 All glassware used in the method must be cleaned thoroughly, as described in Section 7.8 of this method.

9.2.1.2 Use the same reagents and solutions in the same quantities for a group of determinations and the corresponding blank. When a new reagent is prepared or a new stock of filters is used, a new blank must be prepared.

10. Sampling

10.1 *Preparation for Test:*

10.1.1 *Preliminary Stack Measurements*—Select the sampling site, and determine the number of sampling points, stack pressure, temperature, moisture, dry molecular weight, and range of velocity head in accordance with procedures of ASTM Test Method D 3154 or EPA Methods 1 through 4.

10.1.2 Select the correct nozzle diameter to maintain isokinetic sampling rates based on the range of velocity heads determined in 10.1.1.

10.1.3 Ensure that the proper differential pressure gauge is selected for the range of velocity heads (refer to EPA Method 2, Section 2.2).

10.1.4 It is suggested that a EPA Method 17 in-stack filtration be used, however, if and EPA Method 5 configuration is to be used select a suitable probe length such that all traverse points can be sampled. Consider sampling from opposite sides of the stack to minimize probe length when a large duct or stack is sampled.

10.1.5 *Sampling Time and Volume*—The total sampling time for this method should be at least 2 but not more than 3 hours using a nozzle size that will guarantee an isokinetic gas sample volume between 1.0 dry cubic meters corrected to standard conditions (dscm) and 2.5 dscm. If traverse sampling is done (recommended for sampling electric utilities), use the same points for sampling that were used for the velocity traverse as stated in Section 10.1.1 of this method. Each traverse point must be sampled for a minimum of 5 minutes.

11. Preparation of Apparatus

11.1 *Pretest Preparation:*

11.1.1 Weigh several 200- to 300-g portions of silica gel in airtight containers to the nearest 0.5 g. Record the total weight of the silica gel plus container on each container. Alternatively, the silica gel can be weighed directly in the impinger immediately prior to the train being assembled.

11.1.2 Desiccate the filters at 20° ± 5.6°C (68° ± 10°F) and ambient pressure for 24 to 36 hours, weigh at intervals of at least 6 hours to a constant weight (i.e. <0.5-mg change from previous weighing), and record results to the nearest 0.1 mg. Alternatively, the filters may be oven-dried at 105°C (220°F) for 2 to 3 hours, desiccated for 2 hours, and weighed.

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11.1.3 Clean all sampling train glassware as described in Section 8.8 before each series of tests at a single source. Until the sampling train is assembled for sampling, cover all glassware openings where contamination can occur.

11.2 *Preparation of Sampling Train:*

11.2.1 Assemble the sampling train as shown in Figure 1.

11.2.2 Place 100 mL of the KCl solution (see Section 8.5.1 of this method) in each of the first, second, and third impingers, as indicated in Figure 1.

11.2.3 Place 100 mL of the HNO_3–H_2O_2 solution (Section 8.5.2 of this method) in the fourth impinger.

11.2.4 Place 100 mL of the H_2SO_4–$KMnO_4$ absorbing solution (see Section 8.5.3 of this method) in each of the fifth, sixth, and seventh impingers, as indicated in Figure 1.

11.2.5 Transfer approximately 200 to 300 g of silica gel from its container to the last impinger.

11.2.6 Prior to final train assembly, weigh and record the weight of each impinger. This information is required to calculate the moisture content of the sampled flue gas.

11.2.7 To ensure leak-free sampling train connections and to prevent possible sample contamination problems, use Teflon tape, Teflon-coated O-rings, or other noncontaminating material.

11.2.8 Place a weighed filter in the filter holder using a tweezer or clean disposable surgical gloves.

11.2.9 Install the selected nozzle using a Viton A O-ring or equivalent when stack temperatures are less than 260°C (500°F) and an alternative gasket material when temperatures are higher. Other connecting systems, such as Teflon ferrules or ground glass joints may also be used on the probe and nozzle.

11.2.10 Mark the probe with heat-resistant tape or by some other method to denote the proper distance into the stack or duct for each sampling point.

11.2.11 Place crushed ice around the impingers.

11.2.12 *Leak-Check Procedures.* Follow the leak-check procedures given in Section 4.1.4.1 (Pretest Leak Check), Section 4.1.4.2 (Leak Checks During the Sample Run), and Section 4.1.4.3 (Posttest Leak Checks) of EPA Method 5.

12. Calibration and Standardization

12.1 *Sampling Train Calibration:*

12.1.1 *Probe Nozzle*—Refer to Sections 2.2.1 and 2.1.2 of EPA Method 5.

12.2 *Pitot Tube*—Refer to Section 4 of EPA Method 2.

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12.3 *Metering System*—Refer to Section 5.3 of EPA Method 5.

12.4 *Probe Heater*—Refer to Section 5.4 of EPA Method 5.

12.5 *Temperature Gauges*— Refer to Section 4.3 of EPA Method 2.

12.6 *Leak Check of the Metering System*—Refer to Section 5.6 of EPA Method 5.

12.7 *Barometer*—Calibrate the barometer used against a mercury barometer.

12.2 *Atomic Absorption or Atomic Fluorescence Spectrometer Calibration*—Perform instrument setup and optimization according to the manufacturer's specifications. Cold-vapor generation of mercury is performed via addition of stannous chloride solution to reduce oxidized mercury to its elemental state. The mercury-laden solution is then purged with a carrier gas into the atomic absorption cell. This procedure is used to calibrate the instrument using 10%$^{v}/_{v}$ HCl as the blank along with the standards described in Section 8.7.3.3. Calibration is verified by analyzing the QC standard prepared according to Section 8.7.3.4 of this method.

13. Procedure

13.1 *Sampling Train Operation:*

13.1.1 Maintain an isokinetic sampling rate within 10% of true isokinetic, if out-of-stack filtration is used (EPA Method 5) maintain probe and filter exit gas stream temperatures within ±15°C of the flue gas temperature at the sampling location. However, at no time allow the probe to be at a temperature lower than 120°C. If the temperature of the gas is lower than 120°C then in-stack filtration can not be used. The minimum temperature is stipulated to ensure no moisture or acid condensation occurs in the front half of the sampling train.

13.1.2 Record the data, as indicated in Figure 2, at least once at each sample point but not less than once every 5 minutes.

13.1.3 Record the dry gas meter reading at the beginning of a sampling run, the beginning and end of each sampling time increment, before and after each leak check, and when sampling is halted.

13.1.4 Level and zero the manometer. Periodically check the manometer level and zero, because it may drift during the test period.

13.1.5 Clean the portholes prior to the sampling run.

13.1.6 Remove the nozzle cap. Verify that the filter and probe heating systems are up to temperature and that the pitot tube and probe are properly positioned.

13.1.7 Start the pump. Position the nozzle at the first traverse point with the nozzle tip pointing in the direction of flow. Seal the openings around the probe and porthole to prevent unrepresentative dilution of the gas stream. Read the pitot tube manometer, start the stopwatch, open and adjust the control value until the isokinetic sampling rate is obtained (refer to EPA Method 5, Section 4.1.5, for information on isokinetic sampling rate computations), and maintain the isokinetic rate at all points throughout the sampling period.

13.1.8 When sampling at one traverse point has been completed, move the probe to the next traverse point as quickly as possible. Close the coarse adjust valve, and shut the pump off when transferring the probe from one sample port to another. Exclude the time required to transfer the probe from one port to another from the total sampling time.

13.1.9 Traverse the stack cross section, as required by EPA Method 1.

13.1.10 During sampling, periodically check and, if necessary, adjust the probe and filter exit sample gas temperatures, as well as the zero of the manometer.

13.1.11 Add more ice, if necessary, to maintain a temperature of <20°C (68°F) at the condenser/silica gel outlet.

13.1.12 Replace the filter assembly if the pressure drop across the filter becomes such that maintaining isokinetic sampling is no longer possible. Conduct a leak check (refer to EPA Method 5, Section 4.1.4.2) before installing a new filter assembly. The total particulate weight and determination of particle-bound mercury includes all filter assembly catches.

13.1.13 In the unlikely event depletion of $KMnO_4$ via reduction reactions with flue gas constituents other than elemental mercury occurs it may render it impossible to sample for the desired minimum time. This problem is indicated by the complete bleaching of the purple color of the acidified permanganate solution. If the purple color is lost, after completing the sample recovery procedures, all three H_2SO_4–$KMnO_4$ impingers (Impingers 5–7) must be analyzed separately to determine if breakthrough has occurred. If the last H_2SO_4–$KMnO_4$ impinger (Impinger 7) has an less than 10% of the total mercury measured in the three H_2SO_4–$KMnO_4$ impingers the data is valid. If the last impinger (Impinger 7) has more than 10% of the total mercury measured in the three H_2SO_4–$KMnO_4$ impingers then significant breakthrough is probable, and the sampling should be repeated. If the gas stream is known to contain large amounts of reducing constituents (i.e., >2500 ppm SO_2) or breakthrough has occurred in previous sampling runs, then the following modification is suggested: the amount of HNO_3–H_2O_2 ($10\%^{v}/_{v}$) in the fourth impinger should be doubled, and/or a second HNO_3–H_2O_2 impinger should be used to increase the oxidation capacity for reducing gas components prior to the H_2SO_4–$KMnO_4$ impingers. Alternatively, the sample run may be divided into two or more smaller runs to ensure that the absorbing solution is not depleted.

13.1.14 Use a single train for the entire sample run, except when simultaneous sampling is required in two or more separate ducts or at two or more different locations within the same duct or when equipment failure necessitates a change of trains.

13.1.15 At the end of a sample run, turn off the coarse adjust valve, remove the probe and nozzle from the stack, record the final dry gas meter reading, and conduct a posttest leak check, as described in Section 4.1.4.3 of EPA Method 5. Also, leak-check the pitot lines as described in EPA Method 2, Section 3.1. The lines must pass the leak check to validate the velocity head data.

13.1.16 Calculate percent isokinetic to determine whether the run was valid or another test run should be performed (refer to Section 14.8 of this method).

13.2 *Sample Recovery:*

13.2.1 Allow the probe to cool before proceeding with sample recovery. When the probe can be safely handled, wipe off all external particulate matter near the tip of the probe nozzle, and place a rinsed, noncontaminating cap over the probe nozzle to prevent losing or gaining particulate matter. Do not cap the probe tip tightly while the sampling train is cooling; a vacuum can form in the filter holder, with the undesired result of drawing liquid from the impingers onto the filter.

13.2.2 Before moving the sampling train to the cleanup site, remove the probe from the sampling train, and cap the open outlet. Be careful not to lose any condensate that may be present. Cap the filter inlet where the probe was fastened. Remove the umbilical cord from the last impinger, and cap the impinger. Cap the filter holder outlet and impinger inlet. Use noncontaminating caps, such as ground-glass stoppers, plastic caps, serum caps, or Teflon tape, to close these openings.

13.2.3 Alternatively, the following procedure may be used to disassemble the train before the probe and filter holder/oven are completely cooled. Initially disconnect the filter holder outlet/impinger inlet, and loosely cap the open ends. Then disconnect the probe from the filter holder or cyclone inlet, and loosely cap the open ends. Cap the probe tip, and remove the umbilical cord as previously described.

13.2.4 Transfer the probe and filter–impinger assembly to a cleanup area that is clean and protected from the wind and other potential causes of contamination or loss of sample. Inspect the train before and during disassembly, and note any abnormal conditions.

13.2.5 The impinger train sample recovery scheme is illustrated in Figure 3.

13.2.6 *Container 1 (Sample Filter)*—Carefully remove the sample filter from the filter holder so as to not lose any ash, and place the filter in a labeled petri dish container. To handle the filter, use either acid-washed polypropylene or Teflon-coated tweezers or clean, disposable surgical gloves rinsed with water and dried. If it is necessary to fold the filter, make certain the particulate cake is inside the fold. Transfer any particulate matter or filter fibers that adhere to the filter holder gasket to the filter in the petri dish. A dry (acid-cleaned) nonmetallic bristle brush should be used to remove any remaining particulate matter. Do not use any metal-containing materials when recovering this train. Immediately cover and seal the labeled petri dish.

13.2.7 *Container 2 (Probe Rinse)*—Quantitatively recover particulate matter and any condensate from the probe nozzle, probe fitting, probe liner, and front half of the filter holder by washing these components with 0.1 mol/L HNO_3. nonmetallic brush may also be used for removing particulate. If the sample train is to be used as a replacement for EPA Method 5 (out-of-stack filtration) then an acetone probe rinse must be also completed prior to the HNO_3 probe rinse as is outlined in EPA Method 5. However, organic compounds can interfere with CVAA analyses for mercury (resulting in a low bias). Therefore, care must be taken to ensure all acetone has evaporated before the acetone rinse residue is added to the probe rinse container to be analyzed for mercury.

13.2.8 *Container 3 (Impingers 1 through 3, KCl Impinger Contents and Rinses)*:

13.2.8.1 Dry the exterior surfaces of Impingers 1, 2, and 3. Then weigh and record the weight of each impinger (to the nearest 0.5 g).

Enclosure 5

EMISSION MEASUREMENT CENTER
GUIDELINE DOCUMENT (GD-043)

PREPARATION AND REVIEW

OF

EMISSION TEST REPORTS

December 1998

PREFACE

This guideline document is made available to promote consistency in the preparation and review of site-specific emission test reports for emission test programs performed for the U. S. Environmental Protection Agency (EPA), State and local agencies, and private sector interests.

TABLE OF CONTENTS

EMISSION TEST REPORT FORMAT

PURPOSE AND USE OF GUIDELINE

The purpose of this guideline is to promote consistency in the preparation and review of test reports for emission test programs sponsored by the U. S. Environmental Protection Agency (EPA), state and local agencies, and the private sector.

The emission test report must provide the information necessary to document the objectives of the test and determine whether proper procedures were used to accomplish these objectives.

The emission test report presents the information gathered according to an emission test plan. Therefore, the contents of the test plan serve as the foundation for the test report.

This guideline presents a standard format for preparing the emission test report. The standard test report contains a table of contents, six sections, and appendices. Rather than discussing the standard format, this guideline lists the contents for each section. Then an example is given to illustrate the intent of each list. The list at the beginning of each section serves a dual purpose: (1) as a guide to the preparer and (2) as a checklist for both the preparer and the reviewer of the test report.

1.0 INTRODUCTION

1.1 SUMMARY OF TEST PROGRAM

In this section, write a brief summary that identifies or states, as applicable, the following:

- Responsible groups (participating organizations)
- Overall purpose of the emission test
- Regulations, if applicable
- Industry
- Name of plant
- Plant location
- Processes of interest
- Air pollution control equipment, if applicable
- Emission points and sampling locations
- Pollutants to be measured
- Dates of emission testing

EXAMPLE:

1.1 SUMMARY OF TEST PROGRAM

The U.S. Environmental Protection Agency (EPA), Office of Air Quality Planning and Standards (OAQPS), Emission Factor and Inventory Group (EFIG) is responsible for developing and maintaining air pollution emission factors for industrial processes. The EFIG, in collaboration with the **[Trade Organization]**, is presently studying the wood products industry. The purpose of this study is to develop emission factors for oriented strand board (OSB) production facilities. The Emission Measurement Center (EMC) of OAQPS coordinated the emission measurement activities at this plant. **[Contractor]** and **[Trade Organization]** conducted the emission measurements.

