6885 G-000-104 .164

PERMIT TO INSTALL APPLICATION FOR THREE (3) 15 MMBTU GAS/OIL FIRED BOILERS AND ONE 10,000 GALLON DIESEL FUEL STORAGE TANK; FEMP ID NO. 10-009, 10-010, 10-011 AND 10-012

05/04/95

C:EC:95-0060
FERMCO HAMILTON COUNTY
30
PTI

Fernald Environmental
FERMCO
Restoration Management Corporation P.O. Box 398704 Cincinnati, Ohio 45239-8704 (513) 738-6200

6885

May 4, 1995

Fernald Environmental Management Project
Letter No. C:EC:95-0060

Mr. Peter Sturdevant, Compliance Specialist
Air Quality Management
Hamilton County Department
of Environmental Services
1632 Central Parkway
Cincinnati, Ohio 45210

Dear Mr. Sturdevant:

**PERMIT TO INSTALL APPLICATION FOR THREE (3) 15 MMBTU GAS/OIL FIRED BOILERS AND ONE 10,000 GALLON DIESEL FUEL STORAGE TANK; FEMP ID NO. 10-009, 10-010, 10-011 AND 10-012**

Enclosed is the Permit to Install application for three 15 MMbtu Natural Gas-fired Boilers and a 10,000 gal diesel storage tank. No. 2 Diesel fuel oil will be used as an emergency backup fuel.

If you have any questions concerning this application, please contact Ervin Fisher of my staff at (513) 738-6053.

Sincerely,

Terence D. Hagen
Director
Environmental Compliance

TDH:EF:mhv
Enclosure

c: With Enclosure

D. T. Edwards, FERMCO/MS44
T. E. Escue, FERMCO/MS52-5
E. P. Skintik, DOE-FN/MS45
AR Coordinator/MS78
File Record Storage Copy 108.6
RTS Files

Without Enclosure

S. M. Beckman, FERMCO/MS65-2
S. L. Blankenship, FERMCO/MS71-3
W. J. Naber, FERMCO/MS60
P. B. Spotts, FERMCO/MS65-2

For Office Use Only
Check Appropriate Box(es)

____ Air Discharge

____ Water Discharge to New Source Treatment Works

____ Solid Waste Disposal Facility

____ Hazardous Waste Disposal Facility

For Office Use Only

PTI Application No. _____

Date Received _____

Premise No. _____

OHIO ENVIRONMENTAL PROTECTION AGENCY
Application for Permit to Install

U. S. Department of Energy, Fernald Environmental Management Project
Applicant's Name

P. O. Box 538704-8704
Mailing Address

| Cincinnati | Hamilton | OH | 45253-8704 | 513/738-6502 |
|---|---|---|---|---|
| City | County | State | Zip Code | Telephone Number |

Stephen M. Beckman Manager Regulatory Technical Support (513) 738-6502
Person to contact (Name and Title and Telephone Number)

This facility will located within the production area of the Department of Energy's Fernald Environmental Management Project (FEMP)
Location of Proposed Facility(State the location as completely and precisely as possible)*

Fernald Environmental Management Project, 7400 Willey Road

| Fernald | Hamilton | 45030 |
|---|---|---|
| City or Township | County | Zip Code |

Directions: A Permit to Install is required for new or modified sources of pollution under the provisions of OAC Rule 3745-31. An Application cannot be considered complete unless all applicable questions are answered and the required information has been submitted. This application must be signed in accordance with OAC Rule 3745-31-04(B) or it cannot be accepted.

Applicants for permits involving air emissions or wastewater treatment facilities will be required to pay a permit to install fee as shown in Section 3745.11(B) and (C) of the Ohio Revised Code. This fee is payable fifteen days after the date of final issuance of the permit.

Name of new or modified source or facility: Three 15 MMbtu Gas/Oil Fired Boilers

Product of new or modified source /facility: Steam for Space Heating and Process Use

Will the proposed source/facility involve any of the following: Check all that apply.

A. X Air Discharge

B. ___ Wastewater Treatment Works

C. ___ Solid Waste disposal Facility

D. ___ Hazardous Waste Disposal Facility

00002

* Example: "The source will be constructed on a 20 Acre plot to be located on Franklin Township Road No. 17, approximately 1 1/4 miles north of the intersection of State Route 99 and Franklin Township Road No. 17."

Under OAC 3745-31-04, These signatures shall constitute personal affirmation that all statements or assertions of fact made in the application are true and complete, comply fully with applicable state requirements, and shall subject the signatory to liability under applicable state laws forbidding false or misleading statements.

5/4/95

Authorized Signature (for facility) Date

Director, Environmental Compliance
Title

P. O. Box 538704 Cincinnati, Ohio 45253-8704
Address

For Wastewater Treatment Plants:

Signature of General Contractor or Agent Performing installation, if selected. Date

Company

Address

EPA 3150
6/8/82

FOR ALL PERMITS TO INSTALL

1. Describe the product or service to be produced by the applicant along with a description of the proposed source/facility.

   These boilers will be 15 MMbtu Gas/Oil Fired Units that will be used to provide heat and process steam at the FEMP and to help replace the existing two coal-fired boilers that are scheduled to be removed from service.

2. List the name and quantity of all materials and chemicals that will be used or produced by the source/facility.

   The boilers will produce steam for space heating and process usage. As gas fired units the boilers will use a maximum of 14,285.7 cu. ft. per hour of Natural Gas each. If it becomes necessary to burn #2 Fuel Oil they will use a maximum of 107.14 gallons per hour. The storage tank will be used to store diesel fuel for these boilers in case the Natural Gas supply is interrupted.

3. State the reason for the application.

   These are new sources and have not been previously permitted.

4. Has a previous Ohio EPA application or plan submission been filed for this source/facility?

   No.

5. Will the proposed source comply with all rules, laws, etc.?

   Yes.

FOR AIR POLLUTION SOURCES

6. State the amount of each air contaminant from each source in pounds per hour and tons per year at maximum and average conditions.

