



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET
ATLANTA, GEORGIA 30365

4AW-AM

REC 17 1992

Mr. Scott Quaas, Environmental/Specialist
Lonestar Florida/Pennsuco, Inc.
Cement and Aggregate Division
Post Office Box 122035
Palm Village Station
Hialeah, Florida 33012

Is new
Applic.
needed?
(I THINK SO)

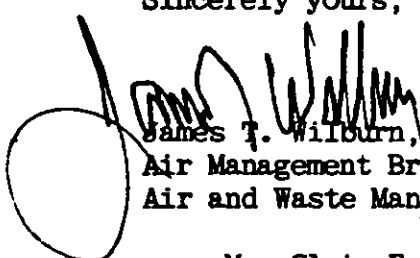
Dear Mr. Quaas:

This is in response to your November 19, 1982, submittal to Mr. Thomas W. Devine concerning the sulfur dioxide (SO₂) emission limitations on Lonestar's Kilns 1,2, and 3 and a request for revising these limitations from those appearing in your present PSD permit (PSD-FL-050).

Since the State of Florida has been granted partial delegation of authority regarding PSD reviews, we have forwarded a copy of this submittal to them. Florida will be responsible for performing the technical review and preparing a preliminary determination. Following this determination, Florida will initiate a public notice and 30-day comment period. EPA will also be afforded an opportunity to review and comment on this determination. A final determination on your permit revision request will be made after the conclusion of the public comment period.

If you have any questions or comments concerning this matter, please contact Mr. Richard S. DuBose, Chief, Air Engineering Section at (404) 881-7654.

Sincerely yours,


James T. Wilburn, Chief
Air Management Branch
Air and Waste Management Division

cc: Mr. Clair Fancy, Deputy Bureau Chief
FL Dept. of Environmental Regulation

Mr. Anthony J. Clemente, P.E., Acting Director
Metropolitan Dade County Dept. of Environmental Resources

Mr. Warren G. Strahm, Subdistrict Manager
FL Dept. of Environmental Regulation



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET
ATLANTA, GEORGIA 30365

4AW-AM

DEC 17 1982

Mr. Clair Fancy, P.E.
Deputy Bureau Chief
Florida Department of Environmental
Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32301

DER
DEC 27 1982
BAQM

Dear Mr. Fancy:

On February 11, 1980, Lonestar Florida/Pennsuco, Inc. (Lonestar) applied for a Prevention of Significant Deterioration (PSD) of Air Quality permit to convert three existing kilns to coal firing near Hialeah, Florida. On July 8, 1980, EPA issued a PSD permit (PSD-FL-050) to Lonestar and granted the company authority to construct subject to 40 CFR 52.21.

On July 15, 1981, Lonestar's consultant performed a stack test to demonstrate compliance with the sulfur dioxide (SO₂) emission limitations as contained in the July 8, 1980, PSD permit. The results of the July 15, 1981, and subsequent April 30, 1982, compliance tests showed actual SO₂ emissions to be in excess of the PSD permitted allowable limits.

SO₂
EXCEEDS
EMISSIONS
IN PERMIT

On October 22, 1982, EPA issued a Notice of Violation pursuant to §113 of the Clean Air Act to the company for operating in violation of the SO₂ emission limits as contained in the PSD permit. The Notice indicated that Lonestar may question the appropriateness of the sulfur dioxide emission limitation contained in the original PSD permit. Subsequently, on November 19, 1982, formal request to modify their July 8, 1980, PSD permit to reflect their actual emission rates was submitted to this office (copy enclosed).

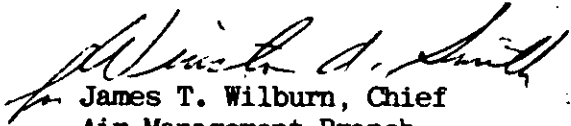
ENFORCEMENT
ACTION
Co. ASKED
a SO₂ STD
BE REVISED

On December 13, 1982, Mr. Bill Wagner of my staff contacted you to discuss the most appropriate way of reviewing and processing Lonestar's request for a permit modification. As a result of that conversation, it was decided that the Florida Department of Environmental Regulation would be the lead agency in processing Lonestar's request for a permit modification. Therefore, EPA is forwarding to you a copy of the information submitted along with Lonestar's request and will await your preliminary determination. Any preliminary determination regarding Lonestar's submittal should be followed by an appropriate public notice and comment period.

Public
notice
req'd.

If you have any questions concerning this matter, please contact Mr. Richard S. DuBose of my staff at (404) 881-7654.

Sincerely yours,


James T. Wilburn, Chief
Air Management Branch
Air and Waste Management Division

Enclosures

cc: Mr. Anthony J. Clemente, P.E., Acting Director
Metropolitan Dade County Dept. of Environmental Resources

Mr. Warren G. Strahm, Subdistrict Manager
FL Dept. of Environmental Regulation

Scott Quass



LONESTAR FLORIDA PENNSUCO, INC.

6451 N. Federal Highway
Fort Lauderdale, Florida 33308
Post Office Box 6097
Fort Lauderdale, Florida 33310
(305) 491-0900

November 19, 1982

Mr. Thomas W. Devine, Director
Air & Waste Management Division
Environmental Protection Agency - Region IV
345 Courtland Street
Atlanta, GA 30365

Dear Mr. Devine:

Re: PSD-FL-050; Lonestar Florida Pennsuco, Inc.;
Kilns 1, 2 and 3; Request for Revision of Sulfur
Dioxide Emission Limitations

Please find enclosed the support documentation for the modeling analysis which accompanied our November 19, 1982 letter on the referenced subject.

Sincerely yours,

Albert W. Townsend
Manager
Real Estate & Environmental Affairs

Encl.
AWT/jh
cc: S. Smallwood-DER



LONESTAR FLORIDA/PENNSUCO, INC.

Cement and Aggregate Division
Post Office Box 122035
Palm Village Station
Hialeah, Florida 33012
(305) 823-8800

November 19, 1982

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Thomas W. Devine, Director
Air & Waste Management Division
Environmental Protection Agency - Region IV
345 Courtland Street
Atlanta, GA 30365

RE: PSD-FL-050; Lonestar Florida/Pennsuco, Inc.;
Kilns 1, 2 and 3; Request for Revision of Sulfur
Dioxide Emission Limitations

Dear Mr. Devine:

In accordance with my letter to you dated November 2, 1982, the following items are enclosed to assist your office in revising the above referenced permit:

1) A revised air quality modeling analysis addressing significant changes which would influence the model predictions and which shows compliance with applicable ambient air quality standards.

2) A revised BACT analysis showing that alternate controls for SO₂ emissions are unwarranted. Retrofitting the three existing kilns with additional or alternative control devices would have only minimal effect on emissions, would have an insignificant effect on reducing ambient air impacts, and would prohibit the company from implementing the complete conversion of its kilns to coal. The analysis also contains an explanation of operating variables in a Portland cement kiln and the resulting effect on SO₂ emissions.

3) A summary of recent stack tests including SO₂ absorption calculations with resulting emission estimates for kiln 3.

Mr. Thomas W. Devine, Director
November 19, 1982
Page 2

Based upon these materials Lonestar respectfully requests a revision to the SO₂ emission limiting standards in the above PSD permit as follows:

Kiln 1	100 lbs/hr.
Kiln 2	100 lbs/hr.
Kiln 3	400 lbs/hr.

We look forward to answering any questions you may have and meeting with you at an early date to discuss this request.

Sincerely,



SCOTT QUAAS
Environmental/Specialist

cc: S. Smallwood-DER

LONESTAR FLORIDA PENNSUCO, INC.
BEST AVAILABLE CONTROL TECHNOLOGY

Operating Variables that Affect SO₂ Emissions

During the operation of a wet process cement kiln there are several process variables that will affect the emission of SO₂ from the kiln's stack.

The major variable is the oxygen content of the kiln and its possible reduction/oxidation zones. The sulfur that has the potential to form SO₂ comes from the kiln feed, fuel and insulflated dust. Depending on the oxygen content in the kiln, the sulfur from the kiln feed will either stay as an oxidized sulfur compound or will be reduced to SO₂. Oxygen contents below about 0.5 percent will tend to generate SO₂^{for SO₂} while higher oxygen contents will retain the sulfur with the feed and eventually in the clinker. This is basically a surface reaction of sulfur oxides on MgO and CaO particles and proceeds until MgSO₄ or CaSO₄ have encapsulated the particle and it has diffused to its interior. ?

As the fuel burns, sulfur oxides are formed in the oxidizing area ✓
of the flame. With sufficient oxygen and contact in the kiln
with the feed material, compounds such as calcium sulfate are ✓
formed and retained in this material.

As the feed material is calcinated and reaches the point of insipient fusion (clinker formation), potassium and sodium oxides are volatized and combined with available sulfur oxides to form alkaline salts in a gas reaction. These salts are very fine particles that are caught in the pollution control equipment downstream of the kiln. The return of all the dust to the kiln (insulflation) is performed as Lonestar's kiln #3. The insulflated sulfates are eventually retained with the clinker as were the sulfates in the feed material and sulfur oxides from the fuel.

The overall effect of excess oxygen in the kiln is that less than 0.5 percent will enhance SO₂ emissions and excess oxygen in the range of 0.5-1.5 percent will significantly reduce emissions. The use of excess oxygen greater than 1.5 percent can cause operational problems (too hot of a backend kiln temperature, improper clinker burning zone, kiln dusting) as well as (wasting fuel by heating the excess air). The use of too little excess oxygen causes incomplete combustion and very unstable operating conditions. When an electrostatic precipitator (ESP) is used, the carbon monoxide generated can cause explosive conditions in the ESP.

Other variables for the emission of SO₂ are sulfur content of fuel, chemistry of kiln feed and kiln dust, NO_x formation and unstable kiln conditions. These factors can be significant as to

SO₂ generation, but for the specific long term operating conditions at Lonestar's kilns they are not considered as important for this analysis as is excess oxygen content. - (0.5 in fuel?)

Control Technology Available

The two types of particulate control equipment typically used to meet New Source Performance Standards (NSPS) and Best Available Control Technology (BACT) review criteria are electrostatic precipitators (ESP) and baghouses. Historically, there has been very little success in using baghouses on wet process kilns due to condensation, temperature and maintenance problems. Baghouses are usually multicompartmental with thousands of fiberglass bags for filtering the dust from the kiln gases. The collection is done on the dust cake which forms on the dirty side of the bags. When a kiln is started or stopped, there is potential for the filter cake temperature to fall below the dew point unless heated by a separate heat source. If condensation does occur (the usual moisture content of the exhaust gases is 30 percent) this cake will harden and permanently blind the bag. Another major problem with baghouses has been the inability to sustain the high operational temperatures without gas conditioning equipment (dilution air). During unstable kiln conditions this can become a problem to adequately cool or heat the bags to prevent excursions of their temperature limits or cooling below the dew point.

Another operational problem with baghouses has been maintaining the thousands of bags. The fiberglass fibers will fatigue with time or fail due to condensation or temperature and can develop pin hole leaks that will necessitate patching or bag replacement. Therefore, a routine maintenance program is a necessity to monitor the conditions of the bags and maintain the reliability of the system.