EPA/EFIG and **[Trade Organization]** considered the **[Plant]** in **[City, State]** to be one of four facilities that represent the diversity in wood species and dryer control devices. This test was the second of the four and was conducted **[Dates]**. Simultaneous measurements were conducted at the inlet and outlet of the electrified filter bed (EFB) for the No. 1 wood wafer dryer exhaust and at the press vents. Pollutants measured were: particulate matter (PM), condensible particulate matter (CPM), carbon monoxide (CO), nitrogen oxides (NO_x), hydrocarbons (HC), formaldehyde (plus other aldehydes and ketones), and volatile and semivolatile organic compounds.

1.2 KEY PERSONNEL

In this section, include the following:

- Names, affiliations, and telephone numbers of key personnel

EXAMPLE:

1.2 KEY PERSONNEL

The key personnel who coordinated the test program and their phone numbers are:

- [Contractor] Project Manager XXX/XXX-XXXX
- Environmental Agency Technical Representative [if any] XXX/XXX-XXXX
- [Plant] Contact XXX/XXX-XXXX
- [Trade Organization] Representative XXX/XXX-XXXX
- [Contractor] Process Monitor XXX/XXX-XXXX

2.0 PLANT AND SAMPLING LOCATION DESCRIPTIONS

2.1 PROCESS DESCRIPTION AND OPERATION

In this section, include the following:

- General description of the basic process
- Flow diagram (indicate emission and process test points)
- Discussion of typical process operations, such as:
  - Production rates
  - Feed material and feed rates or batch sizes
  - Equipment sizes and capacities (ratings)
  - Production schedules (hours/day, days/week, weeks/year, peak periods)

In the flow diagram, trace the process from beginning to end. Identify the major operations. Show only those gas, liquid, and solid flow streams that relate to the emission test.

EXAMPLE:

2.1 PROCESS DESCRIPTION

Figure 2-1 illustrates the basic processing steps for OSB production. The steps are:

- Logs are slashed, debarked, cut into shorter lengths, and sliced into thin wafers.
- The wafers are dried, classified, blended and mixed with resin, oriented, and formed into a mat.
- The formed mats are separated into desired lengths, heated, and pressed to activate the resin and bond the wafers into a solid sheet.
- Sheets are trimmed, edge treated, and packaged for shipping.

At [Plant], the wood mix during the test was 60 percent soft wood (e.g., pine), 30 percent soft hardwood (e.g., sweet gum), and 10 percent hardwood. Two 12-foot diameter dryers processed 30,500 lb/hr of flakes. The moisture content of the flakes leaving the dryer was 3 percent. Inlet temperature to the dryer ran at 900°F and the exit temperature was 255°F. A McConnel burner firing recycled waste (wood trim, fines, and resinated sander dust) heated the dryers. An oil-fired Wellens burner served as a backup, but was not used during the test.

The emission test points were EFB inlet and outlet (stack) and the roof vents from the press.

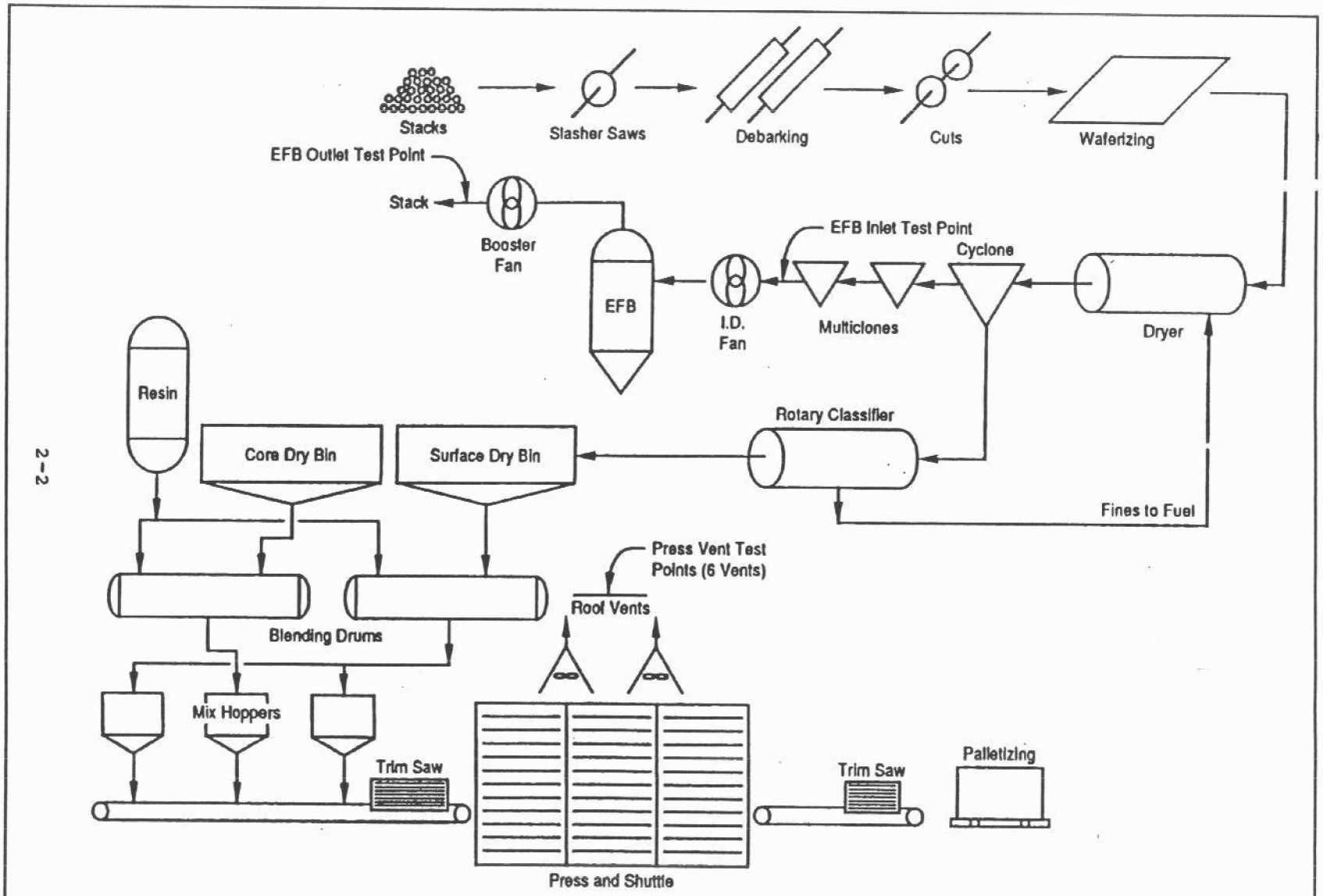


Figure 2-1. Oriented strand board (OSB) process flow diagram.

2-2

2.2 CONTROL EQUIPMENT DESCRIPTION

In this section, include the following:

- Description of all air pollution control systems, if applicable
- Discussion of typical control equipment operation and, if necessary, a schematic

EXAMPLE:

2.2 ELECTRIFIED FILTER BED DESCRIPTION

Particulate matter from the wafer dryer is controlled by cyclones and an electrified filter bed (EFB) manufactured by **[Manufacturer]**. Figure 2-2 is a schematic of an ionizer and gravel bed assembly. The EFB is an electrostatic precipitator (ESP) that uses pea-gravel as its collection electrodes.

The gases enter the EFB into an annular region formed by two concentric cylinders. The inner cylinder is the ionizer. Ions formed by the ionizer stream toward the adjacent cylinder wall and impart electrostatic charges on dust particles.

After passing through the ionizer, the gas flows down the chamber into the filter bed section. The filter bed consists of pea-shaped gravel held between two cylindrical louvers. A high DC positive voltage polarizes the gravel and induces regions of positive and negative charge on the pebbles. As the gases pass through the pebble bed, the negatively charged dust particles are collected on the positively charged regions on the gravel.

As dust accumulates in the filter bed, the resistance to gas flow increases. To maintain constant flow and remove collected particles, the EFB slowly and continuously remove gravel from the bottom. The removed gravel is agitated to remove the dust particles and is recycled into the EFB at the top.

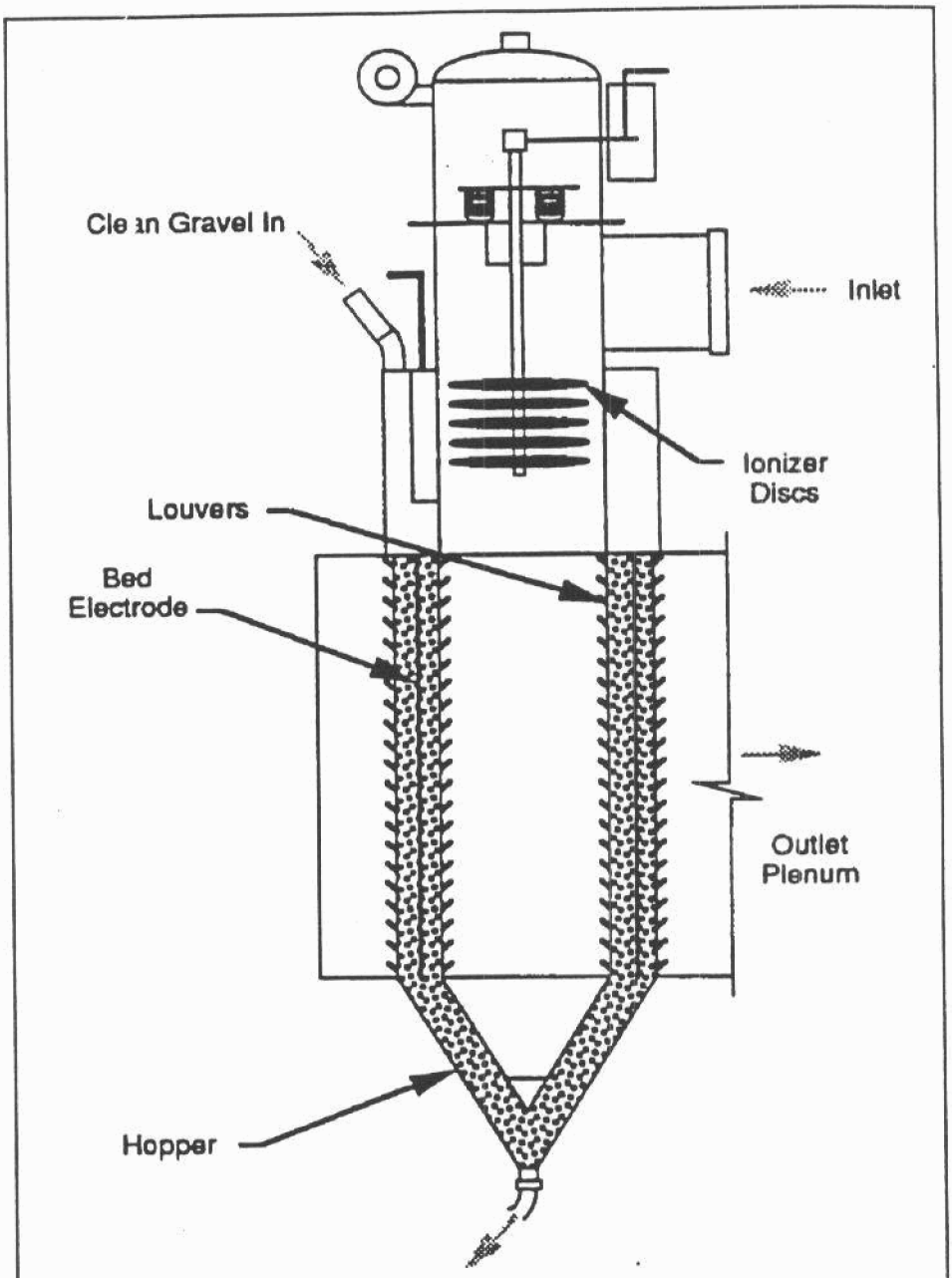


Figure 2-2. Ionizer and gravel bed assembly.

2-4

2.3 FLUE GAS SAMPLING LOCATIONS

In this section:

- Provide a schematic of each location. Include:
  - duct diameter
  - direction of flow
  - dimensions to nearest upstream and downstream disturbances (include number of duct diameters)
  - location and configuration of the sampling ports
  - nipple length and port diameters
  - number and configuration of traverse points
- Confirm that the sampling location met the EPA criteria
  - If not, give reasons and discuss effect on results
- Discuss any special traversing or measurement schemes

EXAMPLE:

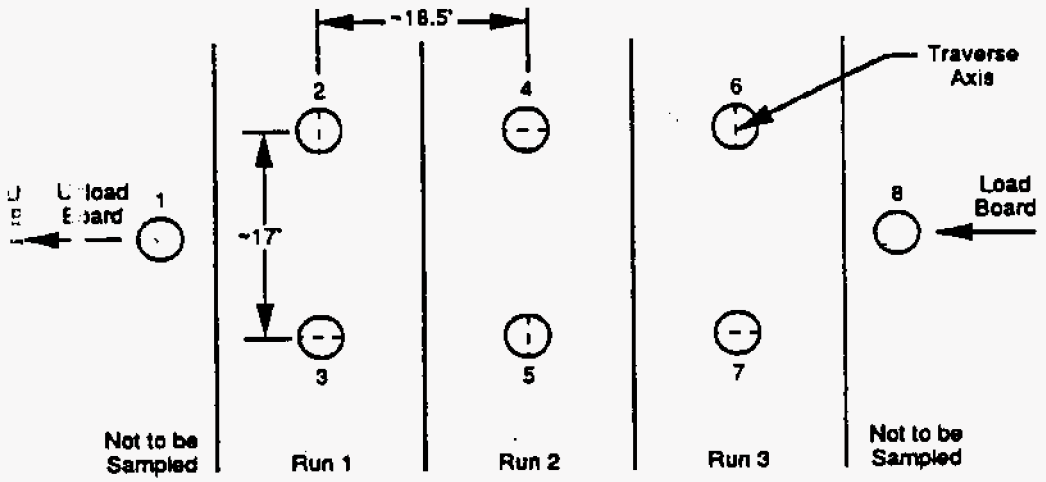
2.3 FLUE GAS SAMPLING LOCATIONS

Emission sampling was conducted at: (1) the EFB inlet on dryer No. 1, (2) the EFB outlet stack on dryer No. 1, and (3) the press vents. Figures 2-3, 2-4, and 2.5 are schematics of these sampling locations.

