

ROUTING AND TRANSMITTAL SLIP

ACTION NO

ACTION DUE DATE

1. TO: (NAME, OFFICE, LOCATION)

Bill Thomas

Initial

Date

2.

Buck Owen DER

Initial

Date

3.

MAY 1 1987

Initial

Date

4.

BAOM

Initial

Date

REMARKS:

Has your section reviewed + commented on the attached?

From past investigations of self-unloaders (Gen. Portland) they appear to be a preferable alternative to grab buckets - reduce chances of spillage & emissions from drop-transfer.

BT 5/4/87

INFORMATION

Review & Return

Review & File

Initial & Forward

DISPOSITION

Review & Respond

Prepare Response

For My Signature

For Your Signature

Let's Discuss

Set Up Meeting

Investigate & Report

Initial & Forward

Distribute

Concurrence

For Processing

Initial & Return

FROM:

Buck Owen

DATE

PHONE

TO: BILL T

DATE DUE:

4/20/87

FROM: CLM

DATE COMPLETED:

DATE: 4/17

SUBJ: St John River Coal Terminal

Please accomplish the following job assignment by the date due.

please check with ^{Aronson} Garmisen at EPA on this. What do we have to do - if anything

Bill Thomas told Buck Owen that BAQM had no objection to this (5/4/87 - see attached routing slip)

SJRCTENV 87-6

March 13, 1987

Mr. Bruce Miller
Branch Chief
Air Programs Branch
US EPA - Region IV
345 Courtland Street, N.E.
Atlanta, Georgia 30365



MAR 18 1987

BAQM

Dear Mr. Miller:

Re: St. Johns River Coal Terminal (SJRCT)
Intended Use of Self-Unloading Coal Ships

PSD Permit No. PSD-FL-010 was issued on March 12, 1982 and modified on October 28, 1986 for the St. Johns River Power Park and the St. Johns River Coal Terminal (SJRCT). The purpose of this letter is to inform the U.S. Environmental Protection Agency (EPA) that JEA proposes to use self-unloading ships at SJRCT, as well as conventional coal carriers. Self-unloaders (see attached photograph) are equipped with a mechanical system that reclaims coal from the ship's holds and places it on a boom that swivels from a fixed point toward the stern of the ship. The boom can be swung away from the centerline of the ship, with the discharge end placed over the receiving hopper of the ship unloader gantry crane. Coal is discharged in a continuous stream into the ship unloader hopper, flows through the ship unloader and is placed on the dock conveyor as before. Thus, the self-unloader ship operation involves unloading of coal into the ship unloader hopper by the ship's boom, in lieu of utilizing the grab bucket. Once in the hopper, the flow of the coal is identical for both operations.

Coal unloading from the vessel by means of the self-unloading system described above is not expected to result in a change in dust emissions from the case currently licensed, which involves conventional ship unloading by means of grab bucket. All of the dust control measures to be deployed for grab bucket unloading will be utilized during self-unloading. In addition, the vessels under consideration in most cases have means of applying moisture to the coal, as necessary, by means of ship-mounted sprays. Therefore, coal entering the ship unloader hopper would essentially be "pre-conditioned" for dust control. Dust emission calculations demonstrating equivalent emissions between the two unloading methods are attached. Because of the insignificant change associated with the use of self-unloading vessels, we believe that no permit modification is necessary.

In addition, we would like to inform EPA that the ship unloader will be equipped with a dust collection system in addition to the

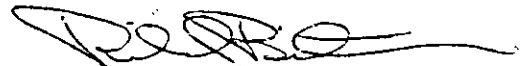
(CONT.)

Mr. Bruce Miller
March 13, 1987
Page 2.

wet suppression system specified in our May 12, 1986 letter. Both the dry collection system and the wet suppression system will be designed to meet the 10 percent opacity permit requirement. The systems will be used interchangeably, depending on the coal characteristics and operating conditions. Also, wet suppression systems have been added to Transfer Station Nos. 3, 4, 6 and 7, the stacker and the reclaimer. Dry collection has been added to Transfer Station No. 5. These systems will also be utilized as necessary to comply with the 10 percent opacity limit.

