



The Agency's engineer based his calculations on standard emission factors and an estimated collection efficiency of the breach and baffles which act as control devices at the plant. During the period in question, the ash content of the coal burned by Respondent varied between 4.9% and 6.4%. The Agency's calculations showed emissions of .88 lbs/MBTU when the coal burned had an ash content of 6.4% and emissions of .64 lbs/MBTU when the coal burned had an ash content of 4.9%. Therefore, by its own calculations the Agency has shown that Respondent has not been guilty of continuous violation as alleged.

Further, the Agency's calculations did not use the Standard Emission Factors in computing the efficiency of collection of the breach and baffles. The Agency engineer used an efficiency of 40% which had been estimated to him by Respondent's personnel during a visit to the plant (Statement, 6(d)). This efficiency was not based on any tests (R. 31-32), it was simply an estimate. According to the Standard Emission Factors, a breach and baffle can have an efficiency of 25% to 50%, depending on the installation.

Also included in the Agreed Statement of Facts is a report of stack tests conducted at Respondent's plant on March 26 and 27, 1973 by Air Resources, Inc. for Respondent. These stack tests were performed by qualified personnel pursuant to ASME Power Test Code 217 (R. 9) and were observed by Mr. Fred Smith of the Agency. The coal used during the tests was not specially ordered for such tests, but was received in the normal course of business. The Agency has not challenged the test procedures or the results; indeed, said results are incorporated in the Agreed Statement of Facts.

The first stack test during which coal with an ash content of 4.9% was burned showed a measured emission rate of .6052 lbs/MBTU. The second stack test during which coal with an ash content of 5.08% was burned showed a measured emission rate of .5973 lbs/MBTU (Exhibit B to Statement, p. 8). Moreover, it was the opinion of Dr. Sander Sundberg who conducted the tests that the gas volumes measured during such tests were higher than would normally be expected or were actually present. Indeed they were higher than the rating of the induced draft fan which helps move the fly ash particulate from the boiler out the stack (R. 10, Exhibit B to Statement, p. 6). And, if the measured gas flow was higher than actually present, the measured emissions on the tests were also higher than actually present (R. 11).

Because of the measured gas flow, stoichiometric calculations based on carbon input and output were applied by Dr. Sundberg to the combustion of coal in the boiler in order to calculate a gas volume (R. 10, Exhibit B to Statement, pp. 6-7). Since

stoichiometric calculations are based on actual data developed in the testing procedures (R. 30), they are considered to be accurate. Dr. Sundberg discussed the calculated gas volume with Mr. Smith, who agreed that it was appropriate to include the calculated gas volumes in the test report (R. 12). Use of these calculated gas volumes, which in the opinion of Dr. Sundberg were more representative of the actual gas volumes than those measured during the test, reduces the emissions during the first stack test to .4639 lbs/MBTU and the emissions during the second stack test to .4252 lbs/MBTU (Exhibit B to Statement, p. 8).

Using both the measured and calculated gas flows and collection on both stack tests, Dr. Sundberg calculated the efficiency of the collection devices at Respondent's plant. These calculations apply standard emission factors to the actual amount of coal burned in an hour during the tests to determine the amount of fly ash emitted by the boiler. This amount is then compared with emissions from the stack collected during the tests (Exhibit B to Statement, p. 8) to determine the efficiency of collection of the breach and baffles (R. 13-17). The efficiencies using the measured gas volumes and collections were 44.3% on the first test and 46.9% on the second test or an average for both tests of 45.6% (Res. Exs. 1 and 2). The efficiencies using the calculated gas volumes and collection were 57.3% on the first test and 62.3% on the second test or an average for both tests of 59.8% (Res. Exs. 1 and 2).

Having determined the collection efficiency, Dr. Sundberg in Respondent's Exhibit 2 used the same formula as the Agency engineer had used to determine the emissions if the ash content of the coal were increased to 6.4% (R. 20). The only difference is the efficiency of collection used; the Agency used an estimated efficiency while Dr. Sundberg used a calculated efficiency based on the actual stack tests. These calculations show that the emissions if the average efficiency based on the measured gas flow is used would be .799 lbs/MBTU. If the average efficiency based on the calculated gas flow, which Dr. Sundberg considered more accurate, is used the emissions would be .590 lbs/MBTU (Res. Ex. 2). Both of these emissions are in compliance with Rule 2-2.53.

This Board has consistently held that actual stack tests can be used to rebut calculations based on standard emission factors. See EPA v. Norfolk & Western Railway, PCB70-41 (1971); EPA v. Donnelly, PCB72-410, 72-472 (1973). Federal had stack tests conducted by an outside firm which the Agency observed and did not challenge. Said stack tests show that Respondent was operating its boilers in compliance with Rule 2-2.53 at the time of the tests regardless whether the measured or calculated gas flow is used. The stack tests show that the breach and baffles used at Respondent's plant have an efficiency higher than the 40% used by the EPA in

its calculations regardless of whether measured or calculated gas flow is used. Using Standard Emission Factors and the efficiencies established by the stack tests, the boiler at Respondent's plant was also operated in compliance with Rule 2-2.53 when the ash content was 6.4%.

On the basis of all the evidence presented, the complaint against Respondent must be dismissed. As noted above, the Agency's case in chief consisted solely of its engineer's calculations. The height of Respondent's stack, a factor critical to the determination of permissible emission under Rule 2-2.53, was not specified. Further, the only evidence of the ash content of Respondent's coal furnished by the Agency dated back to March 30, 1970. On the basis of such a record, this Board may well have found the Agency's case lacking even if Respondent had not commissioned the stack tests in its defense.


This opinion constitutes the findings of fact and conclusions of law of the Board.

ORDER

IT IS THE ORDER of the Pollution Control Board that the complaint against Respondent, Federal Paper Board Company, be dismissed.

Mr. Odell abstains.

I, Christan L. Moffett, Clerk of the Illinois Pollution Control Board, hereby certify the above Opinion and Order were adopted on the 6<sup>th</sup> day of September, 1973 by a vote of 3-0.

  
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Christan L. Moffett, Clerk  
Illinois Pollution Control Board