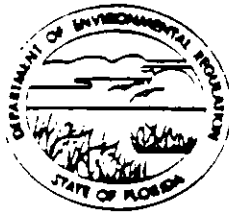


AC 29-166885

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32301



JUN 29 1989

BOB GRAHAM
GOVERNOR

VICTORIA J. TSCHINKEL
SECRETARY

SOUTHWEST DISTRICT
TAMPA

APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

SOURCE TYPE: Air Pollution [] New¹ [X] Existing¹
APPLICATION TYPE: [] Construction [X] Operation [] Modification
COMPANY NAME: Consolidated Minerals, Inc. COUNTY: Hillsborough
(Identify the specific emission point source(s) addressed in this application (i.e. Line
R&D Fluid Bed Reactor
Kiln No. 4 with Venturi Scrubber; Peaking Unit No. 2, Gas Fired) with Scrubber
SOURCE LOCATION: Street Coronet Road City Plant City
UTM: East 17-493.8 North 3096.3
Latitude ° ' "N Longitude ° ' "W
APPLICANT NAME AND TITLE: F. W. Cheesman/President
APPLICANT ADDRESS: P.O. Box 790 Plant City, FL 34289

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of Consolidated Minerals, Inc.
I certify that the statements made in this application for a Operation
permit are true, correct and complete to the best of my knowledge and belief. Further,
I agree to maintain and operate the pollution control source and pollution control
facilities in such a manner as to comply with the provision of Chapter 40J, Florida
Statutes, and all the rules and regulations of the department and revisions thereof. I
also understand that a permit, if granted by the department, will be non-transferable
and I will promptly notify the department upon sale or legal transfer of the permitted
establishment.

*Attach letter of authorization

Signed: *F. W. Cheesman*
F. W. Cheesman/President
Name and Title (Please Type)
Date: Telephone No. (813)752-1161

B. PROFESSIONAL ENGINEER REGISTERED IN FLORIDA (where required by Chapter 471, F.S.)

This is to certify that the engineering features of this pollution control project have
been designed/examined by me and found to be in conformity with modern engineering
principles applicable to the treatment and disposal of pollutants characterized in the
permit application. There is reasonable assurance, in my professional judgment, that

See Florida Administrative Code Rule 17-2.100(57) and (104)

the pollution control facilities, when properly maintained and operated, will discharge an effluent that complies with all applicable statutes of the State of Florida and the rules and regulations of the department. It is also agreed that the undersigned will furnish, if authorized by the owner, the applicant a set of instructions for the proper maintenance and operation of the pollution control facilities and, if applicable, pollution sources.

Signed Anthony R. Lenkei

Anthony R. Lenkei

Name (Please Type)

Consolidated Minerals, Inc.

Company Name (Please Type)

P.O. Box 790 Plant City, FL 34289

Mailing Address (Please Type)

Florida Registration No. 8716

Date: 6, 28, 89.

Telephone No. (813)752-1161

SECTION II: GENERAL PROJECT INFORMATION

- A. Describe the nature and extent of the project. Refer to pollution control equipment, and expected improvements in source performance as a result of installation. State whether the project will result in full compliance. Attach additional sheet if necessary.

- B. Schedule of project covered in this application (Construction Permit Application Only)

Start of Construction _____ Completion of Construction _____

- C. Costs of pollution control system(s): (Note: Show breakdown of estimated costs only for individual components/units of the project serving pollution control purposes. Information on actual costs shall be furnished with the application for operation permit.)

Not Applicable - The pollution control systems are already installed.

- D. Indicate any previous DER permits, orders and notices associated with the emission point, including permit issuance and expiration dates.

This source was issued a permit, A029-73474, on September 27, 1983 and expired
on September 15, 1988.

Page Two, Section II

- A. There are two R&D projects that will require the use of the pilot plant equipment. The first is the production of CDP. This will be the same process that is used at the Plant City Facility. The only exception is that a lower grade rock, BPL, will be used.

The second project is the production of artificial aggregate from waste ash generated at incinerators. It is proposed to fuse the waste ash into a glass like product by mixing the ash with limestone and a flux, such as fluorspar, and heating to produce a semifused mass.

The venting of emissions, from both of the processes, will be through a Tellerette-packed crossflow wet scrubber and will meet existing state and federal emissions control standards and thus be in full compliance.