2.3.1 EFB Inlet. Four 4-inch ports were installed at Sections XX and YY as shown in Figure 2-3. Because of obstructions around the site, Section XX was the only practical location for Methods 202 and 0011. Method 1 requires that Section XX have 24 traverse points; each point was sampled for 2.5 minutes for a total time of 60 minutes. One train traversed into the duct while the other traversed out. At Section YY, about 2 feet below Section XX, one port was used for the paired Method 25 single-point sampling and the second for Method 25A and Method 3.

2.3.2 EFB Outlet. The outlet stack for the EFB has two 4-inch sampling ports A and B as shown in Figure 2-4. Additional 4-inch ports C through H were installed as shown. Methods 202, 0011, and MM5 were conducted at Section XX at 24 points (2.5 minutes at each point), the VOST train were conducted at port E, and Methods 25 (dual), 10, 7E, and 3 were conducted at Section YY.

2.3.3 Press Vents. The press has eight roof vents as shown in Figure 2-5. The two vents on the ends (1 and 8) were not tested because they were not directly over the press and little or no emissions were expected from these vents. Different pairs of the other six vents were sampled for formaldehyde emissions (Method 0011) during each of the three test runs.



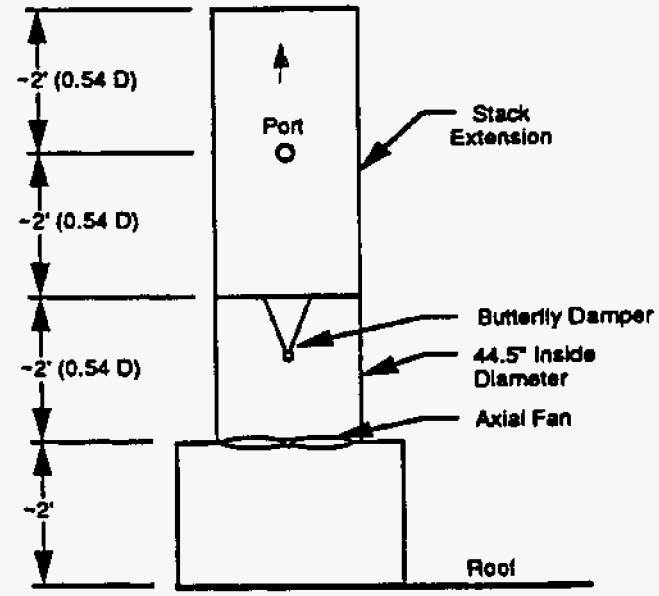


Figure 2-5. Press vents sampling location configuration and testing scheme.

At this location, a 4-foot stack extension to improve flow conditions was constructed. The extension contained one 4-inch port. Each vent "stack" was traversed (12 points) in only one direction. The traverse of the second vent of a pair was in the direction perpendicular to the first vent traverse. Although the location did not meet Method 1 requirements, the results will not be affected since no particulate sampling was conducted at the press vents. The flow check for non-parallel flow before the test showed that the flow conditions were acceptable, i.e., the flow was not cyclonic.

2.4 PROCESS SAMPLING LOCATIONS

If process stream samples were taken, include the following:

- Schematic of locations, if helpful
- Description of each sampling or measurement location
- Description of procedure used to obtain samples or measurements
- Discussion on the representativeness of each of the process stream sampling locations and samples

EXAMPLE: No process samples were required to be taken during the OSB test. Therefore, the example below is from a site-specific test plan for a drum mix asphalt plant. At this plant, a tank of waste fuel was used to supply the burners for the drum mixer. The plan required one grab sample per run of the waste fuel.

2.4 WASTE FUEL SAMPLING LOCATION

The sample for each test run was taken from a tap at the outlet of the waste fuel supply tank to the burners. The sample at this point was expected to be homogeneous. However, to ensure representativeness of the sample for each run, equal volumes of sample were taken at the beginning, middle, and end of the run.

3 0 SUMMARY AND DISCUSSION OF TEST RESULTS

3.1 OBJECTIVES AND TEST MATRIX

In this section:

- State the overall purpose of the test program.
- List the specific objectives.
- Include a test matrix table showing the following (include schematics, if helpful):
  - Run no. and date
  - Sample type/pollutant
  - Test method
  - Sampling locations
  - Clock time
  - Sampling time

EXAMPLE:

3.1 OBJECTIVES AND TEST MATRIX

The purpose of the test program was to develop emission factors for OSB production facilities from the wood products industry.

The specific objectives were:

- Measure the emissions of PM, CPM, CO, NO_x, THC, formaldehyde, other aldehydes, and ketones, and volatile and semi-volatile organics at the wood wafer dryer EFB inlet and outlet locations.
- Measure formaldehyde, other aldehydes, and ketones emissions from the press vents.
- Determine the relationship between Method 25 and Method 25A for HC, and between Method 202 and the Oregon Department of Environmental Quality (ODEQ) Method 7 for particulates (PM and CPM).
- Assess the suitability of deriving a correction factor for Method 25A.
- Obtain production rates, inlet and outlet dryer temperatures, drying rates, belt speed, EFB bed voltage and current, and EFB voltage and ionizer current.

Table 3-1 presents the sampling and analytical matrix and sampling log.

TABLE 3-1. SAMPLING MATRIX

RUN NO. DATE	SAMPLE TYPE	TEST METHOD	LOCATION/CLOCK TIME/SAMPLING TIME		
			EFB INLET	EFB OUTLET	PRESS VENTS
1 7/30/98	PM/CPM	M5/202	1130-1420	1130-1428	1123-1233
	O_2/CO_2	M3	60	60	
	F/A/K	M0011	60	60	60 (Vents 2/3)
	SVOC	MM5	60	60	
	VOC	M0030		60	
	TGNMO	M25		60	
	THC	M25A	60	60	
	NO_x	M7E	60	60	
	CO	M10		60	
2 7/30/98	F/A/K	M0011			1410-1233 60 (Vents 4/5)
2 7/31/98	PM/CPM	M5/202	1215-1327	1215-1349	
	O_2/CO_2	M3	40	45	
	F/A/K	M0011	40	45	
	SVOC	MM5	40	45	
	VOC	M0030		45	
	TGNMO	M25		45	
	THC	M25A	40	45	
	NO_x	M7E	40	45	
	CO	M10		45	
3 7/31/98	PM/CPM	M5/202	1800-1933	1800-1947	800-?
	O_2/CO_2	M3	60	60	
	F/A/K	M0011	60	60	60 (Vents 6/7)
	SVOC	MM5	60	60	
	VOC	M0030		60	
	TGNMO	M25		60	
	THC	M25A	60	60	
	NO_x	M7E	60	60	
	CO	M10		60	

3.2 FIELD TEST CHANGES AND PROBLEMS

If no field test changes or problems occurred, this section may be omitted. In this section, include the following items:

- List and discussion of any changes in sampling and analytical methods for emissions or process information

EXAMPLE:

3.2 FIELD TEST CHANGES AND PROBLEMS

3.2.1 Percent Isokinetics. Three of the 18 runs exceeded the percent isokinetic requirements of ±10 percent as a result of incorrect data input. The magnitude of the exceedances all occurring at the EFB outlet were as follows:

- Run 1, MM5 train for SVOC: 83.3%
- Run 2, M0011 train for formaldehyde/aldehydes 112.1%
- Run 3, M0011 train for formaldehyde/aldehydes 112.1%

Since the sample analyses involved the gaseous (formaldehyde/aldehydes) components and semi-volatile components at the EFB outlet, these deviations are not expected to affect the results.

3.2.2 Shortened Sampling Time. Run No. 2 had a sampling time of 40-45 minutes rather than 60 minutes. The plant went down at 2:47 p.m. The EMB test coordinator determined this run to be adequate.

3.3 PRESENTATION OF RESULTS

In this section and subsequent sections (one section for each objective):

- Address each of the specific objectives and present a summary of the results in tabular form
- Discuss the data

EXAMPLE: This example is for only one of the objectives. Subsequent sections should be similar in content.

3.3 FLOW RATES FROM EFB AND PRESS VENTS

To determine mass emission rates and EFB collection efficiency, flow rate is an important component. In this test program, three separate trains provided simultaneous measurements of velocities, temperatures, and moisture contents. Table 3-2 summarizes the flow rate data. Method 3 data for O_2 and CO_2 are added to this table.

The following observations are made:

- The temperature measurements of the EFB inlet and outlet compare to within ±2°F of each other, except for Run I-1, which is within ±4°F.
- The moisture contents of the EFB inlet and outlet compare to within ±1 percent moisture of each other.
- The flow rate from M5/202, Run I-2 appears to be high, and all three runs from M5/202 outlet appear to be too low when compared to flow rates from the other trains. According to the O_2/CO_2 data, the flow rate at the outlet should be slightly higher than that of the inlet.

Based on the above observations, Runs I-2 and the measurements made at the stack (EFB outlet) for M5/202 were deleted from the averages. The average flow rates as shown in Table 3-2 were considered to provide the best data and, therefore, were used to calculate the mass emission rates.

TABLE 3-2. VOLUMETRIC FLOW RATE DATA

RUN NO.	FLOW RATE, dscmh				TEMPERATURE, °F			MOISTURE, $\%H_2O$			ORSAT, %	
	M5/202	M0011	MM5	Average	M5/202	M0011	MM5	M5/202	M0011	MM5	O_2	CO_2
I-1	54,586	54,334		54,460	225	233		23.4	24.4		16.8	4.0
I-2	60,806	53,131		53,131[a]	225	228		22.7	24.5		16.5	4.4
I-3	55,510	54,874		55,192	224	226		22.8	24.4		17.0	3.8
Avg	56,967	54,113			225	229		23.0	24.4		16.8	4.1
S-1	51,054	54,871	55,342	55,106[b]	227	226	227	23.3	22.5	23.8	17.6	3.2
S-2	52,489	55,803	55,153	56,433[b]	222	223	226	23.3	23.4	24.0	17.1	3.8
S-3	52,398	55,165	57,063	56,114[b]	227	225	227	23.4	22.9	24.0	16.8	4.0
Avg	51,980	55,280	55,853		225	225	227	23.3	22.9	23.9	17.2	3.7
V-1		32,163		32,163		111			2.2			
V-2		31,324		31,324		130			3.6			
V-3		39,087		39,087		133			3.3			
Avg		34,191				125			3.0			

[a] Does not include M5/202
[b] Does not include M5/202 runs

4.0 SAMPLING AND ANALYTICAL PROCEDURES

4.1 TEST METHODS

In this section, include the following:

- Schematic of each sampling train
- Flow diagram of the sample recovery
- Flow diagram of sample analysis
- Description of any modifications
- Discussion of any problematic sampling or analytical conditions

If a non-EPA method was used in place of an EPA method, explain the reason. Place a copy of all methods in Appendix A to the report. Be sure that non-EPA methods are written in detail similar to that of the EPA methods.

EXAMPLE: This example is for just one of the test methods. The test report should include similar schematics and flow diagrams for each of the test methods.

4.1 TEST METHODS

4.1.1 Particulate Matter/Condensible Particulate Matter. PM/CPM at the inlet and outlet of the EFB were determined by Method 202. One of the objectives of this test was to compare Method 202 with ODEQ Method 7, which is identical to Method 202 except for the following:

- A second filter is placed just before the silica gel impinger.
- Acetone rather than methylene chloride is used in the final rinse of the impingers and connecting glassware.
- An optional out-of-stack filter is used before the impingers.

Because of space limitations, Method 202 was modified by inserting a second filter in the same position as that in the ODEQ Method 7. This back-up filter was analyzed gravimetrically according to the ODEQ procedure. All other procedures were those of Method 202. Figures 4-1 and 4-2 are schematics of Method 202 (showing modification) and ODEQ Method 7, respectively.

Figures 4-3 and 4-4 illustrate the sample recovery procedure and analysis schemes, respectively.

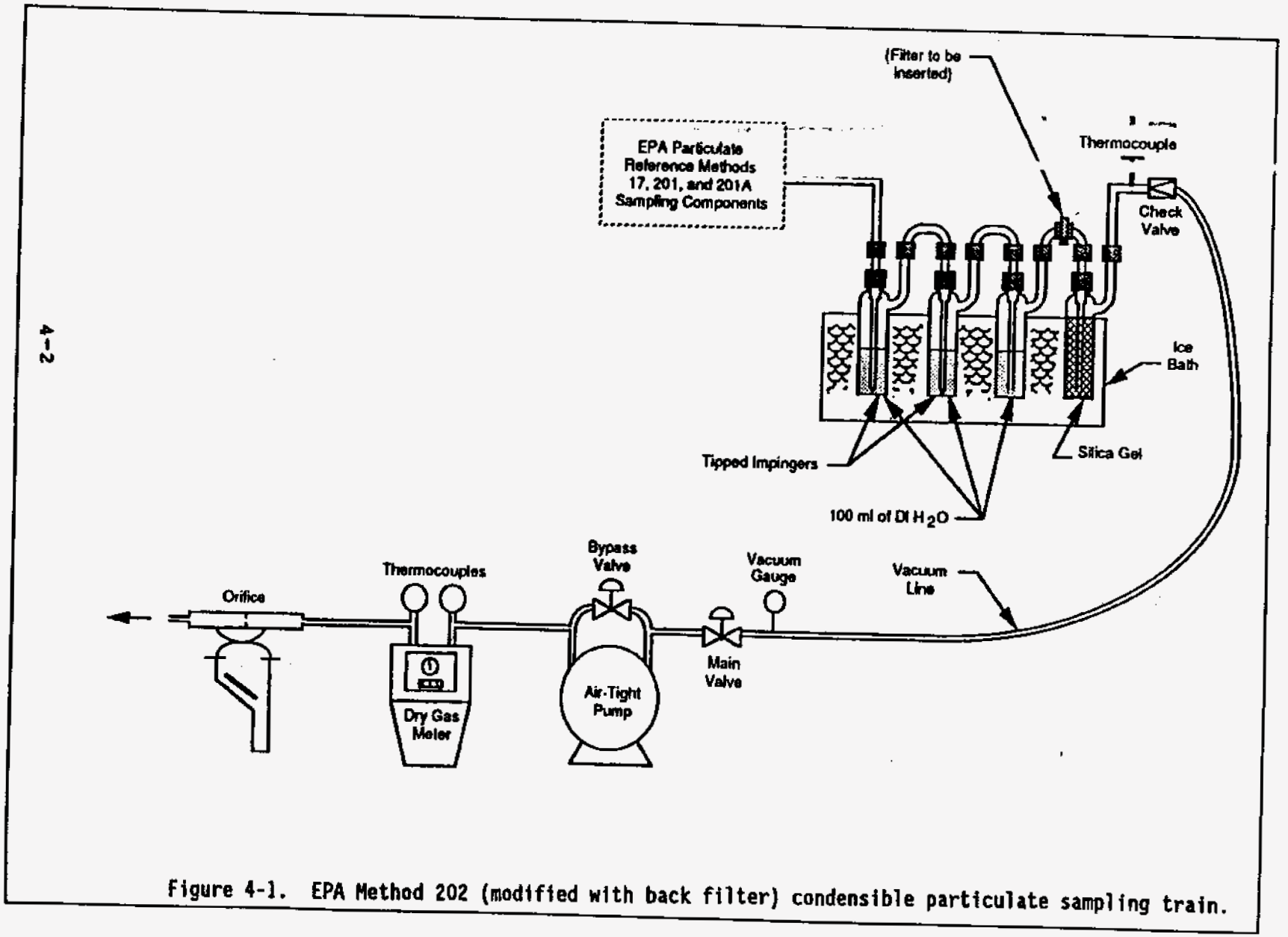


Figure 4-1. EPA Method 202 (modified with back filter) condensible particulate sampling train.