   FEMP ID NO. 10-009, 10-010, or 10-011 (15 MM btu Gas/Oil Fired Boilers)

| Contaminant | Average/Maximum Conditions Gas (All three boilers) | Average/Maximum Conditions Oil (All three boilers) |
|---|---|---|
| PARTICULATE | 0.31 (0.93) TPY<br>0.07 lb/hr. | 0.94 (2.82) TPY<br>0.21 lb/hr. |
| $SO_2$ | 0.04 (0.12) TPY<br>0.01 lb/hr. | 28.71 (86.13) TPY<br>6.56 lb/hr. |
| NOx | 8.86 (26.58) TPY<br>2.02 lb/hr. | 9.39 (28.17) TPY<br>2.14 lb/hr. |
| CO | 2.19 (6.57) TPY<br>0.5 lb/hr. | 2.35 (7.05) TPY<br>0.54 lb/hr. |

FEMP ID NO. 10-011 (10,000 gal Diesel storage tank)

| Liquid Contents | Losses (lbs.): Standing | Withdrawal | Total |
|---|---|---|---|
| Distillate fuel oil no. 2 | 0.90 | 15.79 | 16.68 |
| Total: | 0.90 | 15.79 | 16.68 |

See emission calculations for details.

7. Are the proposed sources required to comply with the following federal requirements?

   i. NSPS- No
   ii. NESHAP- No
   iii. PSD- No
   iv. Appendix "S"- Emission Offset Policy- No

8. Will the proposed sources employ BAT?

   Yes.

9. Will the proposed sources cause significant degradation of air quality?

   No.

10. Will the proposed sources interfere with the attainment and maintenance of ambient air quality?

    No.

11. Describe any source monitoring.

    None

12. Will the proposed sources involve the use of asbestos, etc.,?

    No.

13. Complete a construction schedule.

    Construction schedule attached.

14. Please include the estimated cost of any control equipment to be installed.

    N/A

15. An appendix shall be attached.

    Appendix attached

OHIO ENVIRONMENTAL PROTECTION AGENCY

INSTALLATION SCHEDULE

TO ACCOMPANY APPLICATION FOR PERMIT TO INSTALL

THIS FORM CONSTITUTES PART OF THE APPLICATION OF:

FACILITY NAME: Fernald Environmental Management Project

ADDRESS: 7400 Willey Road, Fernald, Ohio 45030

FOR A PERMIT TO INSTALL THE FOLLOWING AIR CONTAMINANT SOURCE:

IDENTIFICATION: FEMP 10-009, FEMP 10-010, FEMP 10-011, AND FEMP 10-012

DESCRIPTION: Three 15 MMbtu Gas/Oil Fired Boilers and 10,000 gal diesel fuel storage tank

THE INSTALLATION OF THE ABOVE AIR CONTAMINANT SOURCE IS PLANNED TO FOLLOW THE TIME SCHEDULE DESCRIBED BELOW:

| | | DATE |
|---|---|---|
| 1. | EQUIPMENT ORDERED | est. July 1995 |
| 2. | COMMENCE CONSTRUCTION | est. July 1995 |
| 3. | STARTUP | est. Dec. 1995 |
| 4. | PERFORMANCE TESTING | None |

15 MM BTU GAS/OIL FIRED PACKAGED BOILER
FEMP ID NO. 10-009

For Official Use Only

Premise No. ___/ ____/ ____/ _____
Source No. _____/ _____
Application No. _____/ _____

EPA NO. 1431110128 ----
FEMP ID NO. 10-009

## APPENDIX B:

## FUEL BURNING EQUIPMENT

(Boilers, Heaters, and Steam Generators)

1. Manufacturer To Be Determined Model No. Not Available

2. Your identification 15 MMbtu Gas/Oil Fired Package Boiler Year Installed TBD

3. Input capacities ($10^6$ BTU/hr.): Rated 15.0 Max. 15.0 Normal 9.0
   Output capacities (lbs.-steam/hr.): Rated 12,075 Max. 12,075 Normal 7,245
   Note: Indicate units if different than above.

4. Percent used for: Space Heating 80 % Process 20 % Power _____%

5. Normal Operating schedule: 24 hrs./day, 7 days/wk., 52 wks/year

6. Type of fuels fired: [ ] Coal [X] Oil [X] Natural Gas
   [ ] Wood [ ] LPG [ ] Other, specify _____

7. Type of draft: [ ] Natural [ ] Induced [X] Forced

8. Combustion Monitoring: [ ] Fuel/air ratio [ ] $O_2$ [ ] Smoke
   [X] Other, specify N/A

## COAL FIRED UNITS

9. Type of firing: [ ] Hand-fired [ ] Underfeed stoker [ ] Traveling grate
   [ ] Chain grate [ ] Spreader stoker [ ] Cyclones
   [ ] Pulverized-dry bottom
   [ ] Pulverized-wet bottom
   [ ] Other, specify _____

10. Fly ash reinjection: [ ] Yes [ ] No

## OIL FIRED UNITS

11. Type of oil: [X] No. 2 [ ] No. 6 [ ] Other, specify _____

12. Atomization: [ ] Oil pressure [ ] Steam pressure [X] Compressed air
    [ ] Rotary cup [ ] Other, specify _____

13. Oil preheater: [ ] Yes, Temp. _____°F. [X] No

OEPA No. 1431110128 ----
FEMP ID No. 10-009

## FUEL DATA

14. Complete the following tables for each type of fuel*:

| Type of Fuel | Heat Content (BTU/Unit) | Ash | Sulfur | Per Year | Normal/hr. | Maximum/hr. |
|---|---|---|---|---|---|---|
| Coal | BTU/pound | | | tons | lbs. | lbs. |
| Oil | 140M BTU/gallon | .01 | 0.5 | 564 Mgals. | 64.3 gal. | 107.14 gal. |
| Gas | 1050 BTU/cu.ft. | N/A | N/A | 76 MM cu.ft. | 8571.4 cu.ft. | 14,285.7 cu.ft. |
| Wood | | | | tons | lbs. | lbs. |
| LPG | | | | gal. | gals. | gal. |
| Other | | | | | | |

| Type of Fuel | Winter | Spring | Summer | Fall |
|---|---|---|---|---|
| Coal | N/A | N/A | N/A | N/A |
| Oil | 50 | 19 | 12 | 19 |
| Gas | 50 | 19 | 12 | 19 |
| Wood | N/A | N/A | N/A | N/A |
| LPG | N/A | N/A | N/A | N/A |
| Other | N/A | N/A | N/A | N/A |

*Obtain fuel analysis from vendor(s) and report on an as-received basis. Use weighted annual averages.