E. Requested permitted equipment operating time: hrs/day 12 ; days/wk 5 ; wks/yr 23 ;
if power plant, hrs/yr _____ ; if seasonal, describe: Variable as project demands.
Will operate no more than 1400 hours during a year.

F. If this is a new source or major modification, answer the following questions.
(Yes or No)

1. Is this source in a non-attainment area for a particular pollutant? NO
a. If yes, has "offset" been applied? N/A
b. If yes, has "Lowest Achievable Emission Rate" been applied? N/A
c. If yes, list non-attainment pollutants. _____

2. Does best available control technology (BACT) apply to this source?
If yes, see Section VI. NO

3. Does the State "Prevention of Significant Deterioration" (PSD)
requirement apply to this source? If yes, see Sections VI and VII. NO

4. Do "Standards of Performance for New Stationary Sources" (NSPS)
apply to this source? NO

5. Do "National Emission Standards for Hazardous Air Pollutants"
(NESHAP) apply to this source? NO

H. Do "Reasonably Available Control Technology" (RACT) requirements apply
to this source? NO

a. If yes, for what pollutants? _____

b. If yes, in addition to the information required in this form,
any information requested in Rule 17-2.650 must be submitted.

Attach all supportive information related to any answer of "Yes". Attach any justifi-
cation for any answer of "No" that might be considered questionable.

SECTION III: AIR POLLUTION SOURCES & CONTROL DEVICES (Other than Incinerators)

A. Raw Materials and Chemicals Used in your Process, if applicable:

Description	Contaminants		Utilization Rate - lbs/hr	Relate to Flow Diagram
	Type	% wt		
Phosphate Rock	Particulate	100%	265 lbs/hr	
Phosphate Rock	Fluoride	3.5%	265 lbs/hr	
Phosphoric Acid	Fluoride	1.0%	75 lbs/hr	
Soda Ash	Particulate	100%	60 lbs/hr	

B. Process Rate, if applicable: (See Section V, Item 1)

1. Total Process Input Rate (lbs/hr): 400 lbs/hr

2. Product Weight (lbs/hr): 330 lbs/hr

C. Airborne Contaminants Emitted: (Information in this table must be submitted for each emission point, use additional sheets as necessary)

Name of Contaminant	Emission ¹		Allowed Emission Rate per Rule 17-2	Allowable ³ Emission lbs/hr	Potential ⁴ Emission		Relate to Flow Diagram
	Maximum lbs/hr	Actual T/yr			lbs/yr	T/yr	
Particulate	0.33	0.23	17-2.650(2)(b)(2)	.33	16.25	71.2	
Fluoride	0.22	0.15	17-2.600(3)	.22	10.9	47.7	
Opacity			17-2.610(2)(a)	20%			

¹See Section V, Item 2.

²Reference applicable emission standards and units (e.g. Rule 17-2.600(5)(b)2. Table II, E. (1) - 0.1 pounds per million BTU heat input)

³Calculated from operating rate and applicable standard.

⁴Emission, if source operated without control (See Section V, Item 3).

SECTION III: AIR POLLUTION SOURCES & CONTROL DEVICES (Other than Incinerators)

A. Raw Materials and Chemicals Used in your Process, if applicable:

Description	Contaminants		Utilization Rate - lbs/hr	Relate to Flow Diagram
	Type	% Wt		
Waste Ash	Particulate	100%	356 lbs/hr	
Limestone	Particulate	100%	40 lbs/hr	
Fluorspar	Particulate	100%	4 lbs/hr	
Fluorspar	Particulate	48%	4 lbs/hr	

B. Process Rate, if applicable: (See Section V, Item 1)

1. Total Process Input Rate (lbs/hr): 400 lbs/hr

2. Product Weight (lbs/hr): 380 lbs/hr

C. Airborne Contaminants Emitted: (Information in this table must be submitted for each emission point, use additional sheets as necessary)

Name of Contaminant	Emission ²		Allowed Emission Rate per Rule 17-2	Allowable ³ Emission lbs/hr	Potential ⁴ Emission		Relate to Flow Diagram
	Maximum lbs/hr	Actual T/yr			lbs/xxhr	T/yr	
Particulate	0.40	.28	17-2.650(2)(b)(2)	0.40	20.0	87.6	
Fluoride	0.003	.002	17-2.600(3)	0.003	.13	.56	
Opacity			17-2.610(2)(a)	20%			

¹See Section V, Item 2.