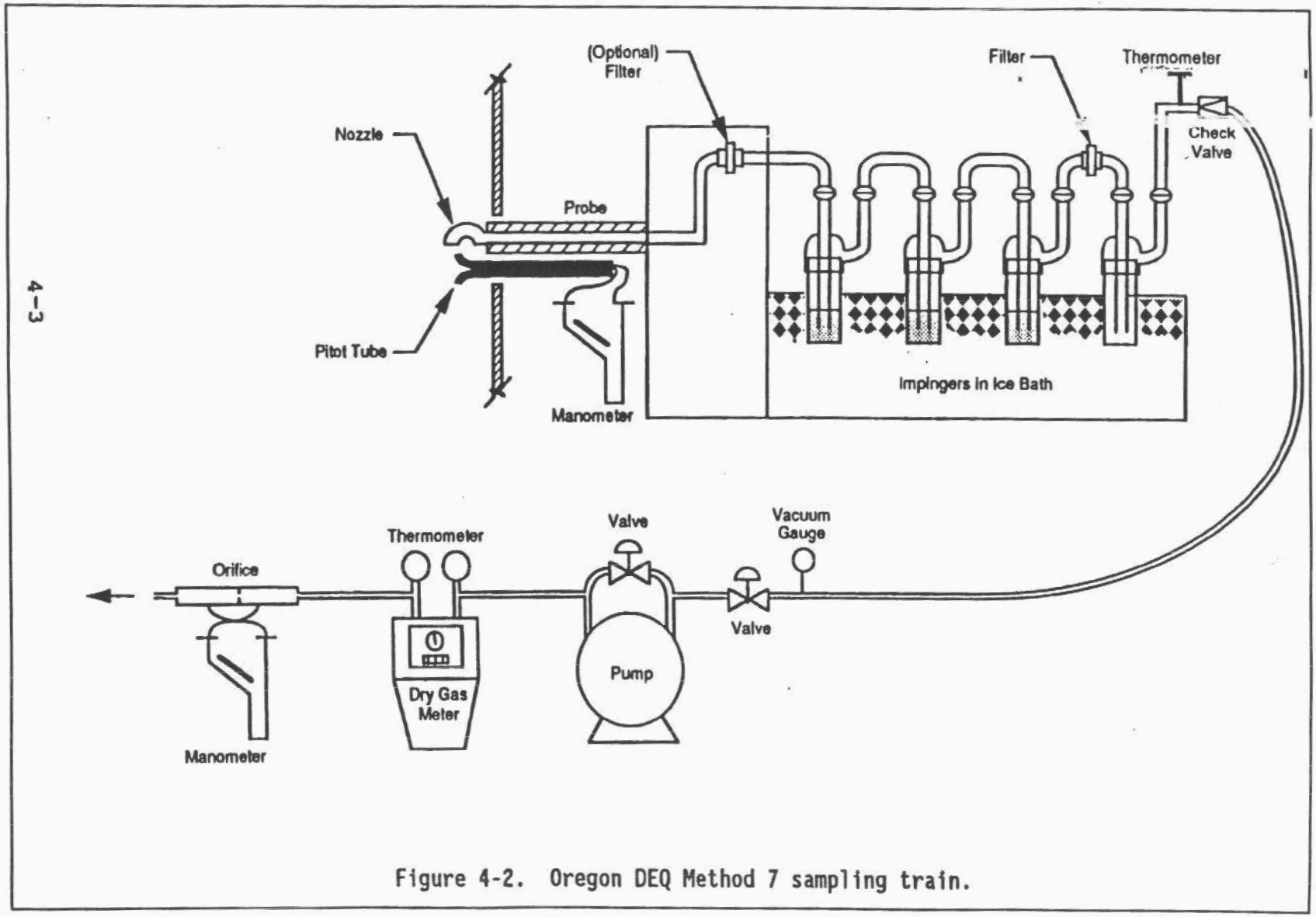


Figure 4-2. Oregon DEQ Method 7 sampling train.

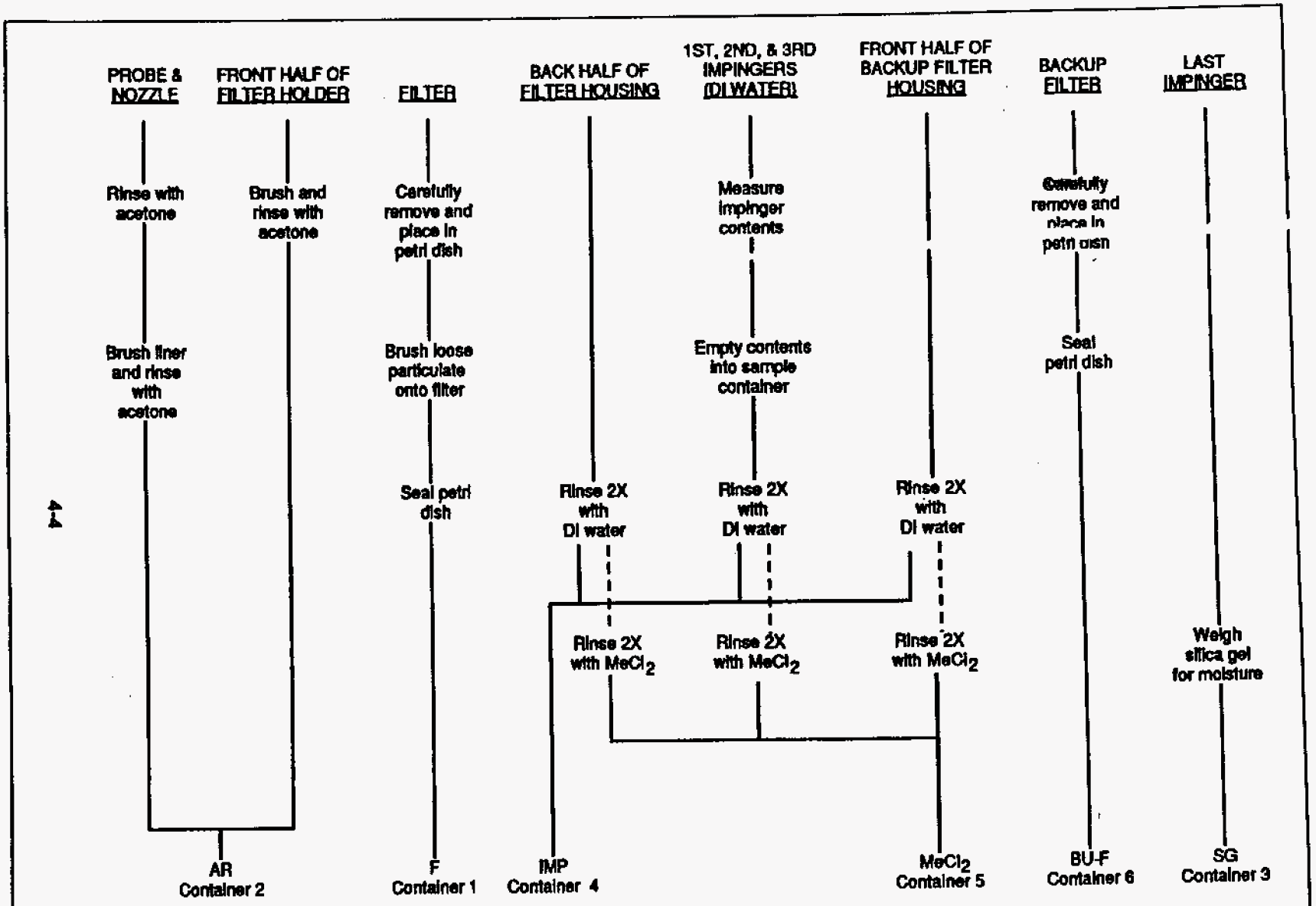


Figure 4-3. Sample recovery scheme for particulate/condensibles samples.

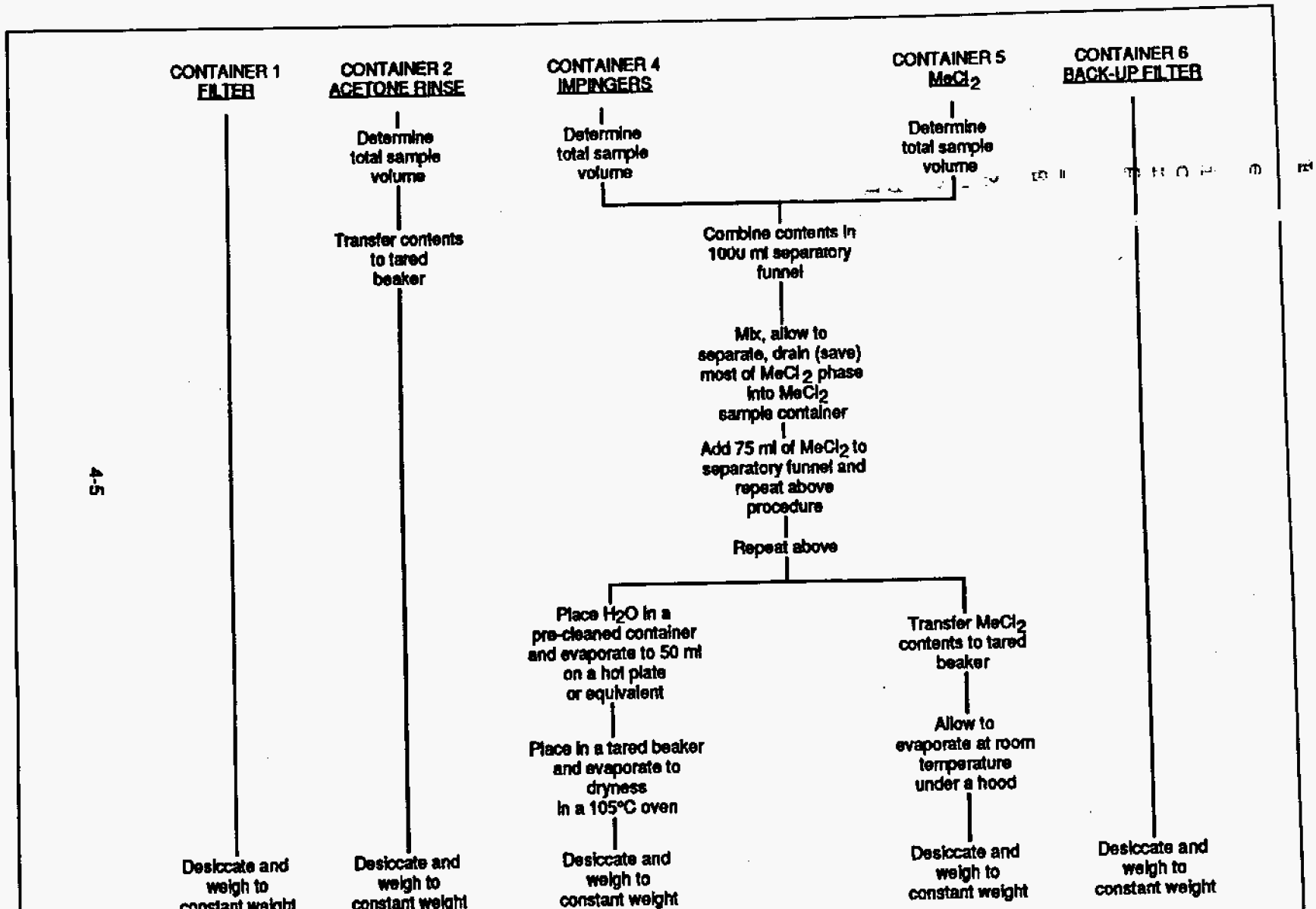


Figure 4-4. Analytical scheme for particulate/condensibles samples.

4.2 PROCESS TEST METHODS

In this section, include the following:

- Description of procedures used to obtain process stream and control equipment data
- Calibration procedures for any test equipment, if appropriate

EXAMPLE:

4.2 PROCEDURES FOR OBTAINING PROCESS DATA

The [Process Monitor] counted the number of press loads for each test period, and obtained the dryer data from the central control panel, amount of wafer flakes dried from digital meters calibrated to measure the amount of flakes leaving the dryer, and the EFB data from the EFB control panel.

5.0 INTERNAL QA/QC ACTIVITIES

5.1 QA/QC PROBLEMS

In this section, discuss:

- QA/QC problems that occurred during the test
- Sample identification and custody problems

EXAMPLE:

5.1 QA/QC PROBLEMS

One field spike was performed at the EFB outlet location as a check of field handling and recovery procedures. The field spike consisted of introducing 200 µl (0.80 mg) of the Field Spike Standard into an impinger containing 200 ml of the DNPH solution and following normal recovery procedures.

Only 0.094 mg out of 0.802 mg was recovered. A check of the DNPH solution revealed that the cause of the poor recovery was due to the deterioration of the solution.

5.2 QA AUDITS

For each of the test methods for which an audit was conducted, list (if applicable) the following:

- Type of audit conducted
- Limits of acceptability
- Supplier of audit material
- Audit procedure
- Summary of results

EXAMPLE: An example for Method 5 dry gas meter audit is provided below.

5.2 METERING SYSTEM AUDIT

An on-site audit of the meterbox calibrations was conducted using calibrated critical orifices supplied by EPA. The procedure that accompanied the orifices were used. The results of this audit are presented in Table 5-1. All audit values were within the acceptable range of 5%.

Enclosure 6

EPA's Information Gathering Authority
Under Section 114 of the Clean Air Act

Under Section 114 of the Act (42 U.S.C. 7414), Congress has given the U.S. Environmental Protection Agency broad authority to secure information needed "for the purpose of (i) developing or assisting in the development of any implementation plan under Section 110 or 111(d), any standard of performance under Section 111, or any emission standard under Section 112, (ii) determining whether any person is in violation of any such standard of any requirement of such a plan, or (iii) carrying out any provision of this Act." Amont other things, Section 114 authorizes EPA to make inspections, conduct tests, examine records, and require owners or operators of emission sources to submit information reasonably required for the purpose of developing such standards. In addition, the EPA Office of General Counsel has interpreted Section 114 to include authority to photograph or require submission of photographs of pertinent equipment, emissions, or both.