## CONTROL EQUIPMENT

Control Equipment Code:

(A) Settling Chamber
(B) Cyclone
(C) Multiple cyclone
(D) Electrostatic precipitator
(E) Spray Chamber
(F) Cyclonic Scrubber
(G) Packing tower
(H) Venturi
(I) Other N/A

15. Control Equipment data:

| | | |
|---|---|---|
| (a) Type (See Above code) | | |
| (b) Manufacturer | | |
| (c) Model No. | | |
| (d) Year installed | | |
| (e) Your identification | | |
| (f) Pollutant Controlled | | |
| (g) Controlled pollutant | | |
| (h) Pressure drop | | |
| (i) Design efficiency | | |
| (j) Operating efficiency | | |

## STACK DATA

16. Your stack identification EP10-009

17. Are other sources vented to this stack? [ ] Yes [X] No
    If yes, identify sources _____

18. Type: [X] Round, top inside diameter dimension 20"
    [ ] Rectangular, top inside dimensions (L) _____ x (W) _____

19. Height: Above roof 10 ft., above ground 49 ft.

20. Exit gas: Temp. 600 °F, Volume N/A ACFM, Velocity N/A ft./min.

21. Continuous monitoring equipment: [ ] Yes [X] No
    If yes, indicate Type _____, Manufacturer _____
    Make or Model _____, Pollutant (s) monitored _____

22. Emission data: Emissions from this source have been determined and such data is included with this appendix: [X] Yes [ ] No
    If yes, check method: [ ] Stack Test [X] Emission factor

Completed by Ervin Fisher, Jr., Date 4/28/95

Emission Calculations for: PERMIT TO INSTALL

Facility: Fernald Environmental Management Project Computed by: Ervin Fisher
Source No: 1431110128 ---- Date: April 28, 1995
Source ID: FEMP ID NO. 10-009

I. Emission Estimates:Natural Gas
Boiler rating (maximum heat input): 15.00 (MMBtu/hour).
Annual operating hours: 8760 hours/year.
Emission factors: (given as lbs/MMcf gas burned)
particulate: 5.0, $SO_2$: 0.6, NOx: 140.0, CO: 35.0
Emission factor reference: AP-42, table 1.4-1.

1. Actual emissions: (heat input basis)
Particulate: 5.0 (lbs/MMcf) / 1050.0 (btu/cf) = 0.0048 (lbs/MMbtu)
$SO_2$: 0.6 (lbs/MMcf) / 1050.0 (btu/cf) = 0.0006 (lbs/MMbtu)

2. Annual actual and potential: 8760 (hrs/year) emission in (tons/year).

Particulates:
ACTUAL: 5.0 (lbs/MMcf) x 15.0 (MMbtu/hr) x 8760 (hrs/year)/1050 (btu/cf)/2000 (lbs/ton) = 0.31 TPY

POTENTIAL: 5.0 (lbs/MMcf) x 15.0 (MMbtu/hr) x 8760 (hrs/year)/1050 (btu/cf)/2000 (lbs/ton) = 0.31 TPY

$SO_2$:
ACTUAL: 0.6 (lbs/MMcf) x 15.0 (MMbtu/hr) x 8760 (hrs/year)/1050 (btu/cf)/2000 (lbs/ton) = 0.04 TPY

POTENTIAL: 0.6 (lbs/MMcf) x 15.0 (MMbtu/hr) x 8760 (hrs/year)/1050 (btu/cf)/2000 (lbs/ton) = 0.04 TPY

NOx:
ACTUAL: 140.0 (lbs/MMcf) x 15.0 (MMbtu/hr) x 8760 (hrs/year)/1050 (btu/cf)/2000 (lbs/ton) = 8.86 TPY

POTENTIAL: 140.0 (lbs/MMcf) x 15.0 (MMbtu/hr) x 8760 (hrs/year)/1050 (btu/cf)/2000 (lbs/ton) = 8.86 TPY

CO:
ACTUAL: 35.0 (lbs/MMcf) x 15.0 (MMbtu/hr) x 8760 (hrs/year)/1050 (btu/cf)/2000 (lbs/ton) = 2.19 TPY

POTENTIAL: 35.0 (lbs/MMcf) x 15.0 (MMbtu/hr) x 8760 (hrs/year)/1050 (btu/cf)/2000 (lbs/ton) = 2.19 TPY

Emission Calculations for: PERMIT TO INSTALL

Facility: Fernald Environmental Management Project Computed by: Ervin Fisher
Source No: 1431110128 ---- Date: April 28, 1995
Source ID: FEMP ID NO. 10-009

I. Emission Estimates:No. 2 Diesel fuel Oil
Boiler rating (maximum heat input): 15.00 (MMBtu/hour).
Annual operating hours: 8760 hours/year.
Emission factors: (given as lbs/1000 gal. fuel burned)
particulate: 2.0, NOx: 20.0, CO: 5.0.
$SO_2$: 0.437 (given as lb/MMbtu heat input
Emission factor reference: AP-42, table 1.3-1 and OAC 3745-18-04 for $SO_2$

1. Actual emissions: (heat input basis)
Particulate: 2.0 (lbs/Mgal) / 140000 (btu/gal) = 0.0143 (lbs/MMbtu)
$SO_2$: {1.00 MMbtu / 140000 (btu/gal)} x 6.2 x 0.005 x 1.974 = 0.437 (lbs/MMbtu)

2. Annual actual and potential: 8760 (hrs/year) emission in (tons/year).

Particulates:
ACTUAL: 2.0 (lbs/Mgal) x 15.0 (MMbtu/hr) x 8760 (hrs/year)/140000 (btu/gal)/2000 (lbs/ton) = 0.94 TPY

POTENTIAL: 2.0 (lbs/Mgal) x 15.0 (MMbtu/hr) x 8760 (hrs/year)/140000 (btu/gal)/2000 (lbs/ton) = 0.94 TPY

$SO_2$:
ACTUAL: 0.437 (lbs/MMbtu) x 15.0 (MMbtu/hr) x 8760 (hrs/year)/2000 (lbs/ton) = 28.71 TPY

POTENTIAL: 0.437 (lbs/MMbtu) x 15.0 (MMbtu/hr) x 8760 (hrs/year)/2000 (lbs/ton) = 28.71 TPY