ESP's, such as those presently installed at Lonestar's kilns, do not have condensation, temperature, or maintenance problems. They do not require any auxiliary heating and can take relatively large fluctuations in gas temperatures without problem. An ESP is designed to have extensive internal maintenance during annual kiln shutdowns and not on a daily basis. It has multi-stages that the gases must travel through (not just a thin filter cake) for collection of the kiln dust. These stages are individually controlled as to voltage, amperage and cleaning cycle. Operational problems in one stage can be compensated for by externally adjusting the other stages. ESP's do not have the daily maintenance problems associated with baghouses.

only relatively

Co. prefers ESP over baghouse

With regard to SO₂ emissions, approximately 75 percent of the SO₂ is absorbed by the proper burning of the kiln and is incorporated in the clinker. EPA has stated that due to the gases having to pass through the filter cake an additional 50 percent removal of the remaining 25 percent (that is,

approximately 12 percent) of the SO₂ may be achieved. This was developed through review of limited testing data on several kilns in the early 1970's; however, no actual tests comparing both control devices under the same operating kiln conditions have been performed.

Furthermore, the reasonableness of that 50 percent additional removal is questionable. In a baghouse system, the gases quickly move from the inlet manifold to a compartment and through a filter cake (approximately 1/4 inch thick) and back to the clean air plenum. The residence time in the collector is much less than in a precipitator. The additional residence time in an electrostatic precipitator (ESP) allows for longer reaction time with the dust particles for good absorption.

50%²

Environmental Impacts

The ambient air quality impacts due to conversion of Lonestar's kilns are addressed in the accompanying dispersion modeling evaluation. The predicated impacts reflect SO₂ emissions using ESP's. Lonestar's maximum annual and highest, second-highest short-term predicted SO₂ impacts with ESP control are shown below in terms of percentages of the AAQS and PSD increments consumed:

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GAS DOES NOT FLOW THROUGH CAKE IN ESP

Environmental Impacts

The ambient air quality impacts due to conversion of Lonestar's kilns are addressed in the accompanying dispersion modeling evaluation. The predicated impacts reflect SO₂ emissions using ESP's. Lonestar's maximum annual and highest, second-highest short-term predicted SO₂ impacts with ESP control are shown below in terms of percentages of the AAQS and PSD increments consumed:

Percentage of Air Quality Standards
Consumed by Lonestar Kilns 1, 2 and 3

<u>Averaging Time</u>	<u>Class I Increments</u>	<u>Class II Increments</u>	<u>Florida AAQS</u>	<u>Dade County AAQS</u> ^{Enforceable?}
Annual	15%	11%	5%	N/A
24-Hour	58%	18%	6%	59%
4-Hour	N/A	N/A	N/A	97%
3-Hour	56%	12%	5%	N/A
1-Hour	N/A	N/A	N/A	37%

N/A - Not applicable

Retrofitting all three kilns with baghouses, and adopting the undocumented assumption of 50% additional removal of the SO₂, would reduce the percentages by one half. With existing ESP control, however, Lonestar's impacts are predicted to be less than 20 percent of Class II increments and Florida AAQS. Therefore, reducing these impacts by 50 percent would not produce significant air quality benefits. In the case of Class I PSD increments and Dade County AAQS (the most stringent standards), Lonestar's impacts do not exceed 60 percent of those standards, except for the 4-hour Dade County AAQS. Therefore, even if a 50% reduction is assumed to be achievable, the ultimate benefit to the environment of such a reduction is not significant.

Gas house may reduce impact by 50% for SO₂

MODELING-
STUDY
Based
on
Worst
Case

The impacts presented in this analysis represent the combination of maximum Lonestar production capacity and worst case meteorological conditions. For the majority of time, actual impacts due to Lonestar are expected to be far below these predicted levels.

ECONOMIC ANALYSIS

An economic analysis was performed for retrofitting baghouses on kilns 1, 2 and 3. The analysis was performed using procedures described in the August 1978 through November 1978 issues of the Journal of the Air Pollution Control Association (Volume 28, Nos. 8-11) in a series of articles entitled "Capital and Operating Costs of Selected Air Pollution Control System."

Purchased Equipment Costs:

	K 1	<u>KILNS</u> K 2	K 3
Flow rate, ACFM	82,000*	82,000*	311,400
Air/Cloth Ratio	2:1	2:1	2:1 ✓
Total Net Cloth Area (ft ²)	41,000	41,000	156,000 ✓
Total Gross Cloth Area (ft ²)	46,000	46,000	164,000
Insulated, suction baghouse	243,000	243,000	815,500 -
Bag Filters \$	96,000	96,000	342,000 -
<u>Fans & Motors \$</u>	<u>13,000</u>	<u>13,000</u>	<u>41,000</u> -
1977 \$	352,000	352,000	1,198,500 -
X 1.6 = 1981 \$	563,200	563,200	1,917,500 -
<u>Gas Conditioner</u>	<u>25,000</u>	<u>25,000</u>	<u>50,000</u> 3
Total 1981 \$	588,200	588,200	1,967,500

* Average of Kilns 1 and 2

Installation Costs:

<u>Item</u>	<u>Cost Factor</u>
Foundations & Supports	0.04
Erection & Handling 0.50 x 2	1.0 (retrofit)
Electrical	0.08
Piping	0.01
Insulation	0.07
Painting	0.02
Engineering/Supervision	0.10
Construction & Field Expense	0.20
Construction Fee	0.10
Start-up	0.01
Performance Test	0.01
Contingencies	0.03
Total	1.67

Total Installation Costs:

K1-	588,200
K2-	588,200
K3-	1,967,500

$$\$ 3,143,900 \times 1.67 = \$5,250,313$$

Total Costs:

Total equipment and installation costs are estimated at:

$$\$3,143,900 + \$5,250,313 = \$8,394,213$$

3 Baghouses installation

This does not include operating or maintenance costs.

Cost Benefit Analysis

Although no test data is presented to support the claim of an additional 50 percent SO₂ removal through the baghouse, for purposes of this analysis the 50 percent removal was assumed. Kilns 1, 2 and 3 are proposed to emit a total of 600^(262 PPM) lb/hr of SO₂. Based upon maximum capacity and year-round operation, a reduction of 50 percent in emissions would equal 1,314^{50% of potential} tons per year of SO₂. The total cost of installing baghouses on kilns 1, 2 and 3 is estimated above at \$8,400,000. This cost is extremely high and does not include the substantially higher maintenance/operation costs of a baghouse. Considering that the existing ESP system is already removing up to 80 percent of the potential SO₂ emissions from the kiln system, the additional costs a baghouse system would impose upon Lonestar are not warranted.

? CLAIM
80% SO₂
removal
by KILN

Summary

The question of SO₂ emission control in a wet process cement kiln is not one of control equipment (which one has better control) but concerns the maintaining of (sufficient excess oxygen[?]) to drive the SO₂ into the clinker material. At Lonestar's facilities the oxygen is maintained in this range (above 0.5 percent) not only for SO₂ control but to provide for complete combustion of the

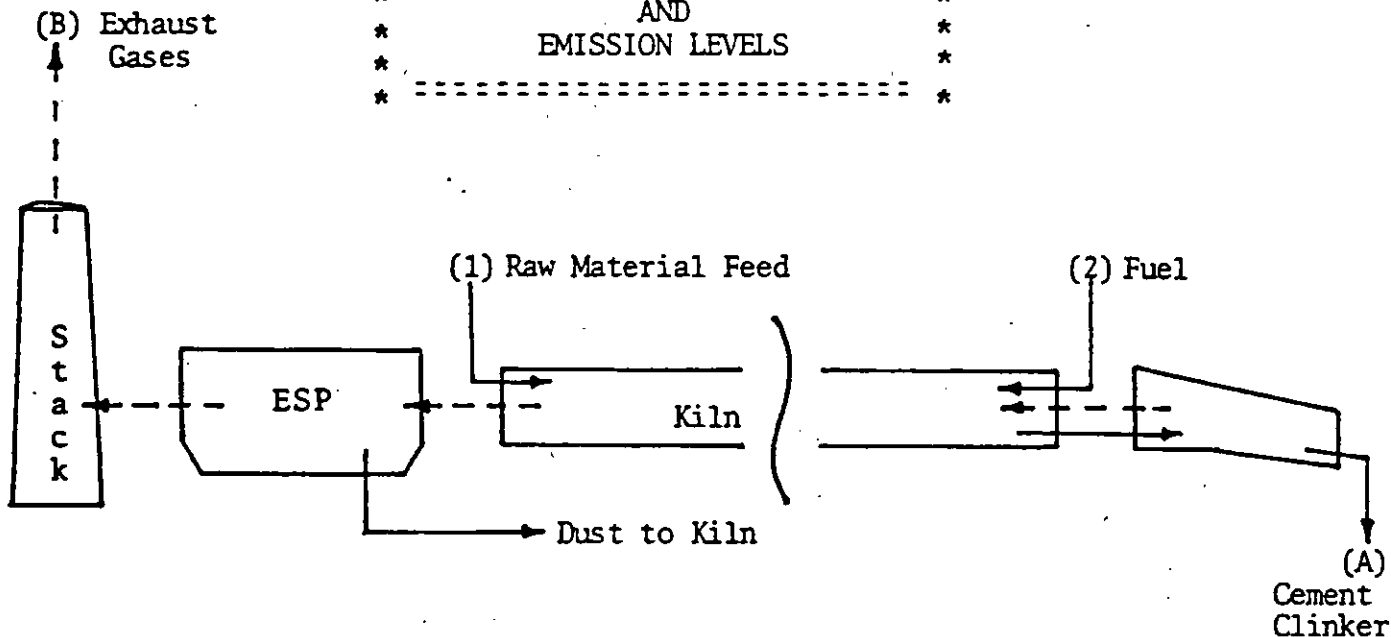
coal and economic benefits. Additionally, SO₂ emissions will be controlled by utilizing coal having a sulfur content of 2 percent or less.

2%
coal

Alternative controls for SO₂ emissions were rejected since retrofitting the three existing kilns with additional or alternative control devices would have only a minimal effect on emissions and would have an insignificant effect on reducing ambient air impacts. The costs of retrofitting would prohibit the company from implementing the complete conversion of its kilns to coal.