Under Section 114, EPA is empowered to obtain information described by that section even if you consider it to be confidential. You may, however, request that EPA treat such information as confidential. Information obtained under Section 114 and covered by such a request will ordinarily be released to the public only if EPA determines that the information is not entitled to confidential treatment.[1] Procedures to be used for making confidentiality determinations, substantive criteria to be used in such determinations, and special rules governing information obtained under Section 114 are set forth in 40 CFR Part 2 published in the Federal Register on September 1, 1976 (40 FR 36902).

Pursuant to § 2.204(a) of EPA's Freedom of Information Act (FOIA) regulation, in the event a request is received, or it is determined that a request is likely to be received, or EPA desires to determine whether business information in its possession is entitled to confidential treatment even though no request for release of the information has been received, please be advised that EPA will seek, at that time, the following information to support your claim as required by § 2.204(e)(4) of EPA's FOIA regulations:

1. Measures taken by your company to guard against undesired disclosure of the information to others;

2. The extent to which the information has been disclosed to others, and the precautions taken in connection therewith;

3. Pertinent confidentiality determinations, if any, by EPA or other Federal agencies, and a copy of any such determinations, or reference to it, if available; and

4. Whether your company asserts that disclosure of the information would be likely to result in substantial harmful effects on the business' competitive position, and if so, what those harmful effects would be, why they should be viewed as substantial, and an explanation of the causal relationship between disclosure and such harmful effects.

[1]Section 114 requires public availability of all emission data and authorizes disclosure of confidential information in certain circumstances. See 40 FR 36902 - 36912 (September 1, 1976).

Enclosure 7

[AD-FRL-3906-3]

Disclosure of Emission Data Claimed as Confidential Under Sections 110 and 114(c) of the Clean Air Act

AGENCY: Environmental Protection Agency (EPA).
ACTION: Notice of policy on public release of certain emission data submitted under sections 110 and 114(c) of the Clean Air Act (CAA).

SUMMARY: Section 114(c) of the CAA excludes emission data from the general definition of trade secret information. Certain classes of data submitted to the EPA under sections 110 and 114(a) of the CAA are emission data, and, as such, cannot be withheld from disclosure as confidential pursuant to section 1905 of title 18 of the United States Code. This notice clarifies EPA's current policy, and solicits comment regarding that policy and categories of data which it considers excluded from a trade secret definition.
DATES: Written comments pertaining to this notice are requested by April 22, 1991.
ADDRESSES: Submit comments to: Nancy D. Riley, U.S. Environmental Protection Agency, Emission Standards Division, Pollutant Assessment Branch (MD-13), Research Triangle Park, NC 27711.
FOR FURTHER INFORMATION CONTACT: Timothy Mohin (telephone: (919) 541-5349 commercial/FTS 629-5349) or Karen Blanchard (telephone: (919) 541-5503 commercial/FTS 629-5503), Pollutant Assessment Branch (MD-13), Emission Standards Division; or Thomas Rosendahl (telephone: (919) 541-5404 commercial/FTS 629-5404), National Air Data Branch (MD-14), Technical Support Division; U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711.
SUPPLEMENTARY INFORMATION: The EPA routinely uses the authority of sections 110 and 114(a) of the CAA to gather technical information from industries involved in operations that lead to emission of pollutants to the ambient air. This information has been used, among other things, to better characterize emitting facilities and to evaluate the need for and impacts of potential regulation.

Information requests under sections 110 and 114(a) of the CAA typically include questions on uncontrolled and controlled emission rates and emission parameters of the polutant or group of pollutants of concern. The respondents sometimes claim that its response constitutes trade secret information, and thus, should be treated as confidential. Claims of confidentiality may be made under section 114(c) of the CAA, which states "* * * upon a showing satisfactory to the Administrator by any person that records, reports, or information, or a particular part thereof, (other than emission data) to which the Administrator has access under this section if made public, would divulge methods or processes entitled to protection as trade secrets of such person, the Administrator shall consider such * * * confidential in accordance with the purposes of section 1905 of title 18 of the United States Code * * *." If the Administrator so determines, the information is not disclosable to the public.

However, section 114(c) of the CAA provides that information claimed to be a trade secret but which constitutes emission data may not be withheld as confidential. Although typically the EPA evaluates whether information constitutes emission data on a case-by-case basis, it believes that some kinds of data will always constitute emission data within the meaning of section 114(c). The purpose of this notice is to describe, without attempting to be comprehensive, that information which the EPA generally considers to be emission data, and which cannot qualify as confidential under either section 114(c) or section 110 (as set forth in 41 CFR 51.321, 51.322, and 51.323) of the CAA. The EPA is issuing this notice to clarify its policy and procedures, to facilitate the use of these data in automated data systems and computer-based simulation models, and to expedite processing of claims for confidentiality or requests for disclosure.

The EPA presently determines that data submitted to it as emission data does not qualify as confidential if it meets the following definition under 40 CFR 2.301(a)(2)(i):

a. Definitions. For the purpose of this section, (1) *Act* means the Clean Air Act, as amended, 42 U.S.C. 7401 et seq. (2)(i) *Emission data* means, with reference to any source of emission of any substance into the air—

(A) Information necessary to determine the identity, amount, frequency, concentration, or other characteristics (to the extend related to air quality) of any emission which has been emitted by the source (or of any pollutant resulting from any emission by the source), or any combination of the foregoing:

(B) Information necessary to determine the identity, amount, frequency, concentration, or other characteristics (to the extent related to air quality) of the emission which, under an applicable standard or limitation, the source was authorized to emit (including, to the extent necessary for such purposes, a description of the manner or rate of operation of the source), or any combination of the foregoing.

(C) A general description of the location and/or nature of the source to the extent necessary to identify the source and to distinguish it from other sources (including, to the extent necessary for such purposes, a description of the device, installation, or operation constituting the source).

The table below lists the specific data fields which the EPA presently considers to constitute emission data and provides a brief description of what each data field describes. The descriptions are intended to provide general information. This list is not exhaustive, and, therefore, other data might be found, in a proper case, to constitute emission data.

Emission Data Fields

Facility Identification: The following data fields are needed to establish the identity and location of emission sources. This shall also include a description or an identifier of the device, installation, or operation constituting the source. These data are used to locate sources for dispersion evaluation and exposure modeling.
Plant Name and related point identifiers
Address
City
County
AQCR (Air Quality Control Region)

MSA, PMSA, CMSA (Metropolitan Statistical Areas)
State
Zip Code
Ownership and point of contact information
Locational Identifiers:
Latitude & Longitude, or UTM Grid Coordinates
SIC (Standard Industrial Classification)
Emission point, device or operation description information
SCC (Source Classification Codes)

Emission Parameters: The following data fields are needed to establish the characteristics of the emissions. This information is needed for the analyses of dispersion and potential control equipment.

Emission type
(e.g., nature of emissions such as CO_2), particulate or a specific toxic compound, and origin of emissions such as process vents, storage tanks or equipment leaks)
Emission rate
(e.g., the amount released to the atmosphere over time such as kg/hr or lbs/yr)
Release height
(e.g., height above ground level where the pollutant is emitted to the atmosphere)
Description of terrain and surrounding structures
(e.g., the size of the area associated with adjacent structures in square meters and terrain descriptions such as mountainous, urban, or rural)
Stack or vent diameter at point of emissions
(e.g., the inside diameter of vent at the point of emission to the atmosphere in meters)
Release velocity
(e.g., velocity of release in m/sec)
Release temperature
(e.g., temperature of release at point of release in degrees Kelvin)
Frequency of release
(e.g., how often a release occurs in events per year)
Duration of release
(e.g., the time associated with a release to the atmosphere)
Concentration
(e.g., the amount of an emission stream constituent relative to other stream constituents expressed as parts per million (ppm), volume percent, or weight percent)
Density of the emissions stream or average molecular weight
(e.g., density expressed as fraction or multiple of the density of air: molecular weight in g/g-mole)
Boiler or process design capacity
(e.g., the gross heating value of fuel input to a boiler at its maximum design rate)
Emission estimation method
(e.g., the method by which an emission estimate has been calculated such as material balance, source test, use of AP-42 emission factors, etc.)
Percent space heat
(e.g., the percent of fuel used for space heating)
Hourly maximum design rate
(e.g., the greatest operating rate that would be expected for a source in a 1-hour period)

The EPA has determined that these data are emission data and releasable upon request. This determination applies to data currently held by EPA as well as to information submitted to EPA in the future. Future requests for information under sections 110 and 114 of the CAA will indicate that these emission data will not be held confidential. This determination applies only to the data listed in the table. Determinations will continue to be made on a case-by-case basis for data not specified in this generic determination.

After consideration of comments on this policy, a revised policy/determination may be published.

Dated: February 8, 1991.

Michael Shapiro.

Acting Assistant Administrator for Air and Radiation.

[FR Doc. 91-4114 Filed 2-20-91: 8:45 am]

Enclosure 8

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
RESEARCH TRIANGLE PARK, NC 27711

OFFICE OF
AIR QUALITY PLANNING
AND STANDARDS

DESIGNATION OF AUTHORIZED REPRESENTATIVE FOR STANDARDS OF PERFORMANCE FOR NEW STATIONARY SOURCES (SECTION 111) AND SOLID WASTE COMBUSTION (SECTION 129), NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS (SECTION 112), AND FEDERAL OZONE MEASURES (SECTION 183)

Under contract 68D60014, Research Triangle Institute (prime contractor) and Resolve Incorporated, The Kevric Company Incorporated, and SKT Consulting (subcontractors) are hereby designated Authorized Representatives of the Administrator of the United States Environmental Protection Agency for the purpose of assisting in the development of national emission standards for hazardous air pollutants under 42 U.S.C. 7412, standards of performance for new stationary sources under 42 U.S.C. 7411, solid waste combustion under 42 U.S. C. 7429, and Federal ozone measures under 42 U.S.C. 7511 (b).

This designation is made pursuant to the Clean Air Act, 42 U.S.C. 7414. The United States Code provides that, upon presentation of this credential, the Authorized Representative named herein: (1) shall have a right of entry to, upon, or through any premises in which an emission source is located or in which records required to be maintained under 42 U.S.C. 7414 (a) (1), are located, and (2) may at reasonable times have access to and copy any records, inspect any monitoring equipment or method required under 42 U.S.C. 7414 (a) (1), and sample any emissions that the owner or operator of such source is required to sample.

Authorized Representatives of the Administrator are subject to the provisions of 42 U.S.C. 7414 (c) respecting confidentiality of methods or processes entitled to protection as trade secrets, as implemented by 40 CFR 2.301 (h) (41 FR 36912, September 1, 1976).

Date: MAR 20 1998

Designation Expires: September 30, 2001

John S. Seitz
Director
Office of Air Quality Planning
and Standards

Enclosure 9

December 1995

Summary of OAQPS Procedures for Safeguarding Clean Air Act (CAA) Confidential Business Information (CBI)

1. Purpose

This memorandum describes Agency policy and procedures pertaining to the handling and safeguarding of information that may be entitled to confidential treatment for reasons of business confidentiality by the OAQPS, Office of Air and Radiation, U.S. Environmental Protection Agency.

2. Other Applicable Documents:

a. Clean Air Act as amended.
b. 40 CFR, Chapter 1, Part 2, Subpart B - Confidentiality of Business Information.
c. EPA Security Manual, Part II, Chapters 8 and 9.
d. Clean Air Act Confidential Business Information Security Manual (June 1995 edition).

3. Exception:

This document was prepared as a summary of data gathering and handling procedures used by the OAQPS, EPA. Nothing in this document shall be construed as superseding or being in conflict with any applicable regulations, statutes, or policies to which EPA is subject.

4. Definition:

Confidential Business Information - Information claimed by the provider to be confidential. This information may be identified with such titles as trade secret, secret, administrative secret, company secret, secret proprietary, privileged, administrative confidential, company confidential, confidential proprietary, or proprietary. NOTE: These markings should not be confused with the classification markings of National Security information identified in Executive Order 11652.

Files may be checked out upon confirmation that the requesting person is authorized to receive the information. All confidential files may be returned no later than 4:30 p.m. on the same day they are removed. The intended user must sign the CBI Control Record when the file is checked out.

The individual who signs out a confidential file is responsible for its safekeeping. The file must not be left unattended. The information must not be disclosed to any non-authorized personnel.

Storage procedures for CAA CBI by an authorized representative of EPA (see Section d. below) must be, at a minimum, as secure as those established for EPA offices within OAQPS. Whenever CBI is removed from the EPA files to be transmitted to an authorized representative, notation is placed in the file indicating what information was transmitted, the date, and the recipient. The authorized representative returns a signed receipt of the DCO.

d. Access to CAA Confidential Business Information

Only authorized EPA employees may open and distribute CAA CBI.

Only employees who require and are authorized access to CAA CBI in the performance of their official duties are permitted to review documents and, upon receiving a confidential document, must sign and date the form shown in Attachment A to certify their access to the document.

The CBI files are controlled by the OD, ESD, and managed by an authorized Federal employee. Access to the information is limited to those persons having a need to know in performing their official duties.

The Group Leader having primary interest in the CAA CBI provides a memorandum for the record designating those personnel who are authorized to use CBI in a program under which CBI can be requested. No person is automatically entitled to access based solely on grade, position, or security clearance. The names of persons granted access to CAA CBI are placed on the Clean Air Act CBI access list, which indicates the "specific" CBI each person is permitted to see. The Access List is reviewed and updated periodically.

Companies under contract to perform work for the EPA may be designated authorized representatives of EPA if such designation is necessary in order for the contractor to carry out the work required by the contract. As authorized representatives, contractors may be granted access to CAA CBI by the Director, ESD. The following conditions apply when it has been determined that disclosure is necessary:

(1) The contractor designated as a representative and its employees (a) may use such confidential information only for the purpose of carrying out the work required, (b) must refrain from disclosing the information to anyone other than EPA without having received from EPA prior written approval of each affected business or of an EPA legal office, and (c) must return to EPA all copies of the information (and any abstracts or excerpts therefrom) upon request or whenever the information is no longer required for the performance of the work.

(2) The authorized contractor designated as a representative must obtain a written agreement from each of its employees who will have access to the information. A copy of each employee agreement (Attachment B) must be furnished to EPA before access is permitted.

(3) The contractor designated as an authorized representative must agree that the conditions in the contract concerning the use and disclosure of CAA CBI are included for the benefit of, and shall be enforceable by, both EPA and any affected business having a proprietary interest in the information.

Information may be released to or accessed by EPA employees other than OAQPS employees only upon approval of the Director, ESD.

Requests for CAA CBI from other Federal agencies, Congress, the Comptroller General, Courts, etc., are processed by the OD, ESD in accordance with 40 CFR 2, Subpart B.