²Reference applicable emission standards and units (e.g. Rule 17-2.600(3)(b)2. Table II, E. (1) - 0.1 pounds per million BTU heat input)

³Calculated from operating rate and applicable standard.

⁴Emission, if source operated without control (See Section V, Item 3).

J. Control Devices: (See Section V, Item 4) FLUID BED REACTOR

Name and Type (Model & Serial No.)	Contaminant	Efficiency	Range of Particles Size Collected (in microns) (If applicable)	Basis For Efficiency (Section V Item 5)
Packed Crossflow	Particulate	98+	N/A	See Attach- ment D
Wet Scrubber with				
Impingement Chamber	Fluoride	98+	N/A	

E. Fuels

Type (Be Specific)	Consumption*		Maximum Heat Input (MMBTU/hr)
	avg/hr	max./hr	
Natural Gas	.0039 MMCF/Hr	.0044 MMCF/Hr	4.37 MMBTU/Hr

*Units: Natural Gas--MMCF/hr; Fuel Oils--gallons/hr; Coal, wood, refuse, other--lbs/hr.

Fuel Analysis: N/A

Percent Sulfur: _____ Percent Ash: _____

Density: _____ lbs/gal Typical Percent Nitrogen: _____

Heat Capacity: _____ BTU/lb _____ BTU/gal

Other Fuel Contaminants (which may cause air pollution): _____

F. If applicable, indicate the percent of fuel used for space heating.

Annual Average _____ Maximum _____

G. Indicate liquid or solid wastes generated and method of disposal.

All solid and liquid wastes will be returned to the plants closed circuit
recirculated process water system.

H. Emission Stack Geometry and Flow Characteristics (Provide data for each stack):

Stack Height: 14.2 ft. Stack Diameter: 0.83 ft.
 Gas Flow Rate: 3107 ACFM DSCFM Gas Exit Temperature: 80 °F.
 Water Vapor Content: 3.5 % Velocity: 94.18 FPS

SECTION IV: INCINERATOR INFORMATION

NOT APPLICABLE

Type of Waste	Type 0 (Plastics)	Type I (Rubbish)	Type II (Refuse)	Type III (Garbage)	Type IV (Pathological)	Type V (Liq. & Gas By-prod.)	Type VI (Solid By-prod.)
Actual lb/hr Incinerated							
Uncontrolled (lbs/hr)							

Description of Waste _____
 Total Weight Incinerated (lbs/hr) _____ Design Capacity (lbs/hr) _____
 Approximate Number of Hours of Operation per day _____ day/wk _____ wks/yr. _____
 Manufacturer _____
 Date Constructed _____ Model No. _____

	Volume (ft) ³	Heat Release (BTU/hr)	Fuel		Temperature (°F)
			Type	BTU/hr	
Primary Chamber					
Secondary Chamber					

Stack Height: _____ ft. Stack Diameter: _____ Stack Temp. _____
 Gas Flow Rate: _____ ACFM _____ DSCFM* Velocity: _____ FPS

*If 50 or more tons per day design capacity, submit the emissions rate in grains per standard cubic foot dry gas corrected to 50% excess air.

Type of pollution control device: Cyclone Wet Scrubber Afterburner
 Other (specify) _____

Brief description of operating characteristics of control devices: _____

Ultimate disposal of any effluent other than that emitted from the stack (scrubber water, ash, etc.):

NOTE: Items 2, 3, 4, 6, 7, 8, and 10 in Section V must be included where applicable.

SECTION V: SUPPLEMENTAL REQUIREMENTS

Please provide the following supplements where required for this application.