DIDN'T
CONSIDER
OTHER
CONTROLS

*! CALCULATED SULFUR BALANCE
* AND *
* EMISSION LEVELS *
* ----- *
* * *



Kiln #3

Sulfur Input Into System - Calculated as Equivalent SO₂

(1) Raw Materials Feed: 141.75 TPH (283,500#/hr.) @ 0.13% SO₃
 #/hr. SO₂ = (141.75)(2000#/ton)(.0013# SO₃/#feed)(64# SO₂/80#SO₃)
 #/hr. SO₂ = 294.8 (POTENTIAL)

(2) Fuel: 17.18 TPH (34,360 #/hr.) coal @ 2% S
 #/hr. SO₂ = (17.18)(2000#/ton)(.02#S/#fuel)(64# SO₂/32#S)
 #/hr. SO₂ = 1374.4 (POTENTIAL)

Total SO₂ Input = 1669.2#/hr. = 294.8(RAW MAT'L) + 1374.4 (FUEL)

Sulfur Out - Calculated as Equivalent SO₂

(A) Cement Clinker: 87.8 TPH @ 0.92% SO₃
 #/hr. SO₂ = (87.8)(2000#/ton)(.0092#SO₃/#clinker)(64#SO₂/80#SO₃)
 #/hr. SO₂ = 1297.1 SO₂ IN CLINKER

(B) Gaseous Emissions should be equivalent to difference between Sulfur Input & Cement Clinker Sulfur Out

#/hr. SO₂ = 372.1# = (1374.4(fuel) + 294.8(feed) - 1297.1(prod))

Percent Sulfur Absorbed in Kiln System

$$\left(\frac{1669.2 \text{ (IN)} - 372.1 \text{ (OUT)}}{1669.2 \text{ (IN)}} \right) = 77.7\%$$

Potential Emissions = 372.2 #/hr. x 8760 ÷ 2000 = 1630.4 TPY

KILN NO. 3

STACK TEST RESULTS - SO₂

↙ %S. in. COOL (less 2%)

4/30/82
Above
Requested
STD. hi % O₂ maybe want to reproduce
?
LW/HW

Date: 4/30/82

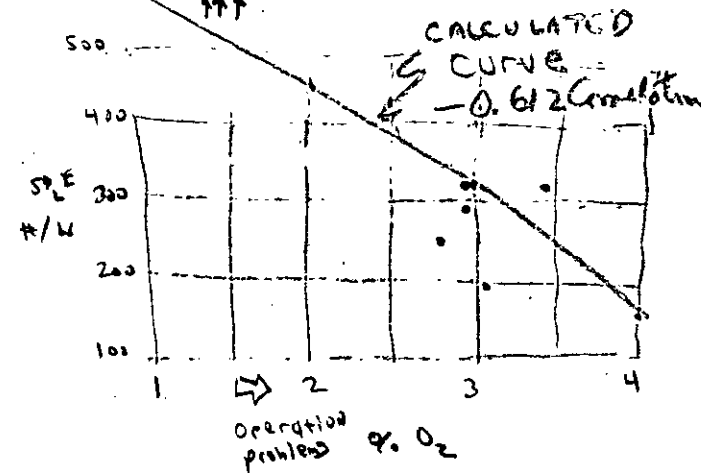
Run No.	Kiln Feed	Feed SO ₃ %	Coal (tph)	%S	Coal SO ₃ %	Clinker SO ₃ %	Dust SO ₃ %	Tested SO ₂	% O ₂	DSCFM	Stack Temp. °F
1	138.28	.17	16.5	X 1.4	3.5	.19	4.93	Y 863.6	X 1.4 < 2%	153911	356.8
2	138.28	.17	16.5	1.44	3.6	.19	5.40	709.1	1.3 < 2%	147463	364.6
3	138.28	.22	16.5	1.552	3.88	.19	4.97	332.3	2.9	145883	362.8

635 Above STD

Date: 5/11/82

1	127.59	.11	13.9	1.668	4.17	.82	4.79	318.52	3.4	155886	343.1
2	127.59	.11	13.5	1.508	3.77	1.27	4.55	294.72	2.9	149023	343.9
3	127.59	.11	14.4	1.488	3.72	.84	4.35	265.46	2.8	149124	346.2
4	127.59	.12	14.4	1.288	3.22	.86	4.35	197.09	3.1	153814	343.3
5	127.59	.10	14.4	1.344	3.36	1.03	4.52	264.91	2.9	151523	344.3
6	127.59	.10	15.5	1.356	3.39	.72	4.33	578.92	1.6 < 2%	148903	352.3

319.9 Below STD



ORIGINALLY CLAIMED BETTER
ABSORPTION ON KILN 3 THAN
OTHER 2 KILNS.

Appears less SO₂ emission @
3% O₂ (low %, 1.5, had
high emission)

STACK TEST RESULTS - SO₂

Date: 4/30/82

Run No.	Kiln Feed	Feed SO ₃ %	Coal (tph)	Coal SO ₃ %	Clinker SO ₃ %	Dust SO ₃ %	Tested SO ₂	% O ₂	DSCFM	Stack Temp. °F
1	138.28	.17	16.5	3.5	.19	4.93	863.6 ⁴³	1.4	153911	356.8
2	138.28	.17	16.5	3.6	.19	5.40	709.1 ³⁵	1.3	147463	364.6
3	138.28	.22	16.5	3.88	.19	4.97	332.3 ¹⁷	2.9	145883	362.8

Date: 5/11/82

1	127.59	.11	13.9	4.17	.82	4.79	318.52 ¹⁶	3.4	155886	343.1
2	127.59	.11	13.5	3.77	1.27	4.55	294.72 ¹⁵	2.9	149023	343.9
3	127.59	.11	14.4	3.72	.84	4.35	265.46 ¹³	2.8	149124	346.2
4	127.59	.12	14.4	3.22	.86	4.35	197.09 ¹⁰	3.1	153814	343.3
5	127.59	.10	14.4	3.36	1.03	4.52	264.91 ¹³	2.9	151523	344.3
6	127.59	.10	15.5	3.39	.72	4.33	578.92 ²⁹	1.6	148903	352.3

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.

DISPERSION MODELING EVALUATION

Introduction

ESE has completed a dispersion modeling evaluation of Lonestar's sulfur dioxide (SO₂) impacts with Kilns 1, 2 and 3 all burning coal. K1 and K2 were modeled emitting a maximum of 100 lbs/hr each when burning coal, and K3 was modeled emitting a maximum of 400 lbs/hr. The purpose of this evaluation was to determine compliance with PSD Class I and Class II allowable increments, and with Federal, State and Dade County Ambient Air Quality Standards (AAQS) when all three kilns are fired with coal. Presented below is a summary of the methodology and results of the modeling evaluation.

Methodology

The methodology used in the evaluation was the same as that presented in the December 17, 1981 modeling evaluation performed for K3 only on coal, except that default values for the wind profile exponents were used. The U.S. Environmental Protection Agency (EPA) and Florida Department of Environmental Regulation (DER) approved Industrial Source Complex Short-Term (ISCST) model was used to estimate annual, 24-hour and 3-hour SO₂ impacts due to Lonestar and nearby significant sources. To evaluate compliance with Dade County AAQS, 4-hour and 1-hour concentrations were also examined. A 5-year meteorological data base (1970-1974) from Miami International Airport was used in conjunction with the ISCST.

For Class I Prevention of Significant Deterioration (PSD) impacts, 33 discrete receptors were placed on the boundary of the Class I area (Everglades National Park). For short term averaging times, highest, second-highest concentrations at each receptor were utilized.

Class II PSD increment consumption and maximum impact concentrations were determined by executing the ISCST with a radial receptor grid placed around the Lonestar plant. Receptors ranged from 0.4 km to 2.8 km with a 0.4 km radial grid spacing. Lonestar and Resource Recovery were determined to be the only significant increment consuming sources in the area, as presented in previous Lonestar modeling reports. Highest, second-highest concentrations were utilized for short-term averaging times.

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.

Lonestar's interaction with other sources were also examined in three additional 5-year ISCST model executions, i.e., receptors were placed downwind of Alton Box, Resource Recovery, and South Florida Materials (formerly Houdaille) in the directions aligning Lonestar with these sources. Since the modeling for receptors around Lonestar showed that Lonestar by itself will comply with all ambient air quality standards, the purpose of this modeling was to determine if Lonestar would cause or contribute to non-compliance of AAQS in the vicinity of these other sources. A 0.2 km receptor spacing was utilized in these model runs.

Highest, second-highest predicted short-term concentrations were refined with the ISCST for cases where standards were predicted to be approached or exceeded. Based on the modeling results, refinements were performed for only the 4-hour averaging time since the Dade County 4-hour AAQS was being approached. A 0.1 km receptor spacing was utilized to refine the concentrations.

Stack parameters used in the modeling are shown in Table 1. The changes since the December 17, 1981 modeling are shown in parentheses, and consist of the SO₂ emission rates for Kilns 1, 2 and 3, and stack parameters for South Florida Materials. Updated parameters for South Florida Materials were provided by Scott Quass of your staff, who researched the permit file of the DER's West Palm Beach office.

Results

Table 2 presents the maximum air quality impacts on PSD Class I and Class II increments, and Florida and Dade County AAQS. The dispersion modeling analysis predicted that Class I and Class II area impacts will not exceed the allowable PSD increments, and no Florida AAQS will be exceeded due to Kilns 1, 2 and 3 burning coal. The increment consumption values shown in Table 2 are conservative since they reflect Lonestar's entire emissions as being increment consuming; only emissions above those due to natural gas firing in K1, K2 and K3 are increment consuming.

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Lonestar also complies with all Dade County AAQS. There is a predicted violation of Dade County AAQS which occurs downwind of Alton Box in the direction of interaction with Lonestar. As shown by the "Lonestar only" impacts, Lonestar's potential maximum individual impact is relatively small and well below the Dade County AAQS. Upon further investigation, it was shown that Lonestar does not contribute significantly to the predicted Alton Box violations. These results are based upon Alton Box emitting 14.4 lbs/hr for each hour of the day (346 lbs/day). Updated information provided by Alton Box showed they burned up to 40 gal/hr of up to 3.0% sulfur fuel oil for 16 hrs/day. This fuel usage would result in only 307 lbs/day being emitted; therefore, Alton Box's maximum impacts may be overestimated by about 10 percent.

Violation
of Dade
Co. AAQS

Conclusion

In conclusion, the dispersion modeling evaluation shows that the operation of Kilns 1, 2 and 3 at Lonestar on coal, emitting 100, 100 and 400 lbs/hr SO₂, respectively, is in compliance with Federal, State and Dade County ambient air quality standards and PSD increments. Lonestar's contributions to predicted violations in the vicinity of Alton Box are shown to be insignificant.

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Table 1. Stack Parameters Used in Lonestar Modeling Evaluation

Source	S02 Emission Rate (g/sec)	Stack Height (m)	Stack Diameter (m)	Stack Gas Velocity (m/sec)	Stack Temp. (°K)
Kiln #1	12.60(2.26)	61.0	2.1	11.86	465.0
Kiln #2	12.60(1.03)	61.0	2.1	10.55	447.0
Kiln #3	50.40(63.70)	61.0	4.33	9.98	454.8
Alton Box	1.81	9.1	0.50	10.00	491.0
South Fla. Mat. (Houdaille)	2.38	11.60 (12.2)	1.08 (1.07)	21.30 (30.10)	363.0 (397.0)
Resource Recovery	14.00	45.7	2.70	14.00	489.0

Note: Numbers in parentheses indicate value used in previous modeling, if different from that used in present study.

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Table 2. Summary of Lonestar Modeling Results, K3 Burning Coal

Scenario	Maximum Concentrations (ug/m ³)				
	Annual	24-hour	4-hour	3-hour	1-hour
<u>Class I Increment Consumption*</u>					
Lonestar Only	0.3	2.9	NA	13.9	NA
Lonestar & Resource Recovery	0.4	3.0	NA	13.9	NA
Allowable Class I Increments	2.0	5.0 ✓	NA	25.0	NA ✓
<u>Class II Increment Consumption*</u>					
Lonestar Only	2.2	16.8	NA	63.3	NA
Lonestar & Resource Recovery	2.4	16.8	NA	63.3	NA
Allowable Class II Increments	20	91	NA	512	NA ✓
<u>Total Air Quality Impacts</u>					
Receptors in Vicinity of Lonestar	3.0	16.8	56.3	63.6	107.2
Receptors in Vicinity of South Florida Materials (Houdaille)**	2.1	19.5	53.3	58.6	95.5
Receptors in Vicinity of Resource Recovery**	1.2	11.2	29.2	34.5	56.9
<u>Receptors in Vicinity of Alton Box**</u>					
All Sources	6.8	32.9	99.8	108.2	155.1
Lonestar Only	0.4	5.7	16.6	20.7	34.0
<u>Dade County AAQS</u>	NA	28.6	57.2	NA	286.0
<u>Florida AAQS</u>	60	260	NA	1300	NA

Note: NA = Not Applicable

*Values shown assume that all Lonestar emissions consume increments, therefore, numbers are conservative.