Requests under the Freedom of Information Act are handled in accordance with 40 CFR 2, Subpart A. The Freedom of Information Act Coordinator must be consulted prior to responding to any request for information if a claim of confidentiality has been asserted or if there is reason to believe that a claim might be made if the business knew release was intended.

e. **Use and Disclosure of CAA Confidential Business Information**

The CAA CBI as defined may not be used in publications, supporting document, memoranda, etc., that become a part of the public domain, except as provided for in 40 CFR 2 Subpart B.

The CAA CBI may not be summarized without the approval of the Group Leader responsible for the CAA CBI. Any authorized reproductions must be logged into the CAA CBI document tracking system and treated according to the same procedures applicable to the original confidential material.

The EPA generated documents or material, or extracts of information containing CAA CBI, must be stamped "Subject to Confidentiality Claim" and a cover sheet must be attached to identify the material as CBI.

f. Handling of Other Information

Reports, memoranda, documents, etc., prepared by EPA or its authorized representatives are not normally circulated outside EPA for comment or review prior to publication except in such cases as described above (6.d.3) wherein CBI is expressly included. However, because industrial-data-gathering visits, plant inspections, and source testing can involve inadvertent receipt of CAA CBI, it is the policy of OAQPS to protect all parties involved in the following manner.

Prior to or at the inception of a plant inspection, data-gathering visit, or source test, EPA or its authorized representative discusses with a responsible industry official the information sought, how it is to be used, and how it is to be protected. A copy of this summary is usually provided to the industry official being consulted.

Following an inspection, visit, or test, a trip report is prepared to include, as practicable, all information received by EPA or its authorized representative during the visit or test. The report may be prepared by either EPA or its authorized representative. The draft of that report is clearly identified, on an attached, colored cover sheet as "Confidential Pending Determination." A second copy of the draft trip report is forwarded by EPA to the responsible industry official for review. The responsible industry official is requested by cover letter to review the report, clearly mark any information considered to be confidential, and return the marked-up report to the responsible EPA employee within 2 weeks of receipt. The original draft is kept in the CBI "pending" file until the marked-up copy is returned by the business firm.

When the reviewed copy of the report, as marked by the responsible plant official, is received by EPA, information designated confidential is placed in the CBI files as described above. The original draft of the trip report is edited to delete the confidential information and to accommodate technical changes, and the trip report is issued.

2 Attachments

Attachment A

CAA CONFIDENTIAL BUSINESS INFORMATION CONTROL RECORD

DATE RECEIVED:	RESPONSIBLE BRANCH:	CONTROL NUMBER:
DATE OF DOCUMENT:	DOCUMENT AUTHOR:	
DESCRIPTION (Providing organization, title, subject, number of copies and number of pages)		
RETURN DATE:	DESTRUCTION DATE:	INITIALS:

Each person given access to this document must fill in the information below

CHECK-OUT			CHECK-IN		
SIGNATURE	DATE	TIME	SIGNATURE	DATE	TIME

CAA CBI Form 1 (Rev. 6/95)

1. AUTHORIZATION FOR ACCESS TO CAA CBI CONTRACTOR EMPLOYEES	
FULL NAME	POSITION
SSN	CONTRACTOR

It is the responsibility of each Authorizing Official* to ensure that the employees under his/her supervision who require access to CAA CBI:

1. Sign the Confidentiality Agreement for EPA Employees
2. Are fully informed regarding their security responsibilities for CAA CBI.
3. Obtain access only to that CAA CBI required to perform their official duties.

SIGNATURE OF AUTHORIZATION OFFICIAL*	TELEPHONE NO.	DATE
TITLE	LOCATION	

II. CONFIDENTIALITY AGREEMENT FOR CONTRACTOR EMPLOYEES

I understand that I will have access to certain Confidential Business Information submitted to EPA or its authorized representatives under the Clean Air Act (CAA). This access is granted in accordance with my official duties as an employee of the Environmental Protection Agency contractor.

I understand that CAA CBI may not be disclosed except as authorized by CAA and Agency regulations. I understand that I am liable for a possible fine of up to $1,000 and/or imprisonment for up to 1 year if I willfully disclose CAA CBI to any person not authorized to receive it. In addition I understand that I may be subject to disciplinary action for violation of this agreement with penalties ranging up to and including dismissal.

I agree that I will treat any CAA CBI furnished to me as confidential and that I will follow the procedures set forth in the CAA Confidential Business Information Security Manual.

I have read and understand these procedures.

SIGNATURE	TELEPHONE NO.	DATE

III. HAVING COMPLETE REQUIRED TRAINING AND PASSED REQUIRED TEST, THE ABOVE-NAMED EMPLOYEE IS HEREBY AUTHORIZED TO HAVE ACCESS TO CAA CBI.

SIGNATURE CONTRACTOR/DCO	TELEPHONE NO.	DATE

EXHIBIT "B"

Gannon Coal Yard Permit
Issued February 11, 1999

Lawton Chiles
Governor

Department of Environmental Protection

Southwest District
3804 Coconut Palm Drive
Tampa, Florida 33619

Virginia B. Wetherell
Secretary

NOTICE OF PERMIT ISSUANCE

In the matter of an
Application for Permit by:

Mr. Gregory M. Nelson
Mgr., Environmental Planning
Tampa Electric Company
6944 U.S. Highway 41 North
Apollo Beach, FL 33572-9200 /

DEP File No.: 0570040-006-AC
County: Hillsborough

Enclosed is Permit Number 0570040-006-AC for the construction/modification of the Gannon Station Fuel Yard, issued pursuant to Section 403.087, Florida Statutes.

Any party to this Order (permit) has the right to seek judicial review of the permit pursuant to Section 120.68, Florida Statutes, by the filing of a Notice of Appeal pursuant to Rule 9.110, Florida Rules of Appellate Procedure, with the Clerk of the Department in the Office of General Counsel, Douglas Building, Mail Station 35, 3900 Commonwealth Boulevard, Tallahassee, Florida 32399-3000; and by filing a copy of the Notice of Appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The Notice of Appeal must be filed within 30 days from the date this Notice is filed with the Clerk of the Department.

Executed in Tampa, Florida.

Sincerely,

George W. Richardson
Air Permitting Engineer
Southwest District

cc: Mirza Baig, EPA
T.W. Davis, P.E., Environmental Consulting & Technology, Inc.
Rick Kirby, EPCHC
AL Linero, DEP

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this NOTICE OF PERMIT ISSUANCE was sent to the addressee by certified mail and all copies were sent by regular mail before the close of business on FEB 09 1999 to the listed persons, unless otherwise noted.

Clerk Stamp

FILING AND ACKNOWLEDGEMENT FILED, on this date, pursuant to Section 120.52(7), Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

(Clerk) FEB 09 1999 (Date)

ATTACHMENT - GENERAL CONDITIONS

1. The terms, conditions, requirements, limitations and restrictions set forth in this permit, are "Permit Conditions" and are binding and enforceable pursuant to Sections 403.141, 403.727, or 403.859 through 403.861, Florida.Statutes (F.S.). The permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions.

2. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department.

3. As provided in subsections 403.087(6) and 403.722(5), F.S., the issuance of this permit does not convey any vested rights or any exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state, or local laws or regulations. This permit is not a waiver of or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in this permit.

4. Not applicable to Air Permits.

5. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefore; nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.

6. The permittee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed and used by the permittee to achieve compliance with the conditions of this permit, are required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.

7. The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law and at reasonable times, access to the premises where the permitted activity is located or conducted to:

a. Have access to and copy any records that must be kept under conditions of the permit;

GENERAL CONDITIONS:

b. Inspect the facility, equipment, practices, or operations regulated or required under this permit; and

c. Sample or monitor any substances or parameters at any location reasonable necessary to assure compliance with this permit or Department rules.

Reasonable time may depend on the nature of the concern being investigated.

8. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately provide the Department with the following information:

a. A description of and cause of noncompliance; and

b. The period of noncompliance, including dates and times; or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to educe, eliminate, and prevent recurrence of the noncompliance. The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the Department for penalties or for revocation of this permit.

9. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source which are submitted to the Department may be used by the Department as evidence in any enforcement case involving the permitted source arising under the Florida Statutes or Department rules, except where such use is prescribed by Section 403.111 and 403.73, F.S. Such evidence shall only be used to the extent it is consistent with the Florida Rules of Civil Procedure and appropriate evidentiary rules.

10. The permittee agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance; provided, however, the permittee does not waive any other rights granted by Florida Statutes or Department rules.

11. This permit is transferable only upon Department approval in accordance with Rule 62-4.120 and 62-730.300 F.A.C., as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department.

12. This permit or a copy thereof shall be kept at the work site of the permitted activity.

GENERAL CONDITIONS:

13. This permit also constitutes:

( ) Determination of Best Available Control Technology (BACT)
( ) Determination of Prevention of Significant Deterioration (PSD)
( ) Compliance with New Source Performance Standards (NSPS)

14. The permittee shall comply with the following:

a. Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department.

b. The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application for this permit. These materials shall be retained at least three years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule.

c. Records of monitoring information shall include:

1. the date, exact place, and time of sampling or measurements;
2. the person responsible for performing the sampling or measurements;
3. the dates analyses were performed;
4. the person responsible for performing the analyses;
5. the analytical techniques or methods used;
6. the results of such analyses.

15. When requested by the Department, the permittee shall within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware the relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.

16. Not applicable to Air Permits.

17. Not applicable to Air Permits.

Department of
Envirc nmental Protection

Southwest District
3804 Coconut Palm Drive
Tampa, Florida 33619

Lawton Chiles
Governor

Virginia B. Wetherell
Secretary

PERMITTEE:

Tampa Electric Company
P.O. Box 111
Tampa, FL 33601-0111

Permit No: 0570040-006-AC
County: Hillsborough
Effective Date: 02/09/1999
Expiration Date: 10/15/2000
Project: Gannon Station
Fuel Yard

This permit is issued under the provisions of Chapter 403, Florida Statutes, and Florida Administrative Code Rules 62-4, 62-200 through 62-297. The above named permittee is hereby authorized to perform the work or operate the facility shown on the application and approved drawing(s), plans and other documents, attached hereto or on file with the Department and made a part of hereof and specifically described as follows:

For the construction/modification of the F.J. Gannon Station fuel yard which serves Boilers No. 1.through 6. This modification is to increase the fuel yard coal throughput from 2.85 to 3.3 million tons per year. For the construction of the auxiliary fuel unloading and handling system to handle up to 362,025 tpy & 400 tph of alternate fuel (i.e., Tire Derived Fuel (TDF), Wood Derived Fuel (WDF), etc). This permit does not authorize the burning of alternate fuels; it only authorizes their handling at the fuel yard. Yard activities include barge (East and West) and railcar unloading of coal, and/or flux, truck unloading of limestone or iron ore, and transfer and storage of these materials. The iron ore is shipped, stored and handled in the same manner as limestone. A description of the fuel yard parameters, etc. are included on Pages 2 and 3.

The modifications at the fuel yard are considered to be a Pollution Control Project (PCP) for the reduction of NOx, as described in Attachment 1 and agreed to by TECO in their 12/23/97 Title IV Acid Rain Phase II NOx Control Plan. In order to maintain the status of this modification as a PCP, i.e., allowing "small" increases in other pollutants, this permit includes limits on heat input and emission rates at the boilers.

Activities at the fuel yard prior to the issuance of this permit may have resulted in violations subject to enforcement. Nothing in this permit shall be construed as ratifying or validating those prior activities or changing the situation relative to potential enforcement.

Location: Port Sutton Road, Port Sutton, Tampa

UTM: 17-360.0 E 3087.5 N Facility ID No.: 0570040 Emission Unit ID No: 008

Replaces Permit No.: AO29-216480

PERMITTEE:
Tampa Electric Company

PERMIT NO: 0570040-006-AC
Project: Gannon Station Fuel Yard

Emission Point Description	Emission Point ID	Throughput (tph)	Control Method*	Efficiency
Barge to clamshell	FH-002	2,300	DS	95%
Barge to continuous unloader	FH-003	2,300	DS	95%
Clamshell to barge unloading hopper	FH-005	2,300	DS	95%
Continuous unloader to conveyor A	FH-006	2,300	**DS	95%
Conveyor A to continuous feeder	FH-007	2,300	DS/E	95%
Barge unloading hopper to conveyor B	FH-009	2,300	**DS/E	95%
Conveyor B to conveyor C	FH-011	2,300	DS/E	90%
Conveyor C to conveyors D1, D2	FH-012	2,300	**DS/E	90%
Railcar to rail unloading hopper	FH-013	2,300	DS/E	95%
Rail unloading hopper to conveyor L	FH-014	2,300	**DS/E	95%
Conveyor L to conveyors D1, D2	FH-015	2,300	**DS/E	95%
Conveyor D1 to conveyor M1	FH-016	2,300	**DS/E	90%
Conveyor D2 to conveyor M2	FH-017	2,300	**DS/E	90%
Conveyor M1 to conveyor E1	FH-018	2,300	**DS/E	90%
Conveyor M2 to conveyor E2	FH-019	2,300	**DS/E	90%
Conveyor E1 to fuel storage pile	FH-020	2,300	DS	70%
Conveyor E2 to fuel storage pile	FH-021	2,300	DS	70%
Fuel storage pile	FH-022/023		DS	50%
Underground reclaim to conveyor F1	FH-024	1,600	DS/E	85%
Underground reclaim to conveyor F4	FH-025	1,600	DS/E	85%
Underground reclaim to conveyor F3	FH-026	1,600	DS/E	85%
Underground reclaim to conveyor F2	FH-027	1,600	DS/E	85%
Conveyor F1 to conveyors G1, G2	FH-028	1,600	**DS/E	90%
Conveyor F4 to conveyors G1, G2	FH-029	1,600	**DS/E	90%
Conveyor F3 to conveyors G1, G2	FH-030	1,600	**DS/E	90%
Conveyor F2 to conveyors G1, G2	FH-031	1,600	**DS/E	90%
Conveyor G1 to crushers	FH-032	800	DS/E	90%
Conveyor G2 to crushers	FH-033	800	DS/E	90%
Crushers to conveyor H1	FH-034	800	**DS/E	90%
Crushers to conveyor H2	FH-035	800	**DS/E	90%
Conveyor H1 to bunkering	FH-036/041		Rotoclones	75%
Conveyor H2 to bunkering	FH-036/041		Rotoclones	75%

Conveyor D1 to conveyors G1, G2	FH-042	2,300	**DS/E	90%
Conveyor D2 to conveyors G1, G2	FH-043	2,300	**DS/E	90%
Dozer operations of storage piles	FH-044		DS	50%
Truck unloading - auxiliary	AH-001	400	DS	85%
Storage pile to auxiliary hopper	AH-002	400	DS/E	90%
Auxiliary hopper to conveyor T	AH-003	400	DS/E	90%
Conveyor T to conveyor U	AH-004	400	DS/E	90%
Conveyor U to conveyors G1, G2	AH-005	400	DS/E	90%

**Dust Suppressant Application Point

* DS=Dust Suppressant E=Enclosure

SPECIFIC CONDITIONS:

1. A part of this permit is the attached 15 General Conditions. [Rule 62-4.160, F.A.C.].

2. Attachment No. 1 is made a part of this permit.

3. In order to maintain the status of this modification as a PCP, the following limits shall apply; on a 12 month rolling average basis:

   a. Starting January 1, 1999 total combined coal heat input to boilers 1 through 6 shall not exceed 69.9×10^6 mmBtu/year.
   b. Starting January 1, 1999, SO_2 total combined emissions from boilers 1 through 6 shall not exceed 66,400 tons per year (tpy).
   c. Starting January 1, 1999, NOx total combined emissions from boilers 1 through 6 shall not exceed 33,100 tons per year, and starting January 1, 2000, NOx total combined emissions from boilers 1 through 6 shall not exceed 31,800 tons per year.
   d. Starting January 1, 1999, and continuing until superceded by the results of the Precipitator Optimization Study (Reference Specific Condition No. 21) PM total combined emissions from boilers 1 through 6 shall not exceed 1,940 tons per year.