If you have any questions or require additional information, please contact Athena Tsengas at (904) 633-4517.

Very truly yours,



Richard Breitmoser, P.E.
Division Chief
Research & Environmental
Affairs Division

RB/AJT/lwr

cc: T. Bisterfeld, EPA
M. Brandon, EPA
H. Oven, FDER

Attachments: 1) Dust Emission Calculations for Self-Unloading
Vessel
2) Photograph of Self-Unloading Vessel

ATTACHMENT 1

JACKSONVILLE ELECTRIC AUTHORITY - ST. JOHNS RIVER COAL TERMINAL
 DUST EMISSION CALCULATIONS
 FOR
 SELF-UNLOADING VESSEL
 (FEBRUARY, 1987)

Emission Factor (continuous drop):

$$E(\text{lbs/ton}) = k(0.0018) \frac{\left(\frac{S}{5}\right) \left(\frac{U}{5}\right) \left(\frac{H}{10}\right)}{\left(\frac{M}{2}\right)^2}$$

Reference: AP-42, Section 11.2.3, Aggregate Handling and Storage Piles

Where:

- k = particle size correction = 1.0
- S = silt content (percent) = 5
- M = surface moisture content (percent) = 5.5
(see below)
- U = wind speed (mph) = 8.4
- H = drop height (ft) = 40

Surface moisture content:

In "Estimate of Particulate Emissions: St. Johns River Coal Terminal and Blending Additions at St. Johns River Power Park", May, 1986, a "worst-case" M of 5% was used. The self-unloaders currently contemplated have sprays mounted on the ship and can raise the surface moisture content of the coal and suppress dust when necessary. Therefore, assuming usage of the ship-mounted sprays on coal with a low surface moisture, the previous M has been revised upwards to value of 5.5%.

Substituting for variables:

$$E(\text{lbs/ton}) = 1 (0.0018) \frac{\left(\frac{5}{5}\right) \left(\frac{8.4}{5}\right) \left(\frac{40}{10}\right)}{\left(\frac{5.5}{2}\right)^2}$$

$$= 0.0016$$

ATTACHMENT 1

JACKSONVILLE ELECTRIC AUTHORITY - ST. JOHNS RIVER COAL TERMINAL

DUST EMISSION CALCULATIONS
FOR
SELF-UNLOADING VESSEL
(FEBRUARY, 1987)

Process Rate: Limited by SJRCT conveyor belt capacity
= 2200 STPH

Control: dust suppression sprays and wind guards, composite
control efficiency = 70%

(Reference: "Estimate of Particulate Emissions:
St. Johns River Coal Terminal and Blending Additions
at St. Johns River Power Park", May, 1986)

Total controlled emissions (lbs/hr) =

$$\text{emission factor} \left(\frac{\text{lbs dust}}{\text{ton coal}} \right) \times \text{process rate} \left(\frac{\text{tons coal}}{\text{hr}} \right) \\ \times 1 - \left(\frac{\text{efficiency} (\%)}{100} \right)$$

$$= 0.0016 \times 2200 \times 0.3$$

$$= 1.056$$

Total controlled emissions (gms/sec)

$$= \text{total controlled emissions} \left(\frac{\text{lbs}}{\text{hr}} \right) \times \left(\frac{\text{hr}}{3600 \text{ sec}} \right) \times \left(\frac{453.6 \text{ gms}}{\text{lb}} \right)$$

$$= 0.13 \text{ gms/sec}$$

ATTACHMENT 1

JACKSONVILLE ELECTRIC AUTHORITY - ST. JOHNS RIVER COAL TERMINAL

DUST EMISSION CALCULATIONS
FOR
SELF-UNLOADING VESSEL
(FEBRUARY, 1987)

Summary and Conclusion:

<u>Operation</u>	<u>Pounds/ Hour</u>	<u>Gms/ Sec</u>
Grab bucket unloading	1.0 (1)	0.13 (2)
Self-unloading vessels	1.056	0.13

NOTES: (1) Currently licensed emission limit, rounded from a calculated value of 1.06

(2) from Table 2, existing PSD permit

No significant difference in consideration of rounding error, accuracy of emission factor, accuracy of monitoring, and other factors.