**Receptors were placed downwind of indicated source in direction which aligned Lonestar with the respective source.

4hour - Vicinity A B
 1970 98.4
 1971 72.1

Highest Lorain County

	1970	1970	1972	1973	1974
4hr	64.8	61.8	60.8	63.5	58.5
2-4hr	55.1	54.2	54.9	53.3	53.2
24hr	16.7	18.9	17.2	20.1	19.0
2-24hr	15.0	16.8	16.5	15.5	15.0

Refined

56.3

4hr Unstable cond.



184

Classify - do we use high or
 2nd high
 Cause of water build



January 31, 1983

DER
FEB 11 1983
BAQM

Mr. Clair Fancy, P.E.
Deputy Chief, B.A.Q.M.
Florida Dept. of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32301

Re: Lonestar Florida Pennsuco Inc.;
Request for revision of SO₂ Standards
contained in EPA Permit # PSD 050 and
FDER Permit # AC13 - 54054

Dear Mr. Fancy:

The Department of Environmental Resources Management has completed review of the referenced request by Lonestar to the Environmental Protection Agency and the Florida Department of Environmental Regulation for revision of the sulfur dioxide emission limits contained in the abovementioned permits, and we have several concerns for your consideration during the review of the proposed revision.

As indicated previously in our letter dated April 23, 1982 to Mr. Roy Duke at your District office in West Palm Beach, DERM proposes that Lonestar be directed to conduct a thorough ambient monitoring program to determine the actual levels of SO₂ in predicted high impact areas, before kilns #1 and #2 are allowed to be converted to coal fuel. It is our position that such a measure is required due to inconsistencies in previous models, and also because the Dade County AAQS might be exceeded if new emission limits are granted to Lonestar. Furthermore, ambient monitoring would serve to ensure that the Class 1 increment is not exceeded in the Everglades National Park.

With regards to Lonestar's current request for revision of the SO₂ emission limits, please be advised of the following concerns by DERM:

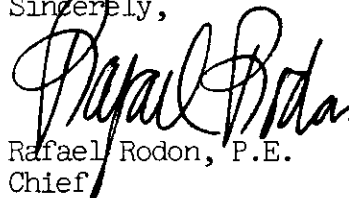
1. The original application by Lonestar for the coal conversion of their kilns projected SO₂ emissions of 56.7 lbs/hr. each from kilns 1 and 2, and 26.3 lbs/hr/ from kiln #3. As you can see, this is greater than twice the amount of SO₂ from each of kilns 1 and 2 than from kiln 3. Yet the current request by Lonestar is for 100 lbs/hr. from each of kilns 1 and 2, and 400 lbs/hr. from kiln 3. Lonestar should justify such a significant change in the projected emission limitations.

2. The BACT analysis, attached to the current request, includes a section describing operating variables that affect SO₂ emissions (page 2, 2nd paragraph). It is stated in this section that the use of excess oxygen greater than 1.5 percent can cause operational problems. Then, in the separate attachment 'STACK TEST RESULTS - SO₂', it is documented that for all the stack tests where SO₂ emissions were lower than the requested limit of 400 lbs/hr. for kiln #3, the percent oxygen ranged from 2.9% to 3.4%. Other results, with the percent oxygen between 1.3% and 1.6%, all showed SO₂ emissions well in excess of 400 lbs/hr. Based on the above, it is reasonable to assume that the requested emission limit for SO₂ of 400 lbs/hr. from kiln 3 is unrealistic.

Finally, this Department does not feel that the possibility of alternate or add on controls for sulfur dioxide has been adequately addressed, in that no direct controls for SO₂ emissions have been assessed.

We trust that the above comments will assist you in your review. If you should have any questions, please do not hesitate to call at (305) 579-2760 or (Sun-com 448-2760).

Sincerely,



Rafael Rodon, P.E.
Chief

Environmental Planning Division

RR:HPW:vpc

cc: Bill Voshell
Roy Duke
Al Townsend
Scott Quaas

2/15

Larry, ^{Steve}

Please keep for
review of Lonestar
when we get it.

ctj

Chapter 25

RESERVED*

*Editor's note—Prior to the enactment of Ord. No. 73-8, adopted Feb. 6, 1973, Ch. 25 of this Code contained rules and regulations of the Dade County Port Authority. Section 2 of said Ord. No. 73-8 provided:

"Section 2. With the exception of resolutions of the board of county commissioners, acting as Dade County Port Authority, creating or relating to bonded indebtedness or other contractual obligations of the Dade County Port Authority, all county ordinances and resolutions, including those of the board of county commissioners acting as Dade County Port Authority, municipal ordinances, resolutions and charters, special laws applying to this county and general laws applying only to this county or any general law which this commission is specifically authorized by the constitution to supersede, nullify or amend, or any part of any such ordinance, resolution, charter or law, in conflict with any provision contained herein is hereby repealed."

Former Ch. 25 was derived from Ord. No. 59-24, adopted July 14, 1959; Ord. No. 59-30, adopted Aug. 18, 1959; Ord. No. 63-19, adopted May 21, 1963; and Ord. No. 67-8, adopted Feb. 7, 1967.

[The next page is 603]

Supp. No. 104



LONESTAR FLORIDA/PENNSUCO, INC.

Cement and Aggregate Division
Post Office Box 122035
Palm Village Station
Hialeah, Florida 33012
(305) 823-8800

November 19, 1982

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Thomas W. Devine, Director
Air & Waste Management Division
Environmental Protection Agency - Region IV
345 Courtland Street
Atlanta, GA 30365

RE: PSD-FL-050; Lonestar Florida/Pennsuco, Inc.;
Kilns 1, 2 and 3; Request for Revision of Sulfur
Dioxide Emission Limitations

Dear Mr. Devine:

In accordance with my letter to you dated November 2, 1982, the following items are enclosed to assist your office in revising the above referenced permit:

1) A revised air quality modeling analysis addressing significant changes which would influence the model predictions and which shows compliance with applicable ambient air quality standards.

2) A revised BACT analysis showing that alternate controls for SO₂ emissions are unwarranted. Retrofitting the three existing kilns with additional or alternative control devices would have only minimal effect on emissions, would have an insignificant effect on reducing ambient air impacts, and would prohibit the company from implementing the complete conversion of its kilns to coal. The analysis also contains an explanation of operating variables in a Portland cement kiln and the resulting effect on SO₂ emissions.

3) A summary of recent stack tests including SO₂ absorption calculations with resulting emission estimates for kiln 3.

DER

FEB 02 1983

JAQM

Mr. Thomas W. Devine, Director
November 19, 1982
Page 2

Based upon these materials Lonestar respectfully requests a revision to the SO₂ emission limiting standards in the above PSD permit as follows:

Kiln 1	100 lbs/hr.
Kiln 2	100 lbs/hr.
Kiln 3	400 lbs/hr.

We look forward to answering any questions you may have and meeting with you at an early date to discuss this request.

Sincerely,



SCOTT QUAAS
Environmental/Specialist

cc: S. Smallwood-DER

LONESTAR FLORIDA PENNSUCO, INC.
BEST AVAILABLE CONTROL TECHNOLOGY

Operating Variables that Affect SO₂ Emissions

During the operation of a wet process cement kiln there are several process variables that will affect the emission of SO₂ from the kiln's stack.

The major variable is the oxygen content of the kiln and its possible reduction/oxidation zones. The sulfur that has the potential to form SO₂ comes from the kiln feed, fuel and insulflated dust. Depending on the oxygen content in the kiln, the sulfur from the kiln feed will either stay as an oxidized sulfur compound or will be reduced to SO₂. Oxygen contents below about 0.5 percent will tend to generate SO₂ while higher oxygen contents will retain the sulfur with the feed and eventually in the clinker. This is basically a surface reaction of sulfur oxides on MgO and CaO particles and proceeds until MgSO₄ or CaSO₄ have encapsulated the particle and it has diffused to its interior.

As the fuel burns, sulfur oxides are formed in the oxidizing area of the flame. With sufficient oxygen and contact in the kiln with the feed material, compounds such as calcium sulfate are formed and retained in this material.

As the feed material is calcinated and reaches the point of insipient fusion (clinker formation), potassium and sodium oxides are volatilized and combined with available sulfur oxides to form alkaline salts in a gas reaction. These salts are very fine particles that are caught in the pollution control equipment downstream of the kiln. The return of all the dust to the kiln (insulflation) is performed as Lonestar's kiln #3. The insulflated sulfates are eventually retained with the clinker as were the sulfates in the feed material and sulfur oxides from the fuel.

The overall effect of excess oxygen in the kiln is that less than 0.5 percent will enhance SO₂ emissions and excess oxygen in the range of 0.5-1.5 percent will significantly reduce emissions. The use of excess oxygen greater than 1.5 percent can cause operational problems (too hot of a backend kiln temperature, improper clinker burning zone, kiln dusting) as well as wasting fuel by heating the excess air. The use of too little excess oxygen causes incomplete combustion and very unstable operating conditions. When an electrostatic precipitator (ESP) is used, the carbon monoxide generated can cause explosive conditions in the ESP.

Other variables for the emission of SO₂ are sulfur content of fuel, chemistry of kiln feed and kiln dust, NO_x formation and unstable kiln conditions. These factors can be significant as to

SO₂ generation, but for the specific long term operating conditions at Lonestar's kilns they are not considered as important for this analysis as is excess oxygen content.

Control Technology Available

The two types of particulate control equipment typically used to meet New Source Performance Standards (NSPS) and Best Available Control Technology (BACT) review criteria are electrostatic precipitators (ESP) and baghouses. Historically, there has been very little success in using baghouses on wet process kilns due to condensation, temperature and maintenance problems. Baghouses are usually multicompartmental with thousands of fiberglass bags for filtering the dust from the kiln gases. The collection is done on the dust cake which forms on the dirty side of the bags. When a kiln is started or stopped, there is potential for the filter cake temperature to fall below the dew point unless heated by a separate heat source. If condensation does occur (the usual moisture content of the exhaust gases is 30 percent) this cake will harden and permanently blind the bag. Another major problem with baghouses has been the inability to sustain the high operational temperatures without gas conditioning equipment (dilution air). During unstable kiln conditions this can become a problem to adequately cool or heat the bags to prevent excursions of their temperature limits or cooling below the dew point.

Another operational problem with baghouses has been maintaining the thousands of bags. The fiberglass fibers will fatigue with time or fail due to condensation or temperature and can develop pin hole leaks that will necessitate patching or bag replacement. Therefore, a routine maintenance program is a necessity to monitor the conditions of the bags and maintain the reliability of the system.

ESP's, such as those presently installed at Lonestar's kilns, do not have condensation, temperature, or maintenance problems. They do not require any auxiliary heating and can take relatively large fluctuations in gas temperatures without problem. An ESP is designed to have extensive internal maintenance during annual kiln shutdowns and not on a daily basis. It has multi-stages that the gases must travel through (not just a thin filter cake) for collection of the kiln dust. These stages are individually controlled as to voltage, amperage and cleaning cycle. Operational problems in one stage can be compensated for by externally adjusting the other stages. ESP's do not have the daily maintenance problems associated with baghouses.

With regard to SO₂ emissions, approximately 75 percent of the SO₂ is absorbed by the proper burning of the kiln and is incorporated in the clinker. EPA has stated that due to the gases having to pass through the filter cake an additional 50 percent removal of the remaining 25 percent (that is,

approximately 12 percent) of the SO₂ may be achieved. This was developed through review of limited testing data on several kilns in the early 1970's; however, no actual tests comparing both control devices under the same operating kiln conditions have been performed.

