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Environmental Control Department
Research & Engineering Center
June 9, 1969

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J. L. Manning - Boston District Office

Visit to P. S. Thorsen of Mass., Inc.
Trip Report and Recommendations

Attached are two copies of subject report.

E. M. Fenner

EMF/ems

Attach.

cc: T. S. Nicely - N.Y. Dist. Office
File
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bcc: F. E. Brandt - DPE

Environmental Control Department
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VISIT TO P. S. THORSEN OF MASSACHUSETTS, INC.
MAY 15, 1969

I. Dust Control

I have reviewed the design of the existing dust collection facilities with an engineer from the Heating, Ventilating, and Dust Control Section of DPE. The basic design of the system, with the exception of the fan and the duct work, is satisfactory, though borderline. DPE recommends the following corrections be made to increase the efficiency of the system:

- A. Duct Work - All single ducts should be 5-in. diameter instead of the present 4.
- B. All ducts carrying the load created by two joined single ducts should be 7-in. instead of the present 6.
- C. All ducts carrying the load from 4 single or 2 dual ducts should be 11-in. in diameter.
- D. The duct work should contain a minimum number of elbows and all elbows should be long sweep.
- E. All single ducts, such as those from the two upper hoods, should be approximately equal in length to the point where they join.
- F. The square portion of the two upper hoods should be made as short as possible prior to their juncture via transition piece with the 5-in. diameter duct riser.
- G. Fan - Name plate data taken from the existing fan and its drive indicate that it has a capacity of only 1300 cfm at 1-in. static pressure. The duct system, as designed, for maximum efficiency, should have a fan capable of producing 1400 cfm at 8-in. static pressure.

However, the duct system, as recommended by DPE, will require a fan with a capacity 2,400 cfm at 8-in. of static pressure. The fan they recommend is:

Westinghouse (B.F. Sturtevant)
Cast Iron Industrial Fan
Model #512
Driven at 1900 rpm by a 5 HP Motor.

Design velocities are 4200 FPM in risers, and 3800 to 4000 FPM in horizontal ducts.

VISIT TO P. S. THORSEN OF MASSACHUSETTS, INC.
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H. Cyclone - No comments.

I. Baghouse - The present baghouse is suitable, although marginal. It will require frequent shaking of the bags in order to prevent their overloading with the subsequent reduction in efficiency of the entire dust collection system.

Our Dust Control Section states there is nothing wrong with discharging the air back into the room. A properly maintained dust collector of this type will be over 99% efficient and, therefore, the amount of dust returned to the room atmosphere is very small. The only time this efficiency will drop is immediately after bag shaking, until enough material has deposited on the inner surface of the bag to act as a filtration precoat.

I recommend, that after these changes have been implemented, new dust counts be made. Included in the samples should be air discharged from the baghouse.

II. Housekeeping

In my opinion, the housekeeping in their Fabrication Shop was good, but could be improved. Idle equipment, such as the drill presses, should be cleaned frequently to prevent material that had collected on their surfaces from becoming airborne from vibration when they are put into operation.

Some areas of the shop gave an impression of untidiness and somewhat haphazard storage.

The procedures for disposal of collected dust, as described to me, appear adequate.

Please call or write if Thorsen or yourself need amplification or clarification on any point of this report.



E. M. Fenner

EMF/ems