1. Total process input rate and product weight -- show derivation [Rule 17-2.100(127)]
2. To a construction application, attach basis of emission estimate (e.g., design calculations, design drawings, pertinent manufacturer's test data, etc.) and attach proposed methods (e.g., FR Part 60 Methods 1, 2, 3, 4, 5) to show proof of compliance with applicable standards. To an operation application, attach test results or methods used to show proof of compliance. Information provided when applying for an operation permit from a construction permit shall be indicative of the time at which the test was made. SEE ATTACHMENT A-1 and A-2
3. Attach basis of potential discharge (e.g., emission factor, that is, AP42 test).
SEE ATTACHMENT A-1 AND A-2
4. With construction permit application, include design details for all air pollution control systems (e.g., for baghouse include cloth to air ratio; for scrubber include cross-section sketch, design pressure drop, etc.) SEE ATTACHMENT B
5. With construction permit application, attach derivation of control device(s) efficiency. Include test or design data. Items 2, 3 and 5 should be consistent: actual emissions = potential (1-efficiency). SEE ATTACHMENT C
6. An 8 1/2" x 11" flow diagram which will, without revealing trade secrets, identify the individual operations and/or processes. Indicate where raw materials enter, where solid and liquid waste exit, where gaseous emissions and/or airborne particles are evolved and where finished products are obtained. SEE ATTACHMENT D
7. An 8 1/2" x 11" plot plan showing the location of the establishment, and points of airborne emissions, in relation to the surrounding area, residences and other permanent structures and roadways (Example: Copy of relevant portion of USGS topographic map).
SEE ATTACHMENT E
8. An 8 1/2" x 11" plot plan of facility showing the location of manufacturing processes and outlets for airborne emissions. Relate all flows to the flow diagram.
NOT APPLICABLE

9. The appropriate application fee in accordance with Rule 17-4.05. The check should be made payable to the Department of Environmental Regulation.
10. With an application for operation permit, attach a Certificate of Completion of Construction indicating that the source was constructed as shown in the construction permit. NOT APPLICABLE

SECTION VI: BEST AVAILABLE CONTROL TECHNOLOGY

NOT APPLICABLE

- A. Are standards of performance for new stationary sources pursuant to 40 C.F.R. Part 60 applicable to the source?

Yes No

Contaminant	Rate or Concentration

- B. Has EPA declared the best available control technology for this class of sources (if yes, attach copy)

Yes No

Contaminant	Rate or Concentration

- C. What emission levels do you propose as best available control technology?

Contaminant	Rate or Concentration

- D. Describe the existing control and treatment technology (if any).

- | | |
|---------------------------|--------------------------|
| 1. Control Device/System: | 2. Operating Principles: |
| 3. Efficiency:* | 4. Capital Costs: |

*Explain method of determining

- 5. Useful Life:
- 7. Energy:
- 9. Emissions:

- 6. Operating Costs:
- 8. Maintenance Cost:

Contaminant	Rate or Concentration

10. Stack Parameters

- a. Height: ft. b. Diameter: ft.
- c. Flow Rate: ACFM d. Temperature: °F.
- e. Velocity: FPS

E. Describe the control and treatment technology available (As many types as applicable, use additional pages if necessary).

1.

- a. Control Device: b. Operating Principles:
- c. Efficiency:¹ d. Capital Cost:
- e. Useful Life: f. Operating Cost:
- g. Energy:² h. Maintenance Cost:
- i. Availability of construction materials and process chemicals:
- j. Applicability to manufacturing processes:
- k. Ability to construct with control device, install in available space, and operate within proposed levels:

2.

- a. Control Device: b. Operating Principles:
- c. Efficiency:¹ d. Capital Cost:
- e. Useful Life: f. Operating Cost:
- g. Energy:² h. Maintenance Cost:
- i. Availability of construction materials and process chemicals:

¹Explain method of determining efficiency.

²Energy to be reported in units of electrical power - KWH design rate.

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

3.

a. Control Device:

b. Operating Principles:

c. Efficiency:¹

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy:²

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

4.

a. Control Device:

b. Operating Principles:

c. Efficiency:¹

d. Capital Costs:

e. Useful Life:

f. Operating Cost:

g. Energy:²

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

5. Describe the control technology selected:

1. Control Device:

2. Efficiency:¹

3. Capital Cost:

4. Useful Life:

5. Operating Cost:

6. Energy:²

7. Maintenance Cost:

8. Manufacturer:

9. Other locations where employed on similar processes:

a. (1) Company:

(2) Mailing Address:

(3) City:

(4) State:

Explain method of determining efficiency.

Energy to be reported in units of electrical power - KWH design rate.

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions:¹

Contaminant	Rate or Concentration

(8) Process Rate:¹

b. (1) Company:

(2) Mailing Address:

(3) City:

(4) State:

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions:¹

Contaminant	Rate or Concentration

(8) Process Rate:¹

10. Reason for selection and description of systems:

¹Applicant must provide this information when available. Should this information not be available, applicant must state the reason(s) why.

SECTION VII - PREVENTION OF SIGNIFICANT DETERIORATION

4. Company Monitored Data ^{NOT APPLICABLE}

1. _____ no. sites _____ TSP _____ () SO₂ _____ Wind spd/dir

Period of Monitoring _____ / _____ / _____ to _____ / _____ / _____
month day year month day year

Other data recorded _____

Attach all data or statistical summaries to this application.