Furthermore, the reasonableness of that 50 percent additional removal is questionable. In a baghouse system, the gases quickly move from the inlet manifold to a compartment and through a filter cake (approximately 1/4 inch thick) and back to the clean air plenum. The residence time in the collector is much less than in a precipitator. The additional residence time in an electrostatic precipitator (ESP) allows for longer reaction time with the dust particles for good absorption.

SO₂

Environmental Impacts

The ambient air quality impacts due to conversion of Lonestar's kilns are addressed in the accompanying dispersion modeling evaluation. The predicated impacts reflect SO₂ emissions using ESP's. Lonestar's maximum annual and highest, second-highest short-term predicted SO₂ impacts with ESP control are shown below in terms of percentages of the AAQS and PSD increments consumed:

Percentage of Air Quality Standards
Consumed by Lonestar Kilns 1, 2 and 3

<u>Averaging Time</u>	<u>Class I Increments</u>	<u>Class II Increments</u>	<u>Florida AAQS</u>	<u>Dade County AAQS</u>
Annual	15%	11%	5%	N/A
24-Hour	58%	18%	6%	59%
4-Hour	N/A	N/A	N/A	97%
3-Hour	56%	12%	5%	N/A
1-Hour	N/A	N/A	N/A	37%

N/A - Not applicable

Retrofitting all three kilns with baghouses, and adopting the undocumented assumption of 50% additional removal of the SO₂, would reduce the percentages by one half. With existing ESP control, however, Lonestar's impacts are predicted to be less than 20 percent of Class II increments and Florida AAQS. Therefore, reducing these impacts by 50 percent would not produce significant air quality benefits. In the case of Class I PSD increments and Dade County AAQS (the most stringent standards), Lonestar's impacts do not exceed 60 percent of those standards, except for the 4-hour Dade County AAQS. Therefore, even if a 50% reduction is assumed to be achievable, the ultimate benefit to the environment of such a reduction is not significant.

The impacts presented in this analysis represent the combination of maximum Lonestar production capacity and worst case meteorological conditions. For the majority of time, actual impacts due to Lonestar are expected to be far below these predicted levels.

ECONOMIC ANALYSIS

An economic analysis was performed for retrofitting baghouses on kilns 1, 2 and 3. The analysis was performed using procedures described in the August 1978 through November 1978 issues of the Journal of the Air Pollution Control Association (Volume 28, Nos. 8-11) in a series of articles entitled "Capital and Operating Costs of Selected Air Pollution Control System."

Purchased Equipment Costs:

	<u>K 1</u>	<u>K 2</u>	<u>K 3</u>
Flow rate, ACFM	82,000*	82,000*	311,400
Air/Cloth Ratio	2:1	2:1	2:1
Total Net Cloth Area (ft ²)	41,000	41,000	156,000
Total Gross Cloth Area (ft ²)	46,000	46,000	164,000
Insulated, suction baghouse	243,000	243,000	815,500
Bag Filters \$	96,000	96,000	342,000
<u>Fans & Motors \$</u>	<u>13,000</u>	<u>13,000</u>	<u>41,000</u>
1977 \$	352,000	352,000	1,198,500
X 1.6 = 1981 \$	563,200	563,200	1,917,500
<u>Gas Conditioner</u>	<u>25,000</u>	<u>25,000</u>	<u>50,000</u>
Total 1981 \$	588,200	588,200	1,967,500

* Average of Kilns 1 and 2

Installation Costs:

<u>Item</u>	<u>Cost Factor</u>
Foundations & Supports	0.04
Erection & Handling 0.50 x 2	1.0 (retrofit)
Electrical	0.08
Piping	0.01
Insulation	0.07
Painting	0.02
Engineering/Supervision	0.10
Construction & Field Expense	0.20
Construction Fee	0.10
Start-up	0.01
Performance Test	0.01
Contingencies	0.03
Total	1.67

Total Installation Costs:

K1-	588,200
K2-	588,200
K3-	1,967,500

$$\text{\$ } 3,143,900 \times 1.67 = \text{\$ } 5,250,313$$

Total Costs:

Total equipment and installation costs are estimated at:

$$\text{\$ } 3,143,900 + \text{\$ } 5,250,313 = \text{\$ } 8,394,213$$

This does not include operating or maintenance costs.

Cost Benefit Analysis

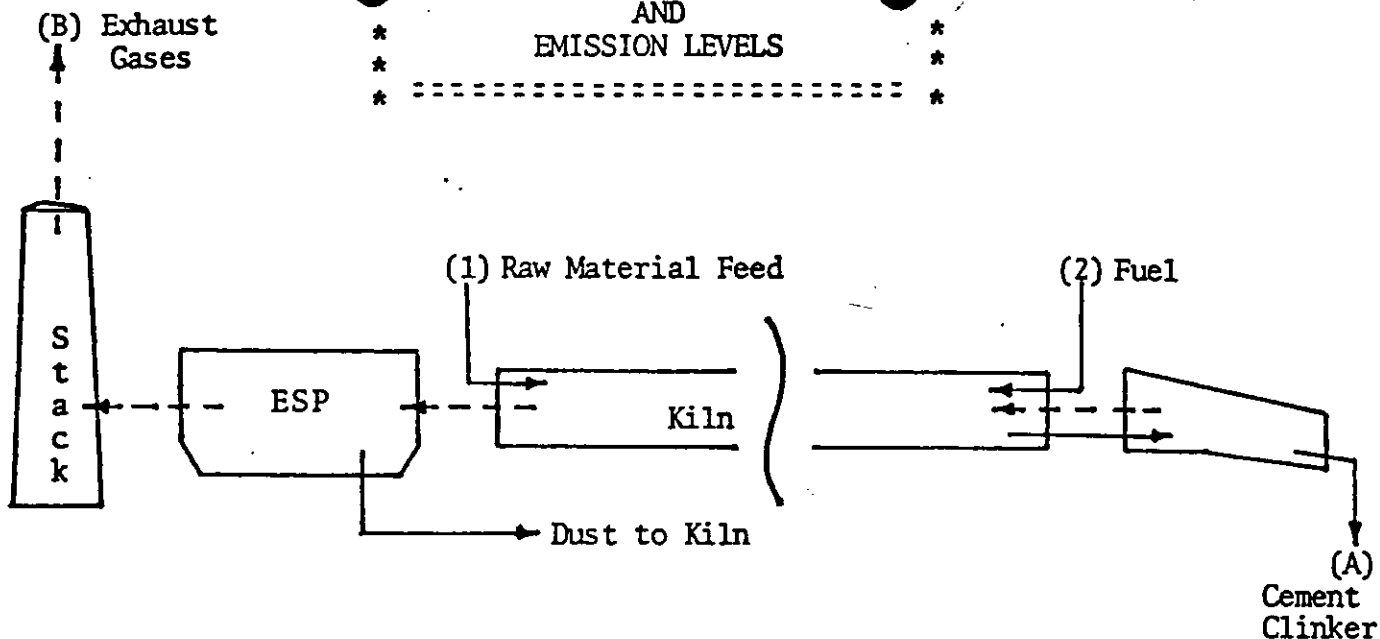
Although no test data is presented to support the claim of an additional 50 percent SO₂ removal through the baghouse, for purposes of this analysis the 50 percent removal was assumed. Kilns 1, 2 and 3 are proposed to emit a total of 600 lb/hr of SO₂. Based upon maximum capacity and year-round operation, a reduction of 50 percent in emissions would equal 1,314 tons per year of SO₂. The total cost of installing baghouses on kilns 1, 2 and 3 is estimated above at \$8,400,000. This cost is extremely high and does not include the substantially higher maintenance/operation costs of a baghouse. Considering that the existing ESP system is already removing up to 80 percent of the potential SO₂ emissions from the kiln system, the additional costs a baghouse system would impose upon Lonestar are not warranted.

Summary

The question of SO₂ emission control in a wet process cement kiln is not one of control equipment (which one has better control) but concerns the maintaining of sufficient excess oxygen to drive the SO₂ into the clinker material. At Lonestar's facilities the oxygen is maintained in this range (above 0.5 percent) not only for SO₂ control but to provide for complete combustion of the

coal and economic benefits. Additionally, SO₂ emissions will be controlled by utilizing coal having a sulfur content of 2 percent or less.

Alternative controls for SO₂ emissions were rejected since retrofitting the three existing kilns with additional or alternative control devices would have only a minimal effect on emissions and would have an insignificant effect on reducing ambient air impacts. The costs of retrofitting would prohibit the company from implementing the complete conversion of its kilns to coal.



Kiln #3

Sulfur Input Into System - Calculated as Equivalent SO₂

(1) Raw Materials Feed: 141.75 TPH (283,500#/hr.) @ 0.13% SO₃

$$\text{\#/hr. SO}_2 = (141.75)(2000\text{\#/ton})(.0013\text{\# SO}_3\text{\#/feed})(64\text{\# SO}_2\text{/80\#SO}_3)$$

$$\text{\#/hr. SO}_2 = 294.8$$

(2) Fuel: 17.18 TPH (34,360 #/hr.) coal @ 2% S

$$\text{\#/hr. SO}_2 = (17.18)(2000\text{\#/ton})(.02\text{\#S/\#fuel})(64\text{\# SO}_2\text{/32\#S})$$

$$\text{\#/hr. SO}_2 = 1374.4$$

Total SO₂ Input = 1669.2#/hr.

Sulfur Out - Calculated as Equivalent SO₂

(A) Cement Clinker: 87.8 TPH @ 0.92% SO₃

$$\text{\#/hr. SO}_2 = (87.8)(2000\text{\#/ton})(.0092\text{\#SO}_3\text{\#/clinker})(64\text{\#SO}_2\text{/80\#SO}_3)$$

$$\text{\#/hr. SO}_2 = 1297.1$$

(B) Gaseous Emissions should be equivalent to difference between Sulfur Input & Cement Clinker Sulfur Out

$$\text{\#/hr. SO}_2 = 372.1\text{\#}$$

Percent Sulfur Absorbed in Kiln System

$$1669.2 - 372.1/1669.2 = 77.7\%$$

Potential Emissions = 372.2 #/hr. x 8760 ÷ 2000 = 1630.4 TPY

STACK TEST RESULTS - SO₂

Date: 4/30/82

Run No.	Kiln Feed	Feed SO ₃ %	Coal (tph)	Coal SO ₃ %	Clinker SO ₃ %	Dust SO ₃ %	Tested SO ₂	% O ₂	DSCFM	Stack Temp. °F
1	138.28	.17	16.5	3.5	.19	4.93	863.6	1.4	153911	356.8
2	138.28	.17	16.5	3.6	.19	5.40	709.1	1.3	147463	364.6
3	138.28	.22	16.5	3.88	.19	4.97	332.3	2.9	145883	362.8

Date: 5/11/82

1	127.59	.11	13.9	4.17	.82	4.79	318.52	3.4	155886	343.1
2	127.59	.11	13.5	3.77	1.27	4.55	294.72	2.9	149023	343.9
3	127.59	.11	14.4	3.72	.84	4.35	265.46	2.8	149124	346.2
4	127.59	.12	14.4	3.22	.86	4.35	197.09	3.1	153814	343.3
5	127.59	.10	14.4	3.36	1.03	4.52	264.91	2.9	151523	344.3
6	127.59	.10	15.5	3.39	.72	4.33	578.92	1.6	148903	352.3

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.