NOx:
ACTUAL: 20.0 (lbs/Mgal) x 15.0 (MMbtu/hr) x 8760 (hrs/year)/140000 (btu/gal)/2000 (lbs/ton) = 9.39 TPY

POTENTIAL: 20.0 (lbs/Mgal) x 15.0 (MMbtu/hr) x 8760 (hrs/year)/140000 (btu/gal)/2000 (lbs/ton) = 9.39 TPY

CO:
ACTUAL: 5.0 (lbs/Mgal) x 15.0 (MMbtu/hr) x 8760 (hrs/year)/140000 (btu/gal)/2000 (lbs/ton) = 2.35 TPY

POTENTIAL: 5.0 (lbs/Mgal) x 15.0 (MMbtu/hr) x 8760 (hrs/year)/140000 (btu/gal)/2000 (lbs/ton) = 2.35 TPY

15 MM BTU GAS/OIL FIRED PACKAGED BOILER
FEMP ID NO. 10-010

For Official Use Only

Premise No. ___/ ____/ ____/ _____
Source No. _____/ _____
Application No. _____/ _____

EPA NO. 1431110128 ----
FEMP ID NO. 10-010

## APPENDIX B:

## FUEL BURNING EQUIPMENT

(Boilers, Heaters, and Steam Generators)

1. Manufacturer To Be Determined Model No. Not Available

2. Your identification 15 MMbtu Gas/Oil Fired Package Boiler Year Installed TBD

3. Input capacities ($10^6$ BTU/hr.): Rated 15.0 Max. 15.0 Normal 9.0
   Output capacities (lbs.-steam/hr.): Rated 12,075 Max. 12,075 Normal 7,245
   Note: Indicate units if different than above.

4. Percent used for: Space Heating 80 % Process 20 % Power _____%

5. Normal Operating schedule: 24 hrs./day, 7 days/wk., 52 wks/year

6. Type of fuels fired: [ ] Coal [X] Oil [X] Natural Gas
   [ ] Wood [ ] LPG [ ] Other, specify _____

7. Type of draft: [ ] Natural [ ] Induced [X] Forced

8. Combustion Monitoring: [ ] Fuel/air ratio [ ] $O_2$ [ ] Smoke
   [X] Other, specify N/A

### COAL FIRED UNITS

9. Type of firing: [ ] Hand-fired [ ] Underfeed stoker [ ] Traveling grate
   [ ] Chain grate [ ] Spreader stoker [ ] Cyclones
   [ ] Pulverized-dry bottom
   [ ] Pulverized-wet bottom
   [ ] Other, specify _____

10. Fly ash reinjection: [ ] Yes [ ] No

### OIL FIRED UNITS

11. Type of oil: [X] No. 2 [ ] No. 6 [ ] Other, specify _____

12. Atomization: [ ] Oil pressure [ ] Steam pressure [X] Compressed air
    [ ] Rotary cup [ ] Other, specify _____

13. Oil preheater: [ ] Yes, Temp. _____°F. [X] No



000014

OEPA No. 1431110128 ----
FEMP ID No. 10-010

## FUEL DATA

14. Complete the following tables for each type of fuel*:

| Type of Fuel | Heat Content (BTU/Unit) | Ash | Sulfur | Per Year | Normal/hr. | Maximum/hr. |
|---|---|---|---|---|---|---|
| Coal | BTU/pound | | | tons | lbs. | lbs. |
| Oil | 140M BTU/gallon | .01 | 0.5 | 564 Mgals. | 64.3 gal. | 107.14 gal. |
| Gas | 1050 BTU/cu.ft. | N/A | N/A | 76 MM cu.ft. | 8571.4 cu.ft. | 14,285.7 cu.ft. |
| Wood | | | | tons | lbs. | lbs. |
| LPG | | | | gal. | gals. | gal. |
| Other | | | | | | |

| Type of Fuel | Winter | Spring | Summer | Fall |
|---|---|---|---|---|
| Coal | N/A | N/A | N/A | N/A |
| Oil | 50 | 19 | 12 | 19 |
| Gas | 50 | 19 | 12 | 19 |
| Wood | N/A | N/A | N/A | N/A |
| LPG | N/A | N/A | N/A | N/A |
| Other | N/A | N/A | N/A | N/A |

*Obtain fuel analysis from vendor(s) and report on an as-received basis. Use weighted annual averages.

## CONTROL EQUIPMENT

Control Equipment Code:

(A) Settling Chamber
(B) Cyclone
(C) Multiple cyclone
(D) Electrostatic precipitator
(E) Spray Chamber
(F) Cyclonic Scrubber
(G) Packing tower
(H) Venturi
(I) Other N/A

15. Control Equipment data:

| | | |
|---|---|---|
| (a) Type (See Above code) | | |
| (b) Manufacturer | | |
| (c) Model No. | | |
| (d) Year installed | | |
| (e) Your identification | | |
| (f) Pollutant Controlled | | |
| (g) Controlled pollutant | | |
| (h) Pressure drop | | |
| (i) Design efficiency | | |
| (j) Operating efficiency | | |

OEPA No. 1431110128----
FEMP ID No. 10-010

## STACK DATA

16. Your stack identification EP10-010

17. Are other sources vented to this stack? [ ] Yes [X] No
    If yes, identify sources _____

18. Type: [X] Round, top inside diameter dimension 20"
    [ ] Rectangular, top inside dimensions (L) _____ x (W) _____

19. Height: Above roof 10 ft., above ground 49 ft.

20. Exit gas: Temp. 600 °F, Volume N/A ACFM, Velocity N/A ft./min.

21. Continuous monitoring equipment: [ ] Yes [X] No
    If yes, indicate Type _____, Manufacturer _____
    Make or Model _____, Pollutant (s) monitored _____

22. Emission data: Emissions from this source have been determined and such data is included with this appendix: [X] Yes [ ] No
    If yes, check method: [ ] Stack Test [X] Emission factor

Completed by Ervin Fisher, Jr., Date 4/28/95



000016

Emission Calculations for: PERMIT TO INSTALL

Facility: Fernald Environmental Management Project Computed by: Ervin Fisher
Source No: 1431110128 ---- Date: April 28, 1995
Source ID: FEMP ID NO. 10-010

I. Emission Estimates:Natural Gas
Boiler rating (maximum heat input): 15.00 (MMBtu/hour).
Annual operating hours: 8760 hours/year.
Emission factors: (given as lbs/MMcf gas burned)
particulate: 5.0, $SO_2$: 0.6, NOx: 140.0, CO: 35.0
Emission factor reference: AP-42, table 1.4-1.

