Stan Krivo 01/25/00

National Aeronautics and
Space Administration

John C. Stennis Space Center
Stennis Space Center, MS 39529-6000

Reply to Attn of:
RA00

January 20, 2000

Ms. Maya Rao
Mississippi Department of Environmental Quality
Office of Pollution Control
P. O. Box 10385
Jackson, MS 39289-0385

Dear Ms. Rao:

This letter is a response to the comments on the Stennis Space Center Air Quality Modeling Protocol provided by Mr. Haidar Airawil on December 12, 1999 and by you and Mr. Stan Krivo by teleconference on January 5, 2000.

1. The reason for choosing the non-regulatory INPUFF2.5 model over other regulatory models such as MESOPUFF and/or CALPUFF.

The INPUFF model has been used in the past for PSD application modeling of rocket motors for Morton Thiokol, UT 1988 and NASA – SSC, MS 1991 (EPA, Model Clearinghouse Information Storage and Retrieval System). It has been selected over other available models because it allows for releases of short duration, which is more compatible with the typical rocket test of 200 seconds or less. MESOPUFF and CALPUFF were primarily designed to analyze long range transport of reactive pollutants. For this application only Carbon Monoxide will require analysis and, given the short duration of release, it is anticipated that the maximum impacts will be close to the source.

2. We recommend the use of actual meteorology over synthetic meteorology and that depends on the use of a particular dispersion model over another. A proposed mixing height value of 9000 meters is too high and questionable for a winter value. A basis should be provided in choosing this value.

The INPUFF 2.5 model is used with prescribed meteorological data. As you have suggested in Comment 4, all of the SCREEN3 delineated set of stability class/wind speed conditions should and will be used. Mixing heights for the modeling runs have been selected from Mixing Heights, Wind Speeds, and Potential for Urban Air Pollution Throughout the Contiguous United States, G.C. Holzworth, 1972, Table B-1, to demonstrate mean annual morning and afternoon mixing heights. You have suggested

that the Jackson, Mississippi data should be used. The reported mixing heights for Jackson are 377 meters (morning) and 1,409 meters (afternoon). Additionally we will run the model using a mixing height of 9,000 meters. Based on previous experience with the INPUFF model and the fact that rocket motor testing produces a large buoyant plume, the most conservative estimates of ground level concentrations of pollutants for some meteorological conditions are best demonstrated with an artificially high mixing height.

3. A worst-case modeling scenario needs to be provided for each affected pollutant with respect to a test location, fuel type and other affected factors such as emission/dispersion parameters.

The propulsion engineers at NASA were consulted to determine the rocket motor with the worst case emissions. The liquid fuel rockets that will be tested all use a similar kerosene based fuel and liquid oxygen. The primary factors in determining emissions are the duration and amount of fuel burned. Based on this, the rocket motor that will be modeled is the F1-A.

4. Stability classes E and F were not considered in the modeling analysis. Hence, a more conservative meteorology such as that of SCREEN3 model would be more appropriate to use for the INPUFF application. Again, a valid reason be provided for choosing this model.

The issues of this comment have been responded to in responses 1 and 2

5. Receptor locations at 100 m spacing should cover all areas within 3 km from the source and a spacing of 50 m should cover all fenceline distances.

Receptors will be modeled at the distances that correspond to whichever test stand is closest to the nearest fenceline and other sensitive receptors (visitor's centers and daycare facility). In addition receptors will be placed at a 100-m spacing out to 1 km from the fenceline and 500-m spacing out to 10 km. The receptor that has the highest impact will be modeled with a refined spacing of 100 m out to the adjacent receptors. The nearest "ambient air" is over 0.75 kilometers from the test stand.

6. The highest 1-hour and 8-hour (first max) background CO concentrations should be selected from the two Hinds County monitors. Those values are 8.6 ppm (1-hour) and 6.8 ppm (8-hour).

As suggested, the highest 1 hour and 8-hour (first Max) concentrations will be selected from the two Hinds County monitors for use as the background concentrations.

7. An agreement addressing the Class I area impact analysis for the Breton Wildlife Refuge with the federal land manager (FLM) of that area should be established. We need to be informed of that protocol and the required modeling analysis.

The Breton National Wildlife Refuge, approximately 80-km from SSC, is the only Class I area within 100 km of SSC. The Federal Land Manager for the Breton National Wildlife Refuge, Bud Rolofson (USFWS) was informed of this project by letter on October 8, 1999, to determine if the FLM had any comments on this project. Mr. Rolofson was contacted by phone and when it was explained that carbon monoxide was the only PSD significant pollutant, he said that he did not see a need to do visibility or Class I increment analysis.

We hope that the above responses adequately address the concerns raised and that you will be able to approve the modeling protocol with incorporation of the changes as stated in this letter. If you have any questions please call Carolyn Kennedy at (228) 688-1445 or me at (228) 688-7384.