DISPERSION MODELING EVALUATION

Introduction

ESE has completed a dispersion modeling evaluation of Lonestar's sulfur dioxide (SO₂) impacts with Kilns 1, 2 and 3 all burning coal. K1 and K2 were modeled emitting a maximum of 100 lbs/hr each when burning coal, and K3 was modeled emitting a maximum of 400 lbs/hr. The purpose of this evaluation was to determine compliance with PSD Class I and Class II allowable increments, and with Federal, State and Dade County Ambient Air Quality Standards (AAQS) when all three kilns are fired with coal. Presented below is a summary of the methodology and results of the modeling evaluation.

Methodology

The methodology used in the evaluation was the same as that presented in the December 17, 1981 modeling evaluation performed for K3 only on coal, except that default values for the wind profile exponents were used. The U.S. Environmental Protection Agency (EPA) and Florida Department of Environmental Regulation (DER) approved Industrial Source Complex Short-Term (ISCST) model was used to estimate annual, 24-hour and 3-hour SO₂ impacts due to Lonestar and nearby significant sources. To evaluate compliance with Dade County AAQS, 4-hour and 1-hour concentrations were also examined. A 5-year meteorological data base (1970-1974) from Miami International Airport was used in conjunction with the ISCST.

For Class I Prevention of Significant Deterioration (PSD) impacts, 33 discrete receptors were placed on the boundary of the Class I area (Everglades National Park). For short term averaging times, highest, second-highest concentrations at each receptor were utilized.

Class II PSD increment consumption and maximum impact concentrations were determined by executing the ISCST with a radial receptor grid placed around the Lonestar plant. Receptors ranged from 0.4 km to 2.8 km with a 0.4 km radial grid spacing. Lonestar and Resource Recovery were determined to be the only significant increment consuming sources in the area, as presented in previous Lonestar modeling reports. Highest, second-highest concentrations were utilized for short-term averaging times.

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.

Lonestar's interaction with other sources were also examined in three additional 5-year ISCST model executions, i.e., receptors were placed downwind of Alton Box, Resource Recovery, and South Florida Materials (formerly Houdaille) in the directions aligning Lonestar with these sources. Since the modeling for receptors around Lonestar showed that Lonestar by itself will comply with all ambient air quality standards, the purpose of this modeling was to determine if Lonestar would cause or contribute to non-compliance of AAQS in the vicinity of these other sources. A 0.2 km receptor spacing was utilized in these model runs.

Highest, second-highest predicted short-term concentrations were refined with the ISCST for cases where standards were predicted to be approached or exceeded. Based on the modeling results, refinements were performed for only the 4-hour averaging time since the Dade County 4-hour AAQS was being approached. A 0.1 km receptor spacing was utilized to refine the concentrations.

Stack parameters used in the modeling are shown in Table 1. The changes since the December 17, 1981 modeling are shown in parentheses, and consist of the SO₂ emission rates for Kilns 1, 2 and 3, and stack parameters for South Florida Materials. Updated parameters for South Florida Materials were provided by Scott Quass of your staff, who researched the permit file of the DER's West Palm Beach office.

Results

Table 2 presents the maximum air quality impacts on PSD Class I and Class II increments, and Florida and Dade County AAQS. The dispersion modeling analysis predicted that Class I and Class II area impacts will not exceed the allowable PSD increments, and no Florida AAQS will be exceeded due to Kilns 1, 2 and 3 burning coal. The increment consumption values shown in Table 2 are conservative since they reflect Lonestar's entire emissions as being increment consuming; only emissions above those due to natural gas firing in K1, K2 and K3 are increment consuming.

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.

Lonestar also complies with all Dade County AAQS. There is a predicted violation of Dade County AAQS which occurs downwind of Alton Box in the direction of interaction with Lonestar. As shown by the "Lonestar only" impacts, Lonestar's potential maximum individual impact is relatively small and well below the Dade County AAQS. Upon further investigation, it was shown that Lonestar does not contribute significantly to the predicted Alton Box violations. These results are based upon Alton Box emitting 14.4 lbs/hr for each hour of the day (346 lbs/day). Updated information provided by Alton Box showed they burned up to 40 gal/hr of up to 3.0% sulfur fuel oil for 16 hrs/day. This fuel usage would result in only 307 lbs/day being emitted; therefore, Alton Box's maximum impacts may be overestimated by about 10 percent.

Conclusion

In conclusion, the dispersion modeling evaluation shows that the operation of Kilns 1, 2 and 3 at Lonestar on coal, emitting 100, 100 and 400 lbs/hr SO₂, respectively, is in compliance with Federal, State and Dade County ambient air quality standards and PSD increments. Lonestar's contributions to predicted violations in the vicinity of Alton Box are shown to be insignificant.

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.

Table 1. Stack Parameters Used in Lonestar Modeling Evaluation

Source	SO2 Emission Rate (g/sec)	Stack Height (m)	Stack Diameter (m)	Stack Gas Velocity (m/sec)	Stack Temp. (°K)
Kiln #1	12.60(2.26)	61.0	2.1	11.86	465.0
Kiln #2	12.60(1.03)	61.0	2.1	10.55	447.0
Kiln #3	50.40(63.70)	61.0	4.33	9.98	454.8
Alton Box	1.81	9.1	0.50	10.00	491.0
South Fla. Mat. (Houdaille)	2.38	11.60 (12.2)	1.08 (1.07)	21.30 (30.10)	363.0 (397.0)
Resource Recovery	14.00	45.7	2.70	14.00	489.0

*60Tfy
Source*

Note: Numbers in parentheses indicate value used in previous modeling, if different from that used in present study.

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.

Table 2. Summary of Lonestar Modeling Results, K3 Burning Coal

Scenario	Maximum Concentrations (ug/m ³)				
	Annual	24-hour	4-hour	3-hour	1-hour
<u>Class I Increment Consumption*</u>					
Lonestar Only	0.3	2.9	NA	13.9	NA
Lonestar & Resource Recovery	0.4	3.0	NA	13.9	NA
Allowable Class I Increments	2.0	5.0	NA	25.0	NA
<u>Class II Increment Consumption*</u>					
Lonestar Only	2.2	16.8	NA	63.3	NA
Lonestar & Resource Recovery	2.4	16.8	NA	63.3	NA
Allowable Class II Increments	20	91	NA	512	NA
<u>Total Air Quality Impacts</u>					
Receptors in Vicinity of Lonestar	3.0	16.8	56.3	63.6	107.2
Receptors in Vicinity of South Florida Materials (Houdaille)**	2.1	19.5	53.3	58.6	95.5
Receptors in Vicinity of Resource Recovery**	1.2	11.2	29.2	34.5	56.9
Receptors in Vicinity of Alton Box**					
All Sources	6.8	32.9	99.8	108.2	155.1
Lonestar Only	0.4	5.7	16.6	20.7	34.0
<u>Dade County AAQS</u>	NA	28.6	57.2	NA	286.0
<u>Florida AAQS</u>	60	260	NA	1300	NA

Note: NA = Not Applicable

*Values shown assume that all Lonestar emissions consume increments, therefore, numbers are conservative.

**Receptors were placed downwind of indicated source in direction which aligned Lonestar with the respective source.

Scott Quass



LONESTAR FLORIDA PENNSUCO, INC.

6451 N. Federal Highway
Fort Lauderdale, Florida 33308
Post Office Box 6097
Fort Lauderdale, Florida 33310
(305) 491-0900

November 19, 1982

Mr. Thomas W. Devine, Director
Air & Waste Management Division
Environmental Protection Agency - Region IV
345 Courtland Street
Atlanta, GA 30365

Dear Mr. Devine:

Re: PSD-FL-050; Lonestar Florida Pennsuco, Inc.;
Kilns 1, 2 and 3; Request for Revision of Sulfur
Dioxide Emission Limitations

Please find enclosed the support documentation for the modeling analysis which accompanied our November 19, 1982 letter on the referenced subject.

Sincerely yours,

Albert W. Townsend
Manager
Real Estate & Environmental Affairs

Encl.
AWT/jh
cc: S. Smallwood-DER

July 15, 1982

AP - Dade County
Lonestar Florida/Pennsuco
Incorporated
Coal Conversion
Kilns 1,2, and 3

Mr. Scott Quaas
Environmental Specialist
Lonestar Florida/Pennsuco, Inc.
Post Office Box 122035 PVS
Hialeah, Florida 33012

Dear Mr. Quaas:

Re: File No. AC13-54054; request for extension of construction permit for coal conversion of kilns 1,2, and 3.

This Department is in receipt of your letter of June 23, 1982 stating that kiln 3 is still out of compliance with the present specific emission limiting standard for sulfur dioxide (27.51 lb/hr) and that further testing is planned for when the unit is run at full capacity. These tests will determine the success of system improvements to date to show compliance with the construction permit.

Since reasonable assurance that the conversion of kiln 3 can meet the permitted emission limit for sulfur dioxide has not yet been demonstrated, the processing of the request for an extension of the permit which includes kilns 1 and 2 is being delayed. Processing will continue upon receipt of test reports or other information which shows kiln 3 in compliance with the permit conditions. If there are any questions, please contact Mr. I. Goldman at this office.

Sincerely,

John A. Guidry
Supervisor
Industrial/Solid Waste/Air Permitting Section

JAG/ige

cc: Metropolitan Dade County Environmental Resources Management



LONESTAR FLORIDA/PENNSUCO, INC.

Cement and Aggregate Division
Post Office Box 122035
Palm Village Station
Hialeah, Florida 33012
(305) 823-8800

RECEIVED

JUN 25 1982

Dept. of Environmental Reg.
West Palm beach

June 23, 1982

DER-WPB	Copy	Route #
DI	✓	
SON		
P.P.		
AL		
REMARKS:		
<i>We should discuss</i>		
<i>Th.3 with Roy &</i>		
<i>Entertainment</i>		
<i>RR</i>		

Mr. John A. Guidry, Supervisor
Solid Waste/Industrial Waste/Air Permitting
South Florida Subdistrict
Department of Environmental Regulation
Post Office Box 3858
West Palm Beach, Florida 33402

Attention: Mr. I. Goldman

Re: File No. AC 13-54054; extension to construction permit for
the coal conversion of Kilns #1, #2, and #3

Dear Mr. Guidry:

In response to your request for additional information the following
is offered to complete the permit extension application.

As you are aware, the conversion of Kiln #3 to coal has been
completed and the initial compliance test showed sulfur dioxide
emissions in excess of the permitted limits. A remodeling of
Kiln #3 on coal, utilizing the sulfur dioxide emission rates from
that test, showed compliance with all applicable county, state and
federal ambient air quality standards. This revised model has
been previously submitted to E.P.A. and D.E.R.'s Tallahassee
office. It is apparent from this revised model that the intent
of the regulations has been met and that only non-compliance with
the specific emission limiting standard for sulfur dioxide exists.

Subsequent to the initial compliance test, we have made modifications
to the kiln as well as operational changes which have shown improvements
in the absorption of sulfur in the kiln system. Unfortunately,
the current economic situation has caused a shutdown of the entire
cement production facilities and it may be sometime before we can
return Kiln #3 to service.

Prior to this shutdown, two sets of emission tests were performed.
One set (required by E.P.A. as a compliance test) a copy of which
will be forthcoming, showed no improvement in sulfur absorption.
A second expanded test showed a marked increase of sulfur absorption
with a resultant reduction in sulfur dioxide emissions. As we are
still trying to further reduce the sulfur dioxide emissions from
this kiln, it would not be prudent as this time to re-negotiate
our emission limiting standard.