   [Rule 62-212.400(2)(a)2., F.A.C.].

4. The Gannon Station fuel yard is permitted to operate continuously, 8,760 hours/year. [Rules 62-4.160(2) and 62-210.200, F.A.C., P.T.E.].

5. The coal throughput shall not exceed 3,304,646 tons per 12 consecutive month period. The auxiliary fuel, consisting of TDF and WDF, throughput shall not exceed 362,025 tons per 12 consecutive month period. [application received 6/3/97 and addendum received 6/98, and Rules 62-4.160(2) and 62-210.200, F.A.C.].

Specific Condition No. 5. continued

5. a. The primary NOx control strategy for the facility is the combustion of high moisture, low BTU coal, and is the basis of the Department's determination that this fuelyard throughput increase qualifies for the PSD exemption as a Pollution Control Project (PCP). If the permittee chooses an alternate NOx control strategy, then this project loses its PCP status and the fuelyard throughput reverts to its previous limitation of 2.85 million tons in any 12 consecutive month period. Use of the two new coal crushers, or any other physical changes made to accommodate this project, would then be prohibited until the permittee submits a construction permit application and receives a Department permit addressing their use.

6. Dust suppressants shall be applied to the fuel either prior to or at the time of delivery and at all emission points where specified on Pages 2 and 3 as necessary to control fugitive PM emissions as specified in Specific Condition No. 8. For the application of dust suppressants prior to delivery, TECO shall keep monthly records of 1) the amount of dust suppressant applied for each type and amount of coal delivered, and 2) type of dust suppressant used (e. g., MSD sheets, product name). [application received 7/3/97].

7. All controls associated with the transfer points (i.e., the grab buckets, the windshield, the enclosures and the wet spray systems) shall be maintained to the extent that the capture efficiencies referenced on Pages 2 and 3 will be achieved [Permit AO29-216480].

8. Visible emissions generated by fugitive or unconfined particulate matter from fuel handling systems and storage areas shall not exceed 5% opacity. [Construction Permit AC29-152987].

9. A thirty (30) minute visible emissions test shall be performed at the following material transfer operations at 12 month intervals on or within 90 days prior to December 31. One copy of each test data shall be submitted to both the Environmental Protection Commission of Hillsborough County and the Florida Department of Environmental Protection [Rule 62-297.310(4(a)2., F.A.C.].

A) The west bucket to the west hopper
B) The railcar to the hopper
C) Either the conveyor E1 or E2 to their respective stockpiles where the initial free fall is at least 30 feet
D) The hammermill crusher to either the conveyor H1 or H2
E) The conveyors D1 or D2 to either conveyor G1 or G2
F) Either the conveyor J1 or J2 to their respective bunkers

10. Compliance with the emission limitation of Specific Condition No. 8 shall be determined using EPA Method 9. The minimum requirements for stack sampling facilities, source sampling and reporting shall be in accordance with Rule 62-297, F.A.C. [Rules 62-204.800, 62-297.310(7)(a)4. and 62-297.400, F.A.C.].

11. All compliance testing shall be conducted during normal operation and at the maximum material (including limestone or iron ore where applicable) transfer rate attainable during the test period. Actual material handling rates will be determined using the totalizer readings obtained from scales located on C, L, and H conveyors. The readings from these scales will be recorded at the start and finish of the visible emissions test. The difference between the values recorded divided by the test duration will be the value used to represent the material handling rate. Alternatively, values from the circular chart recorders located in the coal field control room will be used in the event a problem with a scale totalizer arises. The test results shall indicate if iron ore has been included in the corresponding material transfer rate. Failure to include the actual process or production rate in the results may invalidate the test. [Rule 62-4.070 (3), F.A.C. and Supplement to Application, December 18, 1992]

12. Compliance with the limitations in Specific Condition No. 3 shall be determined on a monthly basis. Heat input shall be determined from the actual fuel input to the boilers and its corresponding heat content, or CEM data, while the SO_2 and the NOx emissions shall be derived from the CEM data. PM emissions shall be based on the most recent stack tests, and TECO shall have the option of conducting additional tests, in addition to those specified in the current boiler operating permit(s) per the conditions in the current boiler operating permit(s).

13. Water sprays or chemical wetting agents and stabilizers are acceptable methods to be used on coal storage piles as necessary to maintain an opacity of less than or equal to 5%. Other appropriate methods may be applied to maintain this opacity, after they are approved by the Department. [AC29-114676].

14. Should the Department have reason to believe the visible emission standards are not being met, the Department may require that compliance with the visible emission standards be demonstrated by testing in accordance with Rule 62-297, F.A.C.

15. Test Reports:

a) The owner or operator of an emission unit for which a compliance test is required shall file a report with both the Environmental Protection Commission of Hillsborough County and the Air Compliance Section of the Southwest District Office of the Department on the results of each such test.

b) The required test report shall be filed as soon as practical but no later than 45 days after the last test is completed. [Rule 62-297.310(8), F.A.C.].

16. The permittee shall notify the Environmental Protection Commission of Hillsborough County at least 15 days prior to the date on which each formal compliance test is to begin of the date, time, and place of each such test, the test contact person who will be responsible for coordinating and having such test conducted. [Rule 62-297.310(7)(a)9., F.A.C.].

17. Operation and Maintenance Plan for Particulate Control:

(A) Process Parameters:

1. For all sources covered under this permit, permitted operation schedule: 24 hrs./day, 7 days/wk.; 52 wks./yr.
2. Equipment Data:
   Conveyor Hoods: Corrugated Aluminum
   Transfer Point Enclosures: Carbon Steel
3. Wet Dust Suppression:
   Manufacturer: Martin Marietta

(B) Inspection and Maintenance Procedures:

The fuel yard particulate control equipment receives regular preventative maintenance as follows:

Conveyor Enclosures:

1. Daily random visual inspections of conveyor hoods.
2. Daily random visual inspections of the transfer points chute work.

Dust Suppression System:

1. Quarterly inspection of system for water leaks.
2. Quarterly inspection of spray nozzles.

The pumps, tanks, etc., that make-up the dust suppression system undergo normal maintenance including lubrication, flushing, and draining. Should these procedures indicate repairs are necessary, maintenance job requests are initiated. All records are maintained for a minimum of five years.
[Rule 62-296.700, F.A.C. and Application for Renewal, July 16, 1992].

18. All reasonable precautions shall be taken to prevent and control generation of unconfined emissions of particulate matter in accordance with the provision in Rule 62-296.320, F.A.C. These provisions are applicable to any source, including, but not limited to, vehicular movement, transportation of materials, construction, alterations, demolition or wrecking, or industrial related activities such as loading, unloading, storing and handling. Reasonable precautions include but are not limited to the following:

A. Chemical or water application to:
   1. Unpaved roads
   2. Unpaved yard areas
B. Paving and maintenance of roads, parking areas, and yards
C. Landscaping or planting of vegetation
D. Confining abrasive blasting where possible
E. Other techniques, as necessary

19. Submit to the Air Management Division of the Environmental Protection Commission of Hillsborough County and the and the Air Compliance Section of the Southwest District Office of the Department each calendar year on or before March 1, completed DEP Form 62-210.900(4), "Annual Operating Report for Air Pollutant Emitting Facility," for the preceding calendar year. [Rules 62-210.370(2), F.A.C.].

Issuance of this permit does not relieve the permittee from complying with applicable emission limiting standards or other requirements of Rules 62-200 through 297, or any other requirements under federal, state or local law. [Rule 62-200.300, F.A.C.].

21. As part of the PCP, an Electrostatic Precipitator Optimization Study shall be conducted for all six units at the facility within six months of the permit being issued. A report shall be due at that point and submitted to both the Environmental Protection Commission of Hillsborough County (EPC) and the Department. The study shall be subject to EPC and Department approval and full implementation of the study shall be completed within twelve months of the permit issue date, or within a period mutually agreed to by the permittee and the EPC. The permittee's application to revise their Title V operating permit shall include verifiable and enforceable operating parameters for the ESPs which reflect the results of the optimization study.

22. The permittee shall provide timely notification to the Environmental Protection Commission of Hillsborough County and the and the Air Permitting Section of the Southwest District Office of the Department prior to implementing any changes that may result in a modification to this permit. The changes may include, but are not limited to, the following, and may also require prior authorization before implementation [Rules 62-210.300 and 62-4.070 (3), F.A.C.]:

A) Alteration or replacement of any equipment* or parameter listed on Pages 2 and 3 of this permit.
B) Installation or addition of any equipment* which is a source of air pollution.
C) Any changes in the method of operation, raw materials, products or fuels.

* Not applicable to normal maintenance and repairs, and vehicles used for transporting material.

23. After construction/modification is complete, TECO shall make proper application to revise the associated final Title V permit (or to revise the application for a Title V permit, as appropriate) [Rule 62-4.090(1), F.A.C.].

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION

W.C. Thomas, P.E.
Air Program Administrator
Southwest District

Attachment 1

PRELIMINARY DETERMINATION
POLLUTION CONTROL PROJECT AND
PSD APPLICABILITY REVIEW
TAMPA ELECTRIC GANNON COAL PROJECT

BACKGROUND

Tampa Electric Company (TEC) operates the Gannon power plant and coal yard in Tampa, Hillsborough County. In June, 1997, TEC applied to increase the permitted coal throughput at the coal yard from 2.85 million tons per year (mmTPY) to 3.77 mmTPY. An addendum submitted in June, 1998 revised the throughput requirement to 3.305 mmTPY. The reason for the increase is that TEC has been progressively using more high moisture/low heat content coals to comply with nitrogen oxides (NO_X) requirements for Phase II units pursuant to the Title IV Acid Rain requirements of the Clean Air Act.

Unless a throughput increase is permitted, use of the lower heat content coals will limit the electrical power production of the Gannon Plant compared to use of high heat content coal. Historically this has not been a problem since the coalyard throughput limit was compatible with use of high heat content fuel and demand. However, with growing electrical demand, lower state-wide electrical reserve capacity, and use of low heat content coal, the throughput limit has become an actual restriction on the overall plant availability. This maximum availability of the plant is approximately 66 percent when burning historical coals, but would be reduced to 57 percent if high moisture, low Btu coals are used while the mass throughput limit is maintained.

TEC maintains that "the coalyard and steam generating units are separate entities with respect to existing operating permits and that the fuel yard permit conditions apply only to the fuel yard, not to the entire facility." Under this view, the coalyard throughput increase would be permitted separately without regard to any emissions changes that might occur from the boilers. Without conceding that the coalyard and steam generating unit permit conditions are mutually applicable, TEC has presented information in subsequent submittals in support of its contention that the project is exempt from the rules for the Prevention of Significant Deterioration (PSD) as a Pollution Control Project."

REGULATIONS

Presuming that the coalyard and the steam units comprise a single facility, an increase in coalyard throughput would result in emissions increases of at least nitrogen oxides (NO_X), sulfur dioxide (SO_2), and particulate matter (PM/PM_{10}). There could also be increases in carbon monoxide (CO) and sulfuric acid mist (SAM).

The change in the coalyard throughput limit is a relaxation of a federally enforceable limitation on the capacity of the facility and is therefore a modification. As such, the PSD requirements in Rule 62-212.400, F.A.C. may apply as described in Rule 62-212.400(2)(g), F.A.C. Modifications to Major Facilities are those that result in a *significant net emissions increase* as described in Rule 62-212.400(2)(d)4.a(ii) and 62-212.400(2), F.A.C.

Per Rule 62-212.400(5)(c), F.A.C.:

> *The proposed facility or modification shall apply Best Available Control Technology (BACT) for each pollutant subject to preconstruction review requirements as set forth in Rule 62-212.400(2)(f), F.A.C.*

It is obvious that the definitions and applicability of facility, modification, and any exemptions are of key importance in this review.

A pollution control project (PCP) is defined at 40CFR52.21(b)(32) as:

> *Any activity or project undertaken at an existing electric steam generating unit for purposes of reducing emissions from such unit. Such activities and projects are limited to:*
>
> *(1) The installation of conventional or innovative pollution control technology, including but not limited to advanced flue gas desulfurization, sorbent injection for sulfur dioxide control and nitrogen oxides control and electrostatic precipitators;*
>
> *(2) An activity or project to accommodate switching to a fuel which is less polluting than the fuel in use prior to the activity or project, including, but not limited to natural gas or coal reburning, or the co-firing of natural gas and other fuel for the purpose of controlling emissions;*
>
> *(3) A permanent clean coal technology demonstration project conducted under title II, Section 101(d) of the Further Continuing Appropriations Act of 1985.....; or*
>
> *(4) A permanent clean coal technology demonstration project that constitutes a repowering project.*

The above definition is not specifically listed in the State Rules in Chapter 62, F.A.C. However it is obvious that it is the intent of the State to abide by the Federal definition. Per Rule 62-212.400(2)(a)2., F.A.C., Pollution Control Project Exemption:

> *A pollution control project that is being added, replaced, or used at an existing electric utility steam generating unit and that meets the requirements of 40CFR52.21(b)(2)(iii)(h) shall not be subject to the preconstruction requirements of this rule.*

According to **40CFR52.21(b)(2)(iii)(h)**, one of the exemptions from review for PSD is:

> *The addition, replacement or use of a pollution control project at an existing electric utility steam generating unit, unless the Administrator determines such addition, replacement, or use renders the unit less environmentally beneficial, or except (1) When the Administrator has reason to believe that the pollution control project would result in a significant net increase in representative actual annual emissions of any criteria pollutant over levels used for that source in the most recent air quality impact analysis in the area conducted for the purpose of title I if any, and (2) The Administrator determines the increase will cause or contribute to a violation of any national ambient air quality standard or PSD increment, or visibility limitation.*

A fuel switch is not actually included in the definition of PCP nor is it listed as an activity in support of a PCP. However, it is not excluded. Furthermore, according to the EPA rule analysis at FR Vol. 57, No. 140, Pages 32320-32321:

> *"Thus EPA is today adopting revisions to its PSD and nonattainment regulations for the addition, replacement or use at an electric steam generating unit of any system or device whose **primary function is the reduction of pollutants** (including the switching to a less-polluting fuel **where the primary purpose of the switch is the reduction of air pollutants).**"*

If it is established that the primary purpose of the switch is to reduce emissions, then it can be evaluated for qualification as a PCP. Even if there is an increase in a PSD pollutant associated with the project, it is not necessarily precluded from consideration as a PCP. Per the EPA analysis:

> *"Several commentors pointed out that a pollution control project that reduces one pollutant should not be allowed to increase emissions of another pollutant if that increase will cause or exacerbate a different pollution problem..... **Although a pollution control project could theoretically cause a small collateral increase in some emissions, it will substantially reduce emissions of other pollutants.** In recognition of this, **the rule provides for a case-by-case assessment** of the pollution control project's net emissions and overall impact on the environment."*

Therefore, the criteria which the Department must follow are clear. **The collateral increase in any PSD pollutant should be small and the decrease in one or more PSD pollutants should be substantial. The increases in any pollutant should not cause or contribute to violation of an ambient air quality standard or PSD increment.**

DESCRIPTION OF PROJECT

The project is the use of Powder River Basin (PRB) coal in Units 1-4. According to TEC, there has been a marked reduction in NO_X emissions from using PRB coal at Units 1-4. This has resulted in emissions reductions approaching the "Phase II" NO_X limit of 0.86 pounds per million Btu heat input (lb/mmBtu) at Units 3 and 4 without physical modification of the wet bottom cyclone units. TEC has also experimented with high moisture/low heat content Indonesian coal. For reference following is a comparison of various coals used at the Gannon Plant.