Specify bubbler (B) or continuous (C).

2. Instrumentation, Field and Laboratory

- a. Was instrumentation EPA referenced or its equivalent? Yes No
- b. Was instrumentation calibrated in accordance with Department procedures?
 Yes No Unknown

B. Meteorological Data Used for Air Quality Modeling

1. _____ Year(s) of data from _____ / _____ / _____ to _____ / _____ / _____
month day year month day year
2. Surface data obtained from (location) _____
3. Upper air (mixing height) data obtained from (location) _____
4. Stability wind rose (STAR) data obtained from (location) _____

C. Computer Models Used

1. _____ Modified? If yes, attach description.
2. _____ Modified? If yes, attach description.
3. _____ Modified? If yes, attach description.
4. _____ Modified? If yes, attach description.

Attach copies of all final model runs showing input data, receptor locations, and principle output tables.

D. Applicants Maximum Allowable Emission Data

Pollutant	Emission Rate
TSP	_____ grams/sec
SO ₂	_____ grams/sec

E. Emission Data Used in Modeling

Attach list of emission sources. Emission data required is source name, description of point source (on NEDS point number), UTM coordinates, stack data, allowable emissions, and normal operating time.

F. Attach all other information supportive to the PSD review.

G. Discuss the social and economic impact of the selected technology versus other applicable technologies (i.e., jobs, payroll, production, taxes, energy, etc.). Include assessment of the environmental impact of the sources.

H. Attach scientific, engineering, and technical material, reports, publications, journals, and other competent relevant information describing the theory and application of the requested best available control technology.

SECTION V SUPPLEMENTAL INFORMATION

2. Particulate Emission Estimate (Waste Ash, Limestone & Fluorspar)
 Estimate Scrubber System Loading: 20 lbs/hr
 100%-98% (Scrubber System Efficiency) = 2% Discharge
 $20 \text{ lbs/hr} \times 2\% = 0.40 \text{ lbs/hr Discharge}$
 $0.40 \text{ lbs} \times 1400 \text{ operating hours} = 560 \text{ lbs/year}$
 $560 \text{ lbs/yr} \div 2000 \text{ lbs/ton} = 0.28 \text{ Tons/Year Emissions}$

Potential Emissions

20 lbs/hr Scrubber System Loading
 $20 \text{ lbs/hr} \times 8760 \text{ hrs/year} =$
 $175,200 \text{ lbs/year} \div 2000 \text{ lbs/ton} =$
 87.6 Tons/Year Potential Emissions

Fluoride Emission Estimate

Estimate Scrubber System Loading: .129 lbs/hr
 100%-98% (Scrubber System Efficiency) = 2% Discharge
 $.129 \text{ lbs/hr} \times 2\% = .003 \text{ lbs/hr Discharge}$
 $.003 \text{ lbs/hr} \times 1400 \text{ operating hours} = 4.2 \text{ lbs/year}$
 $4.2 \text{ lbs/year} \div 2000 \text{ lbs/ton} = .002 \text{ Tons/Year Emissions}$

Potential Emissions

.129 lbs/hr Scrubber System Loading
 $.129 \text{ lbs/hr} \times 8760 \text{ hrs/year} =$
 $1130 \text{ lbs/hr} \div 2000 \text{ lbs/ton} =$
 .56 tons/year Potential Emissions

Particulate Emission Estimate (Phosphate Rock, Phosphoric Acid, Soda Ash)