In answer to your question concerning the commencement of construction on the modifications to Kilns #1 and #2, we are planning to convert these units to coal as soon as the economic situation allows.

In response to your question whether Kilns #1 and #2 would be converted prior to Kiln #3 being brought into compliance, it appears that Kiln #3 will be restarted during mid-summer and we can then complete our study of sulfur dioxide emission reductions and re-negotiate our emission limiting standard, if found necessary. As stated above, the economic situation will prohibit the conversion i.e. start-up of Kilns #1 and #2 on coal, within the next twelve months. Therefore, we feel that Kiln #3 will be in compliance prior to the completion of the coal conversion on Kiln #1 and #2.

It is for the reasons stated above that a three year extension, until May 31, 1985, to our existing construction permit has been requested. This additional information should be sufficient to complete the application and we await the receipt of the permit extension.

Sincerely,



Scott Quaas
Environmental Specialist

SQ/dc

CC: A. Townsend
D. Coppinger



LONESTAR FLORIDA PENNSUCO, INC.

6451 N. Federal Highway
Fort Lauderdale, Florida 33308
Post Office Box 6097
Fort Lauderdale, Florida 33310
(305) 491-0900

May 10, 1982

Mr. Kent Williams
Air Facilities Branch
U.S. Environmental Protection Agency
Region IV
345 Courtland Street
Atlanta, GA 30365

Dear Mr. Williams:

Reference: LONESTAR FLORIDA PENNSUCO, INC.
COAL CONVERSION MODEL

In your letter of March 10, 1982, you raised two questions on the subject model.

- 1) Why the stack parameters changed?
- 2) What effect the EPA's recommended default exponent value would have on the 3 and 24 hour results?

Enclosed please find a model using the default value along with a summary letter from David Buff on Environmental Science & Engineering Inc.

As is evident, there is no violation of county, state or federal ambient air quality standard.

On the questions of stack flow characteristic changes, the initial application used parameters which were assumed rather than actual, which were used on this latter round of modeling.

Hopefully, this information will satisfy your staff as well as Dade County's concern over the modeling results.

Sincerely yours,


Albert W. Townsend
Manager
Real Estate & Environmental Affairs

ATW/jh

cc: B. Mangis, D. Coppinger, S. Quaas
Dade County Environmental Resources Management
Florida Dept. of Environmental Regulation Regulation

MAY 12 1982
MAY 13 1982



April 23, 1982

DER
FEB 03 1982
AQM

Roy M. Duke, P.E.
Subdistrict Manager
Florida Department of Environmental Regulation
Post Office Box 3858
West Palm Beach, Florida 33402

DER-WPB	Copy <input checked="" type="checkbox"/>	Route #
	Action	
DERM	ENV.	PLANN.
PERM.	WQA	WQS
WA	WAG	P. D.
REMARKS:		

RE: LONESTAR FLORIDA PENNSUCO INC.,
REQUEST FOR EXTENSION OF DER
CONSTRUCTION PERMIT # AC13-27742

Dear Mr. Duke:

This Department has reviewed the referenced request by Lonestar for a three year extension of their coal conversion construction permit and recommends that said request be denied for kilns #1 and #2, and that a conditional permit extension be granted for kiln #3.

As you are aware, Lonestar kiln #3 is the only kiln at the subject facility that has been converted to coal fuel thus far, with a subsequent stack test on July 15, 1981 showing the sulfur dioxide emissions from that kiln to be 505.79 lbs/hr. DERM believes that this violation of the 26.3 lbs/hr permitted level for sulfur dioxide for kiln #3 as contained in EPA Permit #PSD-FL-050 and DERM Permit #AC13-27742 can result in violation of the Dade County Ambient Standards for that pollutant. DERM is therefore requiring that Lonestar conduct an ambient monitoring program to determine actual levels of sulfur dioxide, and Lonestar's contribution in the areas of greater impact.

Furthermore, the high level of sulfur dioxide emissions from kiln #3 indicates that assumptions regarding sulfur absorption rates in the kilns on which the original coal conversion applications were based are erroneous. Consequently, this Department feels that Lonestar must provide revised projections of pollutant emissions, especially for sulfur dioxide, that would result from conversion of kilns 1 and 2 to coal fuel, before any further permitting actions can be considered for these kilns to convert to coal.

DERM hereby proposes that extension of the above-mentioned permit be granted for kiln #3 only, with the attached condition that the existing violation be resolved with all the regulatory agencies concerned within eighteen months of the granting of such extension.

RECEIVED

APR 30 1982

Dept. of Environmental Reg.
West Palm Beach

April 23, 1982

Your cooperation in protecting Dade County's ambient air quality is greatly appreciated. If you have any questions on any of the above, please do not hesitate to call.

Yours sincerely,



Rafael Rodon, P.E.
Acting Chief
Environmental Planning Division
Environmental Resources Management

RR:HPW:toc

cc: Ed Cahill
Bill Brant
Joe Stilwell
Al Townsend, Lonestar
Tommie Gibbs, EPA

DEPARTMENT OF ENVIRONMENTAL REGULATION

ROUTING AND TRANSMITTAL SLIP

ACTION NO.	
ACTION DUE DATE	
1 TO: NAME, OFFICE LOCATION)	INITIAL
2	DATE
3	INITIAL
4	DATE
	INITIAL
	DATE
	INITIAL
	DATE

REMARKS: For info only
 Background documents on Lonerstar you may be able to use
 might be good background for Lonerstar permit.

INFORMATION
REVIEW & RETURN
REVIEW & FILE
INITIAL & FORWARD
DISPOSITION
REVIEW & RESPOND
PREPARE RESPONSE
FOR BY SIGNATURE
FOR YOUR SIGNATURE
SET'S OFFICES
SET UP MEETING
INVESTIGATE & RESP
INITIAL & FORWARD
DISTRIBUTE
CONCURRENCE
FOR PROCESSING
INITIAL & RETURN

FROM: J. Goldman	DATE: 1/31/83
PHONE:	

DEPARTMENT OF ENVIRONMENT, REGULATION

SOUTH FLORIDA
SUBDISTRICT

3501 GUN CLUB ROAD
P.O. BOX 3853
WEST PALM BEACH, FLORIDA 33402
305/689-5800



BOB GRAHAM
GOVERNOR

VICTORIA J. TSCHINKEL
SECRETARY
Roy M. Duke
SUBDISTRICT MANAGER

April 28, 1982

Mr. Albert W. Townsend
Manager, Real Estate &
Environmental Affairs
Lonestar Florida Pennsuco, Inc.
6451 North Federal Highway
Fort Lauderdale, FL 33308

AP - Dade County
Lonestar Florida
Pennsuco, Inc.
Coal Conversion
Kilns 1, 2 & 3

Dear Mr. Townsend:

This is to acknowledge receipt of your application, file
number AC 13-54054, for a permit to:

Construct sources of air pollution

_____ This letter constitutes notice that a permit will be
required for your project pursuant to Chapter(s) _____
_____, Florida Statutes.

_____ Your application for permit is complete as of _____
and processing has begun. You are advised that the
department under Chapter 120, Florida Statutes, must
take final action on your application within ninety
(90) days unless the time is tolled by an administrative
hearing.

xxxx Your application for permit is incomplete. Please
provide the information listed on the attached sheet
promptly. Evaluation of your proposed project will
be delayed until all requested information has been
received.

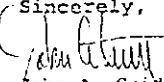
_____ The additional information received on _____
was reviewed, however, the items listed on the attached
sheet remain incomplete. Evaluation of your proposed
project will continue to be delayed until we receive
all requested information.

_____ At this time no permit is required for your project by
this department, and there are no objections to your
proposal. Any modifications in your plans should be
submitted for review, as changes may result in permits
being required. This letter does not relieve you from
the need to obtain any other permits (local, state or
federal) which may be required.

If you have any questions, please contact I. Goldman
of this office. When referring to this project, please use the
file number indicated above.

cc: Metro Dade County
Environmental Resource
Management

Sincerely,


John A. Guidry
Supervisor
Industrial/Solid Waste/Air Permitting

3301 GUM CLUB ROAD
P.O. BOX 3858
WEST PALM BEACH, FLORIDA 33402



BOB GRAHAM
GOVERNOR
Vicki Tschinkel
~~SECRETARY~~
Roy M. Duke
SUBDISTRICT MANAGER

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION
SOUTH FLORIDA SUBDISTRICT

COMPLETENESS SUMMARY
AIR POLLUTION SOURCES

SOURCE NAME: Lonestar Florida Pennsuco, Inc DATE RECEIVED: 3/31/82
 Kilns 1, 2 & 3 DATE REVIEWED: 4/27/82
APPLICANT NAME: Albert W. Townsend REVIEWED BY: I. Goldman
 Manager, Real Estate & Env. Affairs
APPLICANT ADDRESS: 6451 N. Federal Highway
 Fort Lauderdale, FL 33308

Your application for a permit to construct/operate this referenced project has been received, and reviewed for completeness. The following checked items are needed to complete your application.

- () Application fee of \$20. Make check payable to the Department of Environmental Regulation.
- () See comments on application, copy attached.

- () Letter authorizing applicant to represent owner.
- () 8 1/2" x 11" diagram of flow process.
- () 8 1/2" x 11" location map.
- () 8 1/2" x 11" plant layout sketch showing emission points.
- () Test results showing compliance with emission limitations of the department.
- () Air diffusion modeling results showing compliance with ambient air standards and PSD increment.

- () Engineer's report pursuant to Section 17-4.21(1)(c), P.A.C.
- (X) Other: (Any section of the application which is incomplete or lacks sufficient information to be evaluated)
 - A. The Stack test on Kiln 3 showed that the actual emissions of sulfur dioxide were 505.59 lb/hr with an allowable emission rate of 27.51 lb/hr. Indicate how you intend to bring the sulfur dioxide emissions into compliance.
 - B. Has any construction commenced on the modification to Kilns 1 & 2? If so please list what has been done.
 - C. Do you intend to convert Kilns 1 and 2 before Kiln 3 is brought into compliance?

DEPARTMENT OF ENVIRONMENTAL REGULATION

ROUTING AND TRANSMITTAL SLIP

ACTION NO

ACTION DUE DATE

1 TO WHAT OFFICE LOCATION

1. Clair Fancy Larry

INITIAL

DATE

2.

BAQM Cleve, Willard

INITIAL

DATE

3.

Tallahassee

INITIAL

DATE

4.

INITIAL

DATE

REMARKS:

For info only
Background documents on Lonestar you may be able to use
Might be good background for Lonestar permit.

INFORMATION

REVIEW & RETURN

REVIEW & FWD

INITIAL & FORWARD

DISPOSITION

REVIEW & RESPOND

PREPARE RESPONSE

FOR MY SIGNATURE

FOR YOUR SIGNATURE

LET'S DISCUSS

SET UP MEETING

INVESTIGATE & REPT

INITIAL & FORWARD

DISTRIBUTE

CONCURRENCE

FOR PROCESSING

INITIAL & RETURN

FROM:

D. Goldman

DATE

1/31/83

PHONE



April 21, 1982
ESE No. 79-112-008

Mr. Albert W. Townsend
Manager, Real Estate & Environmental Affairs
Lonestar Florida, Inc.
6451 North Federal Highway
Ft. Lauderdale, Florida 33308

Dear Mr. Townsend:

Per your request and in response to EPA's comments concerning the recent modeling of Kiln #3 on coal (ESE letter report of December 17, 1981), ESE has remodeled the subject source. The methodology utilized in the revised modeling was identical to the methodology presented in the December 17 report, except in one respect. In this revised analysis, the default values for the wind profile exponents in the ISCST model were utilized, instead of user specified values. Only the identified worst-case 24-hour, 4-hour, 3-hour and 1-hour meteorological periods for total air quality impacts, identified from the previous modeling effort, were remodeled. In addition, only the cases of receptors in the vicinity of Lonestar and Alton Box were evaluated.