Table 1 - Comparison of 1994 TEC Gannon Coal with 1997 Indonesian and PRB Coals

	Gannon Coal[1]	Indonesian Coal[2]	PRB Coal[3]
Sulfur (%)	1.13	0.35	0.43
Heating Value (Btu/lb)	12,773	9,614	8,720
Ash (%)	6.99	1.44	5.29
Moisture (%)	<10	>25	31[4]

The choice of dates and data for comparison purposes was made by the Department and not TEC. In 1993, TEC imported no Indonesian coal. Receipts of Indonesian coal were 0.147, 0.349, 0.808, and 0.741 mmTPY for 1994, 95, 96, and 97, respectively. In 1994 use of PRB coal by TEC was insignificant. In 1996 and 1997 receipts of PRB coal by TEC (presumably for use at Gannon) were 0.591 and 0.971 mmTPY respectively. The above data indicate that:

1. Use of PRB and Indonesian coals is a recent and increasing practice by TEC.
2. PRB and Indonesian coals have lower sulfur content and lower ash content indicating at least an initial potential for reductions of some pollutants.
3. PRB and Indonesian coals have lower heat content indicating that it is necessary to use more of these coals to achieve the same heat input or electrical power production as achieved with lesser quantities of historical coal used at TEC Gannon.
4. PRB and Indonesian coals have higher moisture content. If NO_X emissions are reduced by the higher moisture content (and presumably some adjustments in combustion practices), then PRB and Indonesian coals have a potential for reductions in NO_X emissions.

EFFECT OF HIGH MOISTURE COAL ON NO_X EMISSIONS

Following the establishment of the above criteria, the Department requested on August 10, 1998 that TEC provide reasonable assurance that high moisture coals do in fact result in NO_X reductions.[5] The Department specifically requested the Sargent & Lundy[6] study and any other information that TEC has to indicate that the actual reason high moisture coal will be used is to reduce NO_X emissions.

TEC promptly provided the Sargent & Lundy Report on August 11 as well as a report submitted to the Public Service Commission (PSC) on NO_X controls[7], a Memorandum of Understanding (MOU) with Hillsborough County on NO_X reductions[8], and an internal summary of NO_X compliance activities[9].

According to the 1998 Compliance Activities document:

> *TEC's cyclone units have shown a reduction in NO_X close to the rule requirements as a result of burning high moisture western coals. However, there are significant penalties as a result and TEC is continuing to investigate other reasonable options.....To continually use this fuel will require changes in the coal preparation to reduce operating difficulties. This work will be complete in 1999.*

According to the MOU:

> *Whereas the Tampa Electric Company has already taken the initiative to reduce the nitrogen oxide emissions from some of the individual affected units by more than 20 percent, resulting in an overall reduction of over 10,000 tons from the 1995 levels;*
> *Whereas the EPC believes the modifications and fuel switching proposed by the Tampa Electric Company will address the secondary environmental impacts associated with nitrogen oxides emissions in the Tampa Bay area.....*

Regarding Gannon 1-4, the May 1997 document submitted to the PSC stated:

A blend of Powder River Basin (PRB) and Western Kentucky coal has been used in the cyclone units. The PRB is a low BTU, high moisture, low sulfur coal. The original blend of 75% PRB has been reduced to 70% in order to minimize the problems associated with this fuel. Problems associated with this coal blend include: load restrictions due to low BTU value of the PRB, high fly ash LOI [loss on ignition], slag tank problems (tapping and explosions), fuel switching problems and fires due to spontaneous combustion of the PRB. NO_X was reduced to the 0.8-0.95 lb./MMBTU for a short period of time. It has not been demonstrated that a higher percentage of PRB in the blend will further lower the NO_X emissions rate.

A series of solutions to the problems were described. Of note is one that clearly associates the purpose of the crusher/grinder project to the problems caused by the use of PRB coal. If the use of high moisture coal is a PCP, then the crusher/grinder project can be a project in support of a PCP. Specifically the document states:

Fly ash LOI appears to be controllable by improving the grind of the coal. To meet the required grind, an increase in coalfield crusher operation and maintenance of up to $600,000 per year may be necessary along with probable crusher upgrades which could cost up to $2,500,000.

The summary of conclusions in the document to the PSC states that:

*TEC has concluded that combustion modification of its Riley Turbo Furnace boilers (Gannon Units 5 and 6) can achieve significant reductions in NO_X emissions but only at the expense of incurring significant capital and O&M costs ..... Furthermore, TEC has concluded that **significant NO_X emission reductions on its cyclone boilers(Gannon Units 1-4) can only be reasonably obtained through fuel switching to a low btu, high moisture fuel** with the resulting expense and risk of sole sourcing these units fuel supply.*

An independent corroboration of the possible reduction of NO_X by use of PRB coal at the Gannon Plant exists in an inspection report.[10] The letter states:

*.....**NO_X emissions** from two cyclone units, at or **below** the proposed EPA limits of 0.94 lb/mmBtu (operation was near full load)..... During my visit I noted that these units had recently **switched to Powder River Basin coal.** During a visit on August 16, a representative from Hillsborough County noted that NO_X emissions from the two wet bottom turbo units [Units 5 and 6] at the Gannon station were below the proposed levels of 0.86 lb/mmBtu.....Can you confirm if fuel switching for SO_2 allowances have a co-benefit of reducing NO_X?*

It is clear from the record that:

1. TEC has a recent history of using the high moisture fuels
2. NO_X reduction through use of high moisture, low Btu fuels has been demonstrated.
3. The use of high moisture, low Btu fuels is in fact the primary strategy employed by TEC at Gannon Units 3 and 4 to comply with the requirements of the Phase II Rules for NO_X control pursuant to Title IV, Acid Rain, Clean Air Act.
4. Additional projects are needed to facilitate the switch to low Btu, high moisture coals.

OTHER CONSIDERATIONS

Based on the application and initial information submitted by TEC, the EPCHC and some Department staff expressed various concerns about the ability of the project to qualify as a PCP. These concerns are:

1. Significant collateral increases of SO_2.[11]
2. Possible impacts on ambient SO_2 concentrations.
3. The possibility that increased annual power generation from the Gannon Plant is the actual reason that greater throughput is needed.
4. The possibility that use of PRB coal is being implemented for economic rather than environmental reasons.
5. Lack of detailed analysis on the collateral increase or decreases of particulate matter, fluorides, and other PSD pollutants.
6. Doubts that it is the use of high moisture coals that causes the lower NO_X emissions.

TEC fully disclosed in its final information submittal that SO_2 emissions may indeed increase. However, it is clear that on balance, the use of PRB coal will actually lower SO2 emissions. TEC stated that the increase is related to the use of a scrubber at Big Bend units 1 and 2 will result in substantial reductions in SO_2 emissions at Big Bend and on a corporate-wide basis as required by Title IV of the Clean Air Act. TEC's reduction at Big Bend will result in available SO_2 allowances, some of which might be sold or possibly used at the Gannon Plant. The emissions are not collateral with the use of high moisture PRB coal, but rather incidental and mostly unrelated.

Any negative impacts on ambient SO_2 concentrations are not related to the use of PRB coal. The subject is being reviewed under Title V permitting. The Department and TEC are working out ways to insure that emission limits are set in the Title V permit to avoid exeedances of the Florida Ambient Air Quality Standard for SO_2.

The electrical generation capacity in the State has fallen below the minimum reserve requirements. Usage of quite a number of plants and even peaking units has increased. Increases in generation due to system-wide growth in demand are normally left out of the calculations for determining increases and decreases in emissions due to modifications at existing power plants. TEC actually left in the future emissions increases attributable to increased growth in demand as well as the unrelated increases due to the scrubber project at Big Bend 1 and 2.

Obviously TEC will ultimately be limited by the coalyard throughput whether it uses high Btu or low Btu fuel. However the use of the low Btu fuel is for reduction of emissions. A compensating increase in allowable coal throughput is a logical way to encourage the use of a less polluting type of coal, while insuring that it does not inadvertently "debottleneck" the rest of the plant.

The Department has seen no evidence that the motivation for using PRB coal is to stimulate demand. Based on the DOE data, the cost of PRB coal delivered to the company's Davant, Louisiana Transfer Station is about the same as other fuels used by TEC. When forwarded to Florida, the cost could be greater than the other fuels because of the low Btu value. As documented above, there is actually a risk related to sole-sourcing the fuel for the Gannon Units using PRB coal. Additionally a host of potential problems were identified by the company that are being progressively solved. The main economic incentive appears to be minimization of the cost to achieve the required NO_X reductions. There appears to be no appreciable economic advantage

to using PRB coal that would result in increased unit availability.

TEC submitted estimates on the collateral increases and decreases in particulate emissions. These appear small and controllable. The low sulfur in PRB coal can actually reduce electrostatic precipitator performance. TEC has sulfur trioxide injection systems that can be adjusted to correct for drops in particulate collection efficiency. The Department did not specifically require TEC to document possible small collateral increases and decreases in other PSD pollutants. The changes are difficult to quantify and there is no reason to expect any significant differences attributable to the use of the PRB coal.

The reduction in NO_X at Gannon Units 1-4 has clearly been documented and is attributable to the use of low moisture coals such as PRB coal. Obviously some relatively inexpensive associated fuel system, ash handling and boiler modifications, as well as combustion optimization contribute to the reduction.

Following are the required emissions reductions that TEC must achieve from the units actually covered by the NO_X Acid Rain requirements:

Table 2 - Comparison of NO_X Emissions From Gannon Units 3-6 Before and After Control Projects and Fuel Use Strategies (pounds per million Btu)

	1995	Future
Gannon Unit 3	1.29	0.86
Gannon Unit 4	1.34	0.86
Gannon Unit 5	0.95	0.84
Gannon Unit 6	1.15	0.84

In its application, TEC assumed that Units 3 and 4 would be required to meet 0.95 pounds of NO_X per million Btu (lb/mmBtu) while Units 5 and 6 will have to meet 0.85. A recent Court decision upheld EPA's final determination on the emissions allowed for these units. Therefore TEC will actually have to achieve somewhat greater NO_X reductions than given in the application. Though not regulated by Phase II Rules, Units 1 and 2 will also achieve some NO_X emissions reductions due to the use of high moisture, low Btu fuel.

CONCLUSION

Based on the foregoing analysis, the Department's Preliminary Determination is that TEC's use of high moisture, low Btu coals such as Indonesian and Powder River Basin coals constitutes a Pollution Control Project per Department and EPA regulations. Additionally the coal yard modifications and the installation of new crusher/grinders constitute projects and activities to accommodate switching to a fuel that is less polluting than the fuel in use prior to the project.

To insure that the increase in permitted coal throughput does not result in emissions increases, limits will be set for "total annual heating value throughput." In this manner, the increase in physical throughput will only compensate for the decrease in fuel heating value. Assuming a conservative heating value of 12,250 Btu per pound from the higher Btu coals exclusively used before 1996, the Department estimates that the required heat throughput is 6.98×10^7 mmBTU per year. This limit should be incorporated into the coalyard permit or adjusted in accordance with more detailed information submitted by TEC. For reference, according to the EPA's Acid Rain

database, the heat input to the Gannon Plant in 1995 and 1996 was 6.69 and 6.89 x 10^7 mmBtu respectively.[12]

The Southwest District is directed to process the permit for the coal yard modifications. Although the actual coalyard projects are to accommodate the use of a PCP, emissions should still be minimized. TEC should also describe to the District its plans to minimize any collateral particulate and carbon monoxide increases from the boilers. This Preliminary Determination may be public noticed in conjunction with the coalyard permit Intent or separately at an earlier date. The details of the notice may be finalized between TEC and the District.

REFERENCES

1 Department of Energy. Receipts and Average Cost of Coal by Type, Electric Utility, and Plant (TEC Gannon), 1994

2 Department of Energy. Receipts, Quality, and Average Delivered Cost of Imported Coal (TEC Davant Transfer - Indonesian Coal), 1997.

3 Department of Energy. Receipts of Western Region Coal (TEC), 1997.

4 Babcock and Wilcox Analysis of Campbell County, Wyoming Subbituminous C.

5 Telecon. Linero, A.A., DEP with Watley, T.J., TEC. August 10, 1998. Need for substantiation of properties of high moisture coals with respect to NO_X controls.

6 Carnot/Sargent & Lundy. "Nitrogen Oxide Limitation Study prepared for Tampa Electric company." March 15, 1996.

7 Tampa Electric Company. "Evaluation of NO_X Controls for Tampa Electric Company's Group II Wet Bottom and Cyclone Boilers." May, 1997.

8 TEC and EPCHC. "Memorandum of Understanding Nitrogen Oxides Emissions Rate Reductions." October 29, 1997.

9 TEC. "Tampa Electric Company NOX Compliance Activities." Undated.

10 Letter from Costello, M., DEP to Ho. P., TEC. Request for Information. October 9, 1996.

11 Memorandum from Anderson, L., DEP to Linero, A., DEP. TEC's Coal Modification Project. August 11, 1998.

12 www.epa.gov/acidrain/ardhome.html. Data summarized in Tables accompanying Reference 11 above.