1. Actual emissions: (heat input basis)
Particulate: 5.0 (lbs/MMcf) / 1050.0 (btu/cf) = 0.0048 (lbs/MMbtu)
$SO_2$: 0.6 (lbs/MMcf) / 1050.0 (btu/cf) = 0.0006 (lbs/MMbtu)

2. Annual actual and potential: 8760 (hrs/year) emission in (tons/year).

Particulates:
ACTUAL: 5.0 (lbs/MMcf) x 15.0 (MMbtu/hr) x 8760 (hrs/year)/1050 (btu/cf)/2000 (lbs/ton) = 0.313 TPY

POTENTIAL: 5.0 (lbs/MMcf) x 15.0 (MMbtu/hr) x 8760 (hrs/year)/1050 (btu/cf)/2000 (lbs/ton) = 0.313 TPY

$SO_2$:
ACTUAL: 0.6 (lbs/MMcf) x 15.0 (MMbtu/hr) x 8760 (hrs/year)/1050 (btu/cf)/2000 (lbs/ton) = 0.038 TPY

POTENTIAL: 0.6 (lbs/MMcf) x 15.0 (MMbtu/hr) x 8760 (hrs/year)/1050 (btu/cf)/2000 (lbs/ton) = 0.038 TPY

NOx:
ACTUAL: 140.0 (lbs/MMcf) x 15.0 (MMbtu/hr) x 8760 (hrs/year)/1050 (btu/cf)/2000 (lbs/ton) = 8.86 TPY

POTENTIAL: 140.0 (lbs/MMcf) x 15.0 (MMbtu/hr) x 8760 (hrs/year)/1050 (btu/cf)/2000 (lbs/ton) = 8.86 TPY

CO:
ACTUAL: 35.0 (lbs/MMcf) x 15.0 (MMbtu/hr) x 8760 (hrs/year)/1050 (btu/cf)/2000 (lbs/ton) = 2.19 TPY

POTENTIAL: 35.0 (lbs/MMcf) x 15.0 (MMbtu/hr) x 8760 (hrs/year)/1050 (btu/cf)/2000 (lbs/ton) = 2.19 TPY

Emission Calculations for: PERMIT TO INSTALL

Facility: Fernald Environmental Management Project Computed by: Ervin Fisher
Source No: 1431110128 ---- Date: April 28, 1995
Source ID: FEMP ID NO. 10-010

I. Emission Estimates:No. 2 Diesel fuel oil
Boiler rating (maximum heat input): 15.00 (MMBtu/hour).
Annual operating hours: 8760 hours/year.
Emission factors: (given as lbs/1000 gal. fuel burned)
particulate: 2.0, NOx: 20.0, CO: 5.0.
$SO_2$: 0.437 (given as lb/MMbtu heat input
Emission factor reference: AP-42, table 1.3-1 and OAC 3745-18-04 for $SO_2$

1. Actual emissions: (heat input basis)
Particulate: 2.0 (lbs/Mgal) / 140000 (btu/gal) = 0.0143 (lbs/MMbtu)
$SO_2$: {1.00 MMbtu / 140000 (btu/gal)} x 6.2 x 0.005 x 1.974 = 0.437 (lbs/MMbtu)

2. Annual actual and potential: 8760 (hrs/year) emission in (tons/year).

Particulates:
ACTUAL: 2.0 (lbs/Mgal) x 15.0 (MMbtu/hr) x 8760 (hrs/year)/140000 (btu/gal)/2000 (lbs/ton) = 0.94 TPY

POTENTIAL: 2.0 (lbs/Mgal) x 15.0 (MMbtu/hr) x 8760 (hrs/year)/140000 (btu/gal)/2000 (lbs/ton) = 0.94 TPY

$SO_2$:
ACTUAL: 0.437 (lbs/MMbtu) x 15.0 (MMbtu/hr) x 8760 (hrs/year)/2000 (lbs/ton) = 28.71 TPY

POTENTIAL: 0.437 (lbs/MMbtu) x 15.0 (MMbtu/hr) x 8760 (hrs/year)/2000 (lbs/ton) = 28.71 TPY

NOx:
ACTUAL: 20.0 (lbs/Mgal) x 15.0 (MMbtu/hr) x 8760 (hrs/year)/140000 (btu/gal)/2000 (lbs/ton) = 9.39 TPY

POTENTIAL: 20.0 (lbs/Mgal) x 15.0 (MMbtu/hr) x 8760 (hrs/year)/140000 (btu/gal)/2000 (lbs/ton) = 9.39 TPY

CO:
ACTUAL: 5.0 (lbs/Mgal) x 15.0 (MMbtu/hr) x 8760 (hrs/year)/140000 (btu/gal)/2000 (lbs/ton) = 2.35 TPY

POTENTIAL: 5.0 (lbs/Mgal) x 15.0 (MMbtu/hr) x 8760 (hrs/year)/140000 (btu/gal)/2000 (lbs/ton) = 2.35 TPY

15 MM BTU GAS/OIL FIRED PACKAGED BOILER
FEMP ID NO. 10-011

For Official Use Only

Premise No. ___/ ___/ ___/ ___
Source No. ___/ ___
Application No. ___/ ___

EPA NO. 1431110128 ----
FEMP ID NO. 10-011

## APPENDIX B:

## FUEL BURNING EQUIPMENT

(Boilers, Heaters, and Steam Generators)

1. Manufacturer To Be Determined Model No. Not Available

2. Your identification 15 MMbtu Gas/Oil Fired Package Boiler Year Installed TBD

3. Input capacities ($10^6$ BTU/hr.): Rated 15.0 Max. 15.0 Normal 9.0
   Output capacities (lbs.-steam/hr.): Rated 12,075 Max. 12,075 Normal 7,245
   Note: Indicate units if different than above.