Sincerely,

Ronald G. Magee
Environmental Officer

cc:
EPA/Stan Krivo

Stanley Krivo
06/30/2000 01:59 PM

To: Chris.Carlson@dep.state.fl.us

cc:

Subject: Re: Initial AQ Review Comments - Stone Container Panama City

Chris,

As requested in our telephone discussion yesterday, the following are my review comments on the Ambient Air Impact Analysis for Stone Container Corporation's PSD permit application to increase production at their Panama City, FL facility. This email is only for your use in developing FL DEP's review comments on the application. Until we complete our review of the computer modeling output files, our comments should be considered preliminary.

1. Table 2-1 Maximum Emissions - This table of maximum emissions does not appear to contain the maximum emissions associated with PM10. This was discovered when comparing Table 2-1 values to the maximum emission values presented in Appendix A Tables A-2b and A-3b.

2. Table 2-2 NOx Emissions - The long-term NOx emissions associated with 1988 Baseline values were not provided for Power Boilers No. 4 and No. 6. No reason was provided for these missing values.

3. Site Property Boundary - For modeling purposes, non-ambient air is the atmosphere over land owned or controlled by the source and to which public access is precluded by a fence or other physical barrier. For the SCC impact modeling, the total property owned appears to be considered non-ambient air. Conformation of the existence of a physical barrier about this property is needed.

4. Worst Case Impact Scenarios - Three SO2 operational scenarios were modeled to present the worst ambient impacts from the operation of the facility. These same scenarios appear to have been used to represent the worst case scenarios for NOx, PM10, and CO impacts. Because the maximum emissions from Power Boilers No. 3 and 4 may be pollutant, fuel, load, and averaging time dependent, the basis for the selection of the worst case impact operational scenarios needs to be included in the application. The load dependent variations in stack exit temperature and exit velocity must be included to properly identify operational scenarios producing the maximum impacts.

5. Ambient Background Concentrations - To address compliance with the NAAQS, background ambient concentrations must be added to maximum modeled values. Ambient monitoring data obtained the Panama City area were selected to be representative. Annual SO2 and PM10 concentrations were incorrectly used for both annual and short-term standards. Appropriate conservative averaging period dependent ambient concentrations should be used. The ambient background concentrations account for all un-modeled major and minor emission sources.

6. Class I Area Assessment - The FLM for the St. Marks and Bradwell Bay Wilderness

Areas should be provided the opportunity to review and comment on this applications. Class I area modeling contained in PSD permit application used the ISC-PRIME model. FLM may require the use of the CALPUFF model for impact assessments at Class I areas.

7. Meteorological Data - The meteorological data used in the modeling were National Weather Service observations from the Pensacola and Apalachicola regional airports for the period 1986-1990. The Guideline of Air Quality Models recommends use of the most recent and available consecutive 5-year data record. Future air quality modeling in this region should consider acquisition of a more recent data record as these data are over a decade old.

8. Significant Impact Area (SIA) - The significant impact area for each pollutant was not provided. This is the area where impact assessments must be provided.

9. ISC-PRIME Model - The justification for the use of the non-guideline ISC-PRIME model has been provided. The comparison data in Table 5-8 provides unexpected results. Although it is expected that the concentrations from the two models will differ in the near field, the maximum concentrations from the over 90 kilometer distance Class I areas should be equivalent. The location (e.g., distances) of the maximum concentrations in this table should be provided.

10. Emission Inventory - The following comments are concerned with the emission sources modeled for NAAQS and PSD increment compliance assessment.

- Only two additional PSD increment consuming sources were included in the cumulative PSD increment assessment. Having only two PSD increment consuming sources within 70 kilometers is unusual. FL DEP should confirm the appropriateness of this PSD emission inventory.

- In the selection of emission sources for inclusion in the PSD and NAAQS modeling, all sources located beyond 70 kilometers were eliminated without consideration of emission magnitude. Large source beyond this distance that could have a significant impact in the SIA should be included in the emission inventory.

- In the selection of emission sources for Class I impact assessments, the area about the Class I area (e.g. 100 kilometers) should be considered.

- The CO emission inventory for NAAQS compliance was not provided.

- Tables 4-3, 4-5, and 4-7 provide the emissions inventories for SO2, PM10, and NOx, respectively. These tables contain the same companies but the individual emission points identified for each company in Table 4-3 do not appear in the subsequent tables. For example, it is expected that a boiler emitting SO2 in Table 4-3 would also emit PM10 and NOx. Also, Power Boiler #7 for Florida Coast Paper was a PSD source for Tables 4-3 and 4-5 but not for 4-7. The difference between these tables should be explained.

- The individual stacks from the selected emission sources were combined for the modeling. Given the small number of other sources in the inventory and the importance of the location of the releases for facilities close (e.g., within 5 kilometers) to SCC,

combining sources may not be appropriate.

11. Site Boundary Receptors - All the site boundary receptors were not within 100-meters resolution.

12. Pre-construction Monitoring - The application does not address the requirement for pre-construction monitoring for those sources with significant emission rates and ambient impacts greater than the de minimis levels.

I hope this helps. Please let me know if you have any questions.
...sjk

Stanley J. Krivo
USEPA Region 4
404/562-9123 (Phone)
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