Estimate Scrubber System Loading: 16.25 lbs/hr

100%-98% (Scrubber System Efficiency) = 2% Discharge

16.25 lbs/hr x 2% = 0.33 lbs/hr Discharge

0.33 lbs x 1400 operating hours = 462 lbs/year

462 lbs/year \div 2000 lbs/ton = .23 Tons/Year Emissions

Potential Emissions

16.25 lbs/hr Scrubber System Loading

16.25 lbs/hr x 8760 hrs/year =

142,350 lbs/hr \div 2000 lbs/ton =

71.2 Tons/Year Potential Emissions

Fluoride Emission Estimate

Estimate Scrubber System Loading: 10.9 lbs/hr

100%-98% (Scrubber System Efficiency) = 2% Discharge

10.9 lbs/hr x 2% = .22 lbs/hr Discharge

.22 lbs/hr x 1400 operating hours = 306 lbs/year

306 lbs/year \div 2000 lbs/ton = .15 Tons/Year Emissions

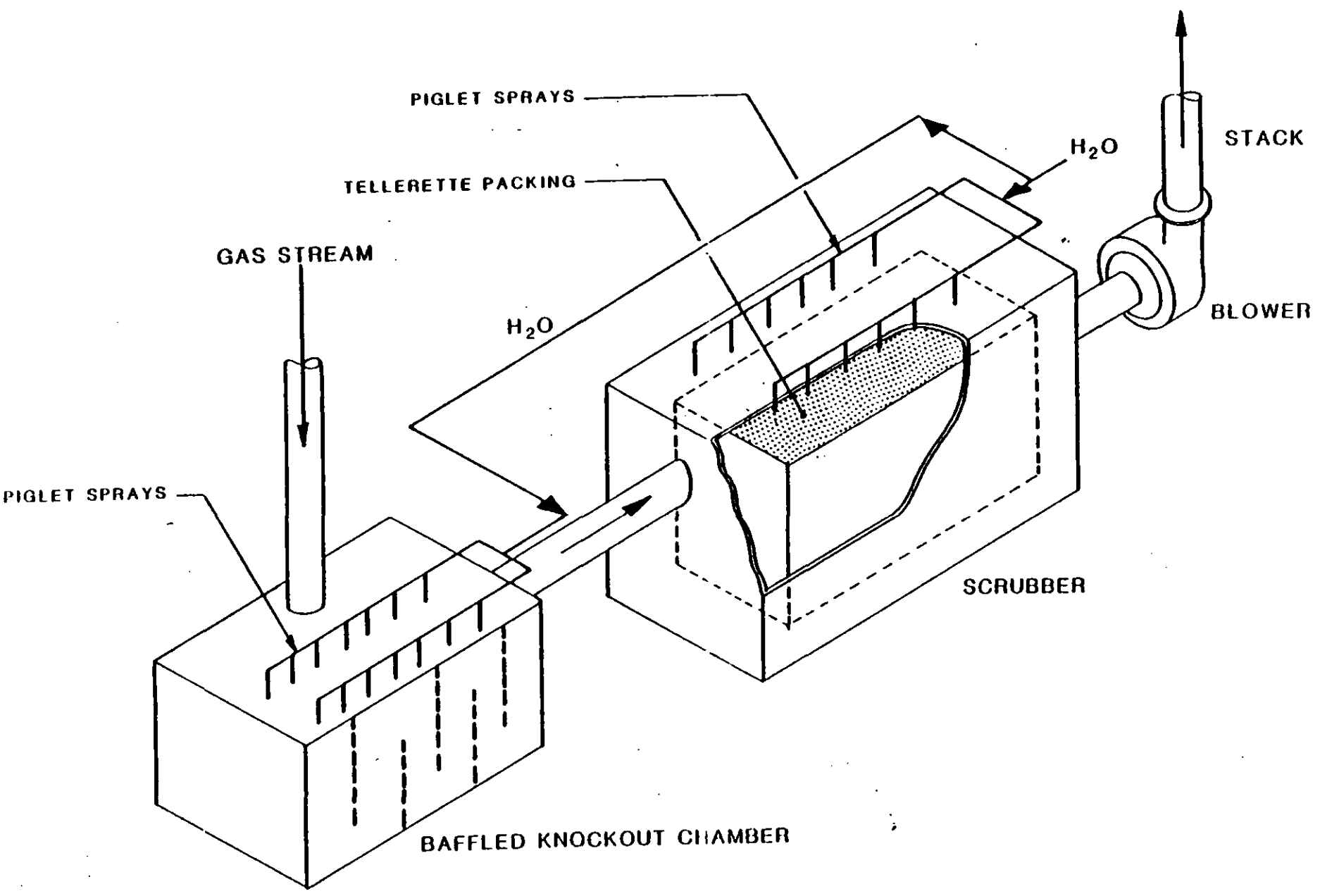
Potential Emissions

10.9 lbs/hr Scrubber System Loading