4. Percent used for: Space Heating 80 % Process 20 % Power ___ %

5. Normal Operating schedule: 24 hrs./day, 7 days/wk., 52 wks/year

6. Type of fuels fired: [ ] Coal [X] Oil [X] Natural Gas
   [ ] Wood [ ] LPG [ ] Other, specify ___

7. Type of draft: [ ] Natural [ ] Induced [X] Forced

8. Combustion Monitoring: [ ] Fuel/air ratio [ ] $O_2$ [ ] Smoke
   [X] Other, specify N/A

## COAL FIRED UNITS

9. Type of firing: [ ] Hand-fired [ ] Underfeed stoker [ ] Traveling grate
   [ ] Chain grate [ ] Spreader stoker [ ] Cyclones
   [ ] Pulverized-dry bottom
   [ ] Pulverized-wet bottom
   [ ] Other, specify ___

10. Fly ash reinjection: [ ] Yes [ ] No

## OIL FIRED UNITS

11. Type of oil: [X] No. 2 [ ] No. 6 [ ] Other, specify ___

12. Atomization: [ ] Oil pressure [ ] Steam pressure [X] Compressed air
    [ ] Rotary cup [ ] Other, specify ___

13. Oil preheater: [ ] Yes, Temp. ___ °F. [X] No



000020

OEPA No. 1431110128 ----
FEMP ID No. 10-011

## FUEL DATA

14. Complete the following tables for each type of fuel*:

| Type of Fuel | Heat Content (BTU/Unit) | Ash | Sulfur | Per Year | Normal/hr. | Maximum/hr. |
|---|---|---|---|---|---|---|
| Coal | BTU/pound | | | tons | lbs. | lbs. |
| Oil | 140M BTU/gallon | .01 | 0.5 | 564 Mgals. | 64.3 gal. | 107.14 gal. |
| Gas | 1050 BTU/cu.ft. | N/A | N/A | 76 MM cu.ft. | 8571.4 cu.ft. | 14,285.7 cu.ft. |
| Wood | | | | tons | lbs. | lbs. |
| LPG | | | | gal. | gals. | gal. |
| Other | | | | | | |

| Type of Fuel | Winter | Spring | Summer | Fall |
|---|---|---|---|---|
| Coal | N/A | N/A | N/A | N/A |
| Oil | 50 | 19 | 12 | 19 |
| Gas | 50 | 19 | 12 | 19 |
| Wood | N/A | N/A | N/A | N/A |
| LPG | N/A | N/A | N/A | N/A |
| Other | N/A | N/A | N/A | N/A |

*Obtain fuel analysis from vendor(s) and report on an as-received basis. Use weighted annual averages.

## CONTROL EQUIPMENT

Control Equipment Code:

(A) Settling Chamber
(B) Cyclone
(C) Multiple cyclone
(D) Electrostatic precipitator
(E) Spray Chamber
(F) Cyclonic Scrubber
(G) Packing tower
(H) Venturi
(I) Other N/A

15. Control Equipment data:

| | | |
|---|---|---|
| (a) Type (See Above code) | | |
| (b) Manufacturer | | |
| (c) Model No. | | |
| (d) Year installed | | |
| (e) Your identification | | |
| (f) Pollutant Controlled | | |
| (g) Controlled pollutant | | |
| (h) Pressure drop | | |
| (i) Design efficiency | | |
| (j) Operating efficiency | | |

OEPA No. 1431110128----
FEMP ID No. 10-011

## STACK DATA

16. Your stack identification EP10-011

17. Are other sources vented to this stack? [ ] Yes [X] No
    If yes, identify sources _____

18. Type: [X] Round, top inside diameter dimension 20"
    [ ] Rectangular, top inside dimensions (L) _____ x (W) _____

19. Height: Above roof 10 ft., above ground 49 ft.

20. Exit gas: Temp. 600 °F, Volume N/A ACFM, Velocity N/A ft./min.

21. Continuous monitoring equipment: [ ] Yes [X] No
    If yes, indicate Type _____, Manufacturer _____
    Make or Model _____, Pollutant (s) monitored _____

22. Emission data: Emissions from this source have been determined and such data is included with this appendix: [X] Yes [ ] No
    If yes, check method: [ ] Stack Test [X] Emission factor

Completed by Ervin Fisher, Jr., Date 4/28/95



000022

Emission Calculations for: PERMIT TO INSTALL

Facility: Fernald Environmental Management Project Computed by: Ervin Fisher
Source No: 1431110128 ---- Date: April 28, 1995
Source ID: FEMP ID NO. 10-011

I. Emission Estimates:Natural Gas
Boiler rating (maximum heat input): 15.00 (MMBtu/hour).
Annual operating hours: 8760 hours/year.
Emission factors: (given as lbs/MMcf gas burned)
particulate: 5.0, $SO_2$: 0.6, NOx: 140.0, CO: 35.0
Emission factor reference: AP-42, table 1.4-1.

1. Actual emissions: (heat input basis)
Particulate: 5.0 (lbs/MMcf) / 1050.0 (btu/cf) = 0.0048 (lbs/MMbtu)
$SO_2$: 0.6 (lbs/MMcf) / 1050.0 (btu/cf) = 0.0006 (lbs/MMbtu)

2. Annual actual and potential: 8760 (hrs/year) emission in (tons/year).

Particulates:
ACTUAL: 5.0 (lbs/MMcf) x 15.0 (MMbtu/hr) x 8760 (hrs/year)/1050 (btu/cf)/2000 (lbs/ton) = 0.31 TPY

POTENTIAL: 5.0 (lbs/MMcf) x 15.0 (MMbtu/hr) x 8760 (hrs/year)/1050 (btu/cf)/2000 (lbs/ton) = 0.31 TPY

$SO_2$:
ACTUAL: 0.6 (lbs/MMcf) x 15.0 (MMbtu/hr) x 8760 (hrs/year)/1050 (btu/cf)/2000 (lbs/ton) = 0.04 TPY

POTENTIAL: 0.6 (lbs/MMcf) x 15.0 (MMbtu/hr) x 8760 (hrs/year)/1050 (btu/cf)/2000 (lbs/ton) = 0.04 TPY

NOx:
ACTUAL: 140.0 (lbs/MMcf) x 15.0 (MMbtu/hr) x 8760 (hrs/year)/1050 (btu/cf)/2000 (lbs/ton) = 8.86 TPY

POTENTIAL: 140.0 (lbs/MMcf) x 15.0 (MMbtu/hr) x 8760 (hrs/year)/1050 (btu/cf)/2000 (lbs/ton) = 8.86 TPY

CO:
ACTUAL: 35.0 (lbs/MMcf) x 15.0 (MMbtu/hr) x 8760 (hrs/year)/1050 (btu/cf)/2000 (lbs/ton) = 2.19 TPY