Presented in the attached table is a comparison of the original modeling results and the revised modeling results (default values). The contributions of the three Lonestar kilns to the maximum predicted impacts are also presented. As shown in the table, for receptors near Lonestar, the maximum predicted impacts have increased slightly for all averaging times except for the 1-hour case. These increases are all less than 3 ug/m^3 . Kiln 3 is the primary contributor to these maximum predicted impacts, accounting for up to 92 percent of the total concentration. The revised maximum concentrations are predicted to be below the AAQS in the immediate vicinity of the Lonestar plant, where maximum Lonestar impacts occur. For the 24-hour average, maximum impacts are less than 40 percent of the AAQS; for the 4-hour averaging time, maximum impacts are less than 66 percent of the AAQS and for the 1-hour averaging time, maximum impacts are less than 30 percent of the AAQS.

For the case of receptors in the vicinity of Alton Box, no changes in the maximum impacts are predicted. This is a function of Alton Box being the sole contributor to the maximum impacts and Alton Box's short stacks, which would be less affected by changes in the wind profile exponents than would sources with taller stacks. For the case of Lonestar only impacts in the vicinity of Alton Box, all maximum predicted impacts have decreased slightly (by up to 1.5 ug/m^3). Kiln3 is the primary contributor to these impacts, which are less than EPA promulgated significant impact levels (5 ug/m^3 , 24-hour average; 25 ug/m^3 , 3-hour average). These results indicate that by using the default wind profile exponents, less impact due to Lonestar is predicted at these more distant receptors.

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.

Mr. Albert W. Townsend
April 21, 1982
Page 2

Most importantly, the revised modeling evaluation, like the earlier modeling study, shows that Lonestar is neither causing or significantly contributing to predicted levels in exceedance of the Dade County AAQS.

Enclosed also are five (5) sets of supportive computer model printouts. If you should have any questions concerning this report, please call.

Sincerely,

David A. Buff

David A. Buff, P.E.
Senior Engineer
Project Operations

DAB/sn

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.

Comparison of Lonestar SO₂ Modeling Results Using User Specified and Default Values of Wind Profile Exponents

Scenario	Total Air Quality Impacts* (ug/m ³)			
	24-hour	4-hour	3-hour	1-hour
<u>Receptors in Vicinity of Lonestar</u>				
Previous Modeling+	10.5	35.9	42.3	77.1
Revised Modeling**	11.0	37.4	44.7	76.8
Kiln 3 Contribution	9.9	34.1	40.6	71.0
Kiln 1 and 2 Contribution	1.1	3.0	3.7	5.5
<u>Receptors in Vicinity of Alton Box</u>				
Previous Modeling+--All Sources	56.9	139.5	137.4	164.0
Revised Modeling**--All Sources	56.9	139.5	137.4	164.0
Kilns 1,2, and 3 Contribution	0.0	0.0	0.0	0.0
Previous Modeling+--Lonestar Only	4.6	12.9	14.9	38.0
Revised Modeling**--Lonestar Only	4.4	11.2	14.6	30.6
Kiln 3 Contribution	4.1	10.5	13.6	29.1
Kilns 1 and 2 Contribution	0.3	0.7	1.0	1.5
Dade County AAQS	28.6	57.2	1300++	286.0

* Includes impacts from all modeled sources.

+ Using user specified values of wind profile exponents.

** Using default values of wind profile exponents.

++ Florida AAQS



LONESTAR FLORIDA PENNSUCO, INC.

6451 N. Federal Highway
Fort Lauderdale, Florida 33308
Post Office Box 6097
Fort Lauderdale, Florida 33310
(305) 491-0900

March 30, 1982

Mr. Roy M. Duke, P.E.
Subdistrict Manager
Florida Dept. of Environmental Regulation
P.O. Box 3858
West Palm Beach, FL 33402

Dear Mr. Duke:

Reference: Lonestar Florida Pennsuco, Inc., Coal Conversion
Permit AC 13-2774 Expires 5/31/82

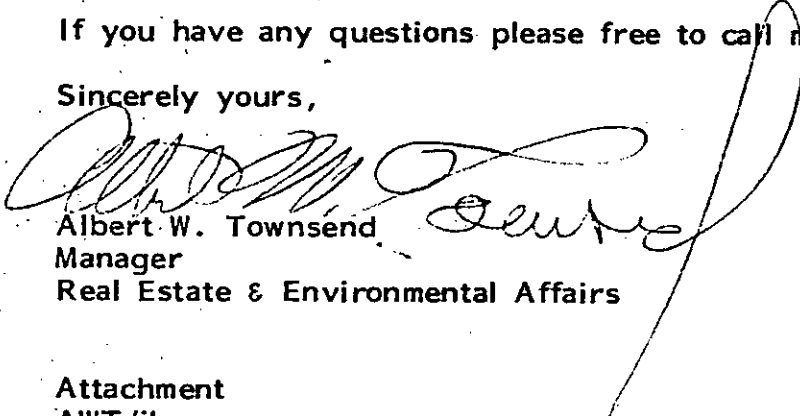
As you are aware, Lonestar has encountered some difficulties with complying with the above referenced construction permit allowing SO₂ emissions on Kiln #3. The attached letter explains the problem.

As of this date, Kiln #1 and 2 have not been converted to coal but are still slated for conversion as soon as the economic situation improves.

Therefore, we respectfully request a three year extension, until May 31, 1985 to our existing construction permits.

If you have any questions please free to call me.

Sincerely yours,


Albert W. Townsend
Manager
Real Estate & Environmental Affairs

Attachment
AWT/jh
cc: B. Mangis
D. Coppinger

DER-WPE	Copy <input checked="" type="checkbox"/>	Route #
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W.A.	<input type="checkbox"/>	
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W.W.	<input type="checkbox"/>	
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W.Y.	<input type="checkbox"/>	
W.Z.	<input type="checkbox"/>	
REMARKS: Need on file		

RECEIVED
MAR 31 1982
Dept. of Environmental Reg.
West Palm Beach



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

346 COURTLAND STREET
ATLANTA, GEORGIA 30333

MAR 10 1982

REF: 4AW-AF

Mr. Albert W. Townsend
Manager, Real Estate and
Environmental Affairs
Lonestar Florida Pennsuco, Inc.
6451 N. Federal Highway
Fort Lauderdale, Florida 33308

Dear Mr. Townsend:

My staff has reviewed your recent SO₂ modeling submittal for Lonestar's No. 3 kiln and offer the following comments:

1. It appears that there was a change in emission rates for all 3 kilns, as well as lower exit velocities and stack temperature, from that of the original modeling. Please explain these changes in modeling parameters and why, even though the ground level impacts increased slightly, the increases were not as large as expected.
2. It is also suggested that the ISCST model be re-run using EPA's recommended default exponent values for the critical 3 and 24 hour periods. This needs to be done in order to satisfy Dade County's concern over the modeling impact. Either set of exponent values (wind profile vs. default), should show that Lonestar, by itself, will not contribute to a violation of any Federal, State, or Local SO₂ Standard. In addition, kiln No. 3's contribution to the modeled impacts needs to be identified.

If you have any questions concerning this matter, please contact Kent Williams of my staff at (404) 881-4552.

Sincerely yours,

K Williams

for Tommie A. Gibbs, Chief
Air Facilities Branch

cc: Clair Fancy, FDER

DER

MAR 15 1982

BAQM

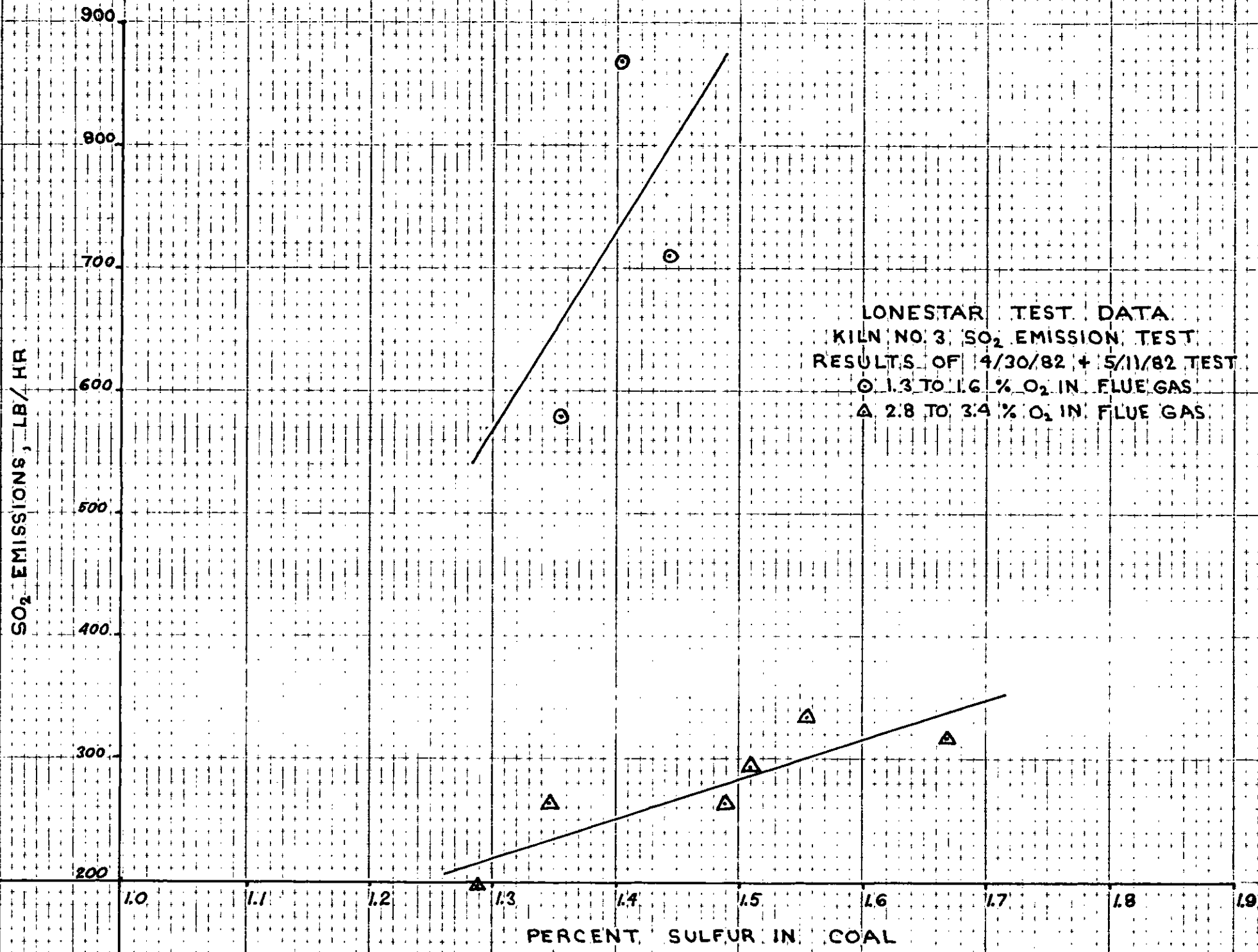


FIGURE 1