10.9 lbs/hr x 8760 =

95,484 lbs/hr \div 2000 lbs/ton =

47.7 Tons/Year Potential Emissions



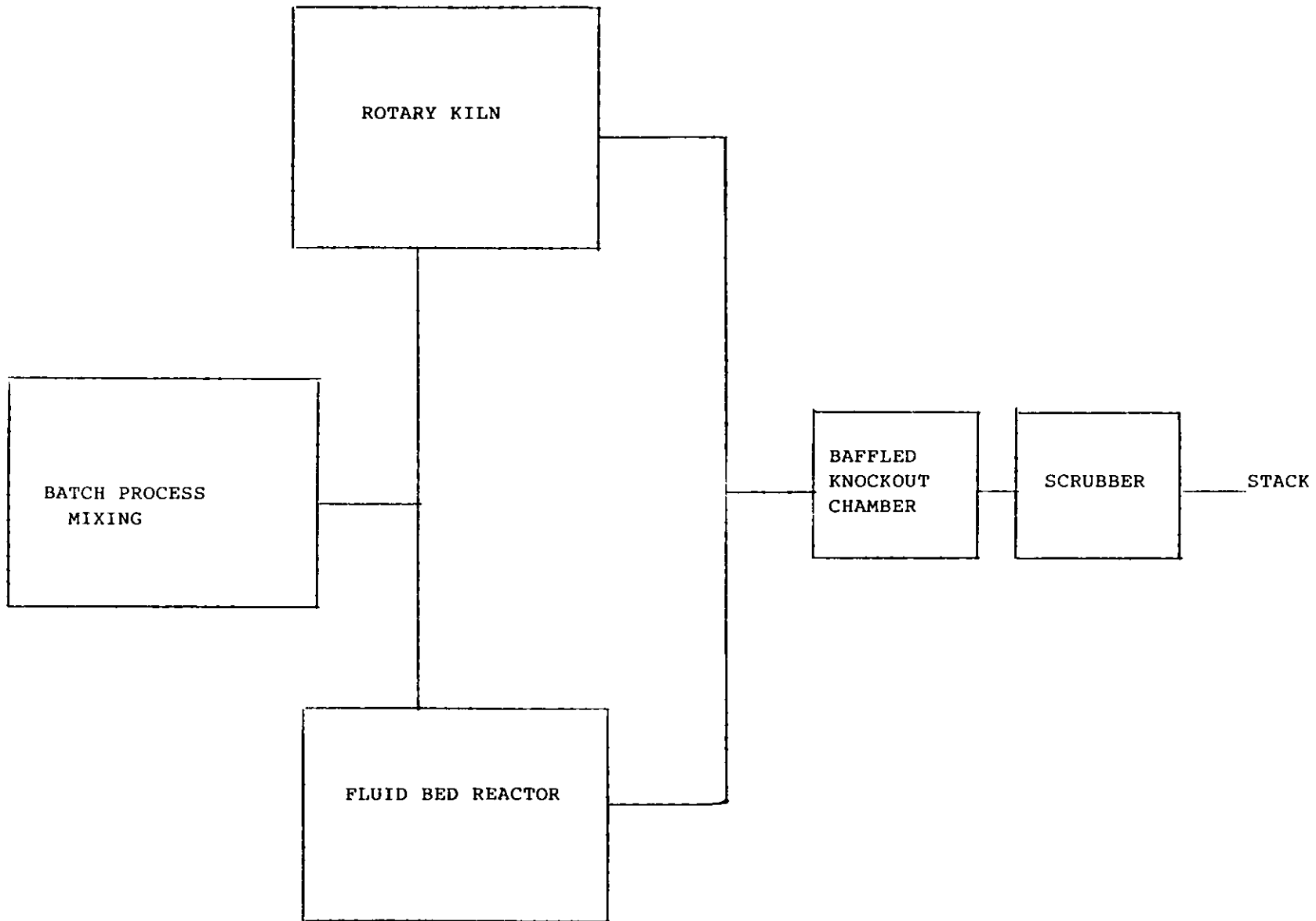
ATTACHMENT B

ATTACHMENT C

The scrubber referenced in this permit is a horizontal, crossflow, Tellerette-packed wet scrubber. A baffled spray chamber is located upstream of the scrubber to quench the gas stream and to provide the initial fluoride removal from the inlet gases.

The scrubber and associated systems were designed, built, and installed by the previous owner of the facility, and no records of the original design data have been found. However, the United States Environmental Protection Agency recognizes that properly sized irrigated packed bed scrubbers are 98+% efficient for the removal of gaseous and particulate fluorides.

ATTACHMENT D



ATTACHMENT E