POTENTIAL: 35.0 (lbs/MMcf) x 15.0 (MMbtu/hr) x 8760 (hrs/year)/1050 (btu/cf)/2000 (lbs/ton) = 2.19 TPY

Emission Calculations for: PERMIT TO INSTALL

Facility: Fernald Environmental Management Project Computed by: Ervin Fisher
Source No: 1431110128 ---- Date: April 28, 1995
Source ID: FEMP ID NO. 10-011

I. Emission Estimates:No. 2 Diesel fuel oil
Boiler rating (maximum heat input): 15.00 (MMBtu/hour).
Annual operating hours: 8760 hours/year.
Emission factors: (given as lbs/1000 gal. fuel burned)
particulate: 2.0, NOx: 20.0, CO: 5.0.
$SO_2$: 0.437 (given as lb/MMbtu heat input
Emission factor reference: AP-42, table 1.3-1 and OAC 3745-18-04 for $SO_2$

1. Actual emissions: (heat input basis)
Particulate: 2.0 (lbs/Mgal) / 140000 (btu/gal) = 0.0143 (lbs/MMbtu)
$SO_2$: {1.00 MMbtu / 140000 (btu/gal)} x 6.2 x 0.005 x 1.974 = 0.437 (lbs/MMbtu)

2. Annual actual and potential: 8760 (hrs/year) emission in (tons/year).

Particulates:
ACTUAL: 2.0 (lbs/Mgal) x 15.0 (MMbtu/hr) x 8760 (hrs/year)/140000 (btu/gal)/2000 (lbs/ton) = 0.94 TPY

POTENTIAL: 2.0 (lbs/Mgal) x 15.0 (MMbtu/hr) x 8760 (hrs/year)/140000 (btu/gal)/2000 (lbs/ton) = 0.94 TPY

$SO_2$:
ACTUAL: 0.437 (lbs/MMbtu) x 15.0 (MMbtu/hr) x 8760 (hrs/year)/2000 (lbs/ton) = 28.71 TPY

POTENTIAL: 0.437 (lbs/MMbtu) x 15.0 (MMbtu/hr) x 8760 (hrs/year)/2000 (lbs/ton) = 28.71 TPY

NOx:
ACTUAL: 20.0 (lbs/Mgal) x 15.0 (MMbtu/hr) x 8760 (hrs/year)/140000 (btu/gal)/2000 (lbs/ton) = 9.39 TPY

POTENTIAL: 20.0 (lbs/Mgal) x 15.0 (MMbtu/hr) x 8760 (hrs/year)/140000 (btu/gal)/2000 (lbs/ton) = 9.39 TPY

CO:
ACTUAL: 5.0 (lbs/Mgal) x 15.0 (MMbtu/hr) x 8760 (hrs/year)/140000 (btu/gal)/2000 (lbs/ton) = 2.35 TPY

POTENTIAL: 5.0 (lbs/Mgal) x 15.0 (MMbtu/hr) x 8760 (hrs/year)/140000 (btu/gal)/2000 (lbs/ton) = 2.35 TPY

10,000 GAL DIESEL STORAGE TANK
FEMP ID NO. 10-012

FOR OFFICIAL USE ONLY

Premise No.___/___/___/____
Source No.___/____
Application No._____/_____

DOE - FEMP
(Facility Name)
OEPA NO 1431110128
FEMP ID NO. 10-012

APPENDIX E-2

INORGANIC MATERIAL STORAGE TANK OR
STORAGE TANK WITH CAPACITY LESS THAN 40,000 GALLONS

1. Tank identification: Name or number 10-012 Date Installed TBD (month/year)

2. Tank capacity: 10,000 gallons

3. Tank shape: [X] Cylindrical [ ] Rectangular
[ ] Spherical [ ] Other, specify_____

4. Tank dimensions: Diameter 10 ft. Height 18 ft. Length _____ Width _____

5. Tank shell material: [X] Steel [ ] Aluminum [ ] Other, specify_____

6. Type of tank:
[ ] External floating roof tank
[ ] Internal floating roof tank
[X] Fixed roof tank
[ ] Vertical cylindrical tank
[ ] Horizontal cylindrical tank
[ ] Pressure tank
[ ] Other, specify _____

7. Location of tank: [X] Outdoors [ ] Indoors [ ] Underground

8. Type of filling: [ ] Splash [X] Submerged [ ] Other, specify _____

9. If this tank is located outdoors and above ground, provide the paint color of the tank

[ ] Aluminum (specular) [ ] Light gray [ ] White
[X] Aluminum (diffuse) [ ] Medium gray [ ] Other, specify _____

Condition of paint: [X] Good [ ] Poor

10. If this tank is equipped with or vented to a vapor control system, complete (a) through (c) of this item.

a) Type of vapor control system _____
Manufacturer _____ Make or model _____
Date installed (month and year) _____

b) Date tank was equipped with or vented to vapor control system (month & year) _____

c) Specify the rate of emission or percent control (by weight) for any pollutants being controlled: _____
(Attach calculations and test data to support response, unless previously submitted)



000026

DOE - FEMP 6885

(Facility Name)
10-012

(tank identification)

11. Complete the table below for any pressure or vacuum relief vent valve.

| Type of Vent Valve | Pressure Setting | Vacuum Setting | If pressure relief is discharged to a vapor control, identify the vapor control. |
|---|---|---|---|
| | | | |
| | | | |

12. Operational Data (complete (a) through (g) of this item for all materials stored or to be stored. Attach additional sheets if necessary.)

a) Material Distillate fuel oil no. 2 Trade Name No. 2 Diesel
Density: 6.2 lbs/gal or _____° API Producer _____

b) Temperature of stored material: Average AMB °F and Maximum AMB ° F
(If temperature is approximately outdoor ambient temperature, write "AMB".)

c) Vapor pressure of stored material (Complete i, ii, iii of this item. If vapor pressure is not known, write "unknown"):

i.) Actual vapor pressure: 0.0062 psia at average storage temperature
0.0082 psia at maximum storage temperature

ii.) Reid vapor pressure: Average UNK psi and minimum-maximum UNK - UNK psi

iii.) If material stored is a gas or liquified gas, provide the pressure at which it is stored: _____ psi gage at _____ °F

d) Type of liquid organic material (If the material is an organic liquid other than a gasoline, fuel oil, kerosene, crude oil, lubricant or other petroleum liquid, answer the question below.)

Is it a photochemically reactive material? [ ] Yes [ ] No

e) Type of waste material (If the material is a waste, answer the question below.)
N/A
Is it a hazardous waste? [ ] yes [ ] No
If yes, identify type (EPA hazardous waste number) _____

f) Indicate the year (or 12-month period) for item (g): MAX. POTENTIAL

g) Annual throughput of material: 3,000,000 gallons.

Completed by Ervin Fisher Regulatory Technical Specialist Date April 28, 1995



000027

# TANK IDENTIFICATION AND PHYSICAL CHARACTERISTICS

**Identification**

| | |
|---|---|
| Identification No.: | 10-012 |
| City: | Cincinnati |
| State: | OH |
| Company: | FERMCO |
| Type of Tank: | Vertical Fixed Roof |

**Tank Dimensions**

| | |
|---|---|
| Shell Height (ft): | 18 |
| Diameter (ft): | 10 |
| Liquid Height (ft): | 18 |
| Avg. Liquid Height (ft): | 18 |
| Volume (gallons): | 10000 |
| Turnovers: | 300 |
| Net Throughput (gal/yr): | 3000000 |

**Paint Characteristics**

| | |
|---|---|
| Shell Color/Shade: | Aluminum/Diffuse |
| Shell Condition: | Good |
| Roof Color/Shade: | Aluminum/Diffuse |
| Roof Condition: | Good |

**Roof Characteristics**

| | |
|---|---|
| Type: | Dome |
| Height (ft): | 0.00 |
| Radius (ft) (Dome Roof): | 5.00 |
| Slope (ft/ft) (Cone Roof): | 0.0000 |

**Breather Vent Settings**

| | |
|---|---|
| Vacuum Setting (psig): | 0.00 |
| Pressure Setting (psig): | 0.00 |

Meteorological Data Used in Emission Calculations: Dayton, Ohio

TANKS PROGRAM 2.0
EMISSIONS REPORT - DETAIL FORMAT
LIQUID CONTENTS OF STORAGE TANK

| Component | Month | Daily Liquid Surf. Temperatures (deg F) Avg. | Min. | Max. | Liquid Bulk Temp. (deg F) | Vapor Pressures (psia) Avg. | Min. | Max. | Vapor Mol. Weight | Mol. Weight | Basis for V. P. Calculations |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Fuel oil no. 2 | All | 58.85 | 50.52 | 67.18 | 54.50 | 0.0062 | 0.0047 | 0.0082 | 130.000 | 130.00 | Option 4: A=12.1010, B=8907.0 |

Annual Emission Calculations

| | |
|---|---|
| Standing Losses (lb): | 0.8973 |
| Vapor Space Volume (cu ft): | 261.80 |
| Vapor Density (lb/cu ft): | 0.0001 |
| Vapor Space Expansion Factor: | 0.064477 |
| Vented Vapor Saturation Factor: | 0.998899 |
| **Tank Vapor Space Volume** | |
| Vapor Space Volume (cu ft): | 261.80 |
| Tank Diameter (ft): | 10 |
| Vapor Space Outage (ft): | 3.33 |
| Tank Shell Height (ft): | 18 |
| Average Liquid Height (ft): | 18 |
| Roof Outage (ft): | 3.33 |
| **Roof Outage (Dome Roof)** | |
| Roof Outage (ft): | 3.33 |
| Dome Radius (ft): | 5 |
| Shell Radius (ft): | 5 |
| **Vapor Density** | |
| Vapor Density (lb/cu ft): | 0.0001 |
| Vapor Molecular Weight (lb/lb-mole): | 130.000000 |
| Vapor Pressure at Daily Average Liquid Surface Temperature (psia): | 0.006240 |
| Daily Avg. Liquid Surface Temp.(deg. R): | 518.52 |
| Daily Average Ambient Temp. (deg. R): | 511.57 |
| Ideal Gas Constant R (psia cuft /(lb-mole-deg R)): | 10.731 |
| Liquid Bulk Temperature (deg. R): | 514.17 |
| Tank Paint Solar Absorptance (Shell): | 0.60 |
| Tank Paint Solar Absorptance (Roof): | 0.60 |
| Daily Total Solar Insolation Factor (Btu/sqft^Gday): | 1160.00 |

Vapor Space Expansion Factor

| | |
|---|---|
| Vapor Space Expansion Factor: | 0.064477 |
| Daily Vapor Temperature Range (deg.R): | 33.31 |
| Daily Vapor Pressure Range (psia): | 0.003473 |
| Breather Vent Press. Setting Range(psia): | 0.00 |
| Vapor Pressure at Daily Average Liquid Surface Temperature (psia): | 0.006240 |
| Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia): | 0.004714 |
| Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia): | 0.008188 |
| Daily Avg. Liquid Surface Temp. (deg R): | 518.52 |
| Daily Min. Liquid Surface Temp. (deg R): | 510.19 |
| Daily Max. Liquid Surface Temp. (deg R): | 526.85 |
| Daily Ambient Temp. Range (deg.R): | 19.20 |

Annual Emission Calculations

Vented Vapor Saturation Factor

| | |
|---|---|
| Vented Vapor Saturation Factor: | 0.998899 |
| Vapor Pressure at Daily Average Liquid Surface Temperature (psia): | 0.006240 |
| Vapor Space Outage (ft): | 3.33 |

| | |
|---|---|
| Withdrawal Losses (lb): | 15.7860 |
| Vapor Molecular Weight (lb/lb-mole): | 130.000000 |
| Vapor Pressure at Daily Average Liquid Surface Temperature (psia): | 0.006240 |
| Annual Net Throughput (gal/yr): | 3000000 |
| Turnover Factor: | 0.2724 |
| Maximum Liquid Volume (cuft): | 1414 |
| Maximum Liquid Height (ft): | 18 |
| Tank Diameter (ft): | 10 |
| Working Loss Product Factor: | 1.00 |

Total Losses (lb): 16.68

Annual Emissions Report

| Liquid Contents | Losses (lbs.): Standing | Withdrawal | Total |
|---|---|---|---|
| Distillate fuel oil no. 2 | 0.90 | 15.79 | 16.68 |
| Total: | 0.90 | 15.79 | 16.68 |