§ 102. Depositions; Defendant's mill manager

There is a tendency among new-comers to the field of environmental law who lack trial experience to commence discovery with written interrogatories. Their reason is that depositions should be reserved for pinpointing particular weaknesses after they have been discovered by interrogatories. This reasoning is supported by the equally naive belief that depositions are somehow less rigorous and less critical to the plaintiffs case than motion practice or appeals. In many cases, this can become the fatal flaw in the plaintiffs' case.

Always begin discovery in an environmental action with the deposition of the defendant's agent, servant or employee charged with the operation and management of the offending plant. In the Hoerner Waldorf case, the deposition of Roy Countryman, manager of the Hoerner Waldorf mill furnished the basis for the presentation of the plaintiffs case and the survival of the cause of action until the defendant's had been forced to modernize their plant. The detailed analysis of that deposition follows and can serve as a model in any lawsuit seeking to impose state of the art pollution control technology on an industrial defendant.

At the outset of the deposition of any industrial employee immediately establish his position in the corporate hierarchy, and if possible obtain or construct the organizational chart of the corporate operational team to at least the level just below that of the witness.

A. Roy E. Countryman, my address is 2709 Humble Street, Missoula. I am resident Manager of the Missoula mill.

Q. Now, Mr. Countryman, in the operation of the Hoerner Waldorf mill here in Missoula, how does the wood that is the raw material for the pulp arrive at your plant?

A. Either by rail car or by truck. . . .

A. Most of it arrives as bark-free wood chips.

Q. And following that are there any procedures that are done to this wood before it enters the digester?

A. Yes. Most of it is re-screened for the purpose of improved classification, size classification.

Q. And are all of the wood chips received utilized ultimately in the pulp process?

A. All chips, yes.

Q. And is the first step or the first stage of the pulp process that of digestion?

A. Yes.

Q. And in what type of devices is the wood pulp digested here at the Waldorf Hoerner Missoula plant?

A. Three. We have a large, continuous chip digester.

Q. Make and model?

Comment:
Identify each piece of equipment by make and model number so that interrogatories can be taken at a later date from the manufacturer of the equipment in order to determine whether the existing equipment in the plant truly reflect the state of the art.

A. Kamyr, and when you say model, I will assume you mean size; it's rated at 900 air dried tons a day.

Q. And that's a continuous digester, right?

A. Yes.... A second one is a smaller, 150-ton a day Kamyr continuous digester. The third type consists of batch digesters.

Q. And how much or how many batch digesters do you have?

A. We have eight, but do not operate them all.

Q. At the present time how many are you operating?

A. It alternates, four or five.

Q. And when was the last time you operated all eight?

A. Prior to the—1966 sometime.

Q. In other words then, after the two Kamyr digesters were put into operation you removed some of the older batch digesters from operation?

A. Correct.

Q. Are those digesters the batch digesters that are still—withdraw it. Are the batch digesters that are not being used now in opera- operable condition?

A. Yes.

Q. Now, can you briefly for us describe, as technically as you wish, the chemical processes that go on in that batch digesters?

Comment:

Insist that the witness answer the questions in the precise technical language of the industry. If you do not understand a word or a phrase, then do not hesitate to ask for an explanation, but see to it that the general statement is couched in the language of the industry. This will assure counsel the opportunity to later submit the testimony to independent experts for evaluation, and also help counsel develop a vocabulary for the cross-examination of later defense experts.

A. Well, yes. To answer your question in general, it applies to all digesters at the plant, and generally what you are doing is dissolving out the lignin and other binding material to free up the cellulose.

Q. And do the Kamyr digesters operate on the same chemical principles as the batch digesters?

A. Yes.

Q. Now, what's the capacity of each of those batch digesters?

A. They are not rated in the same way the continuous cookers are. A batch digester is what the name implies. A typical cycle time is three hours, and by cycle time I mean you would produce a batch cooked each three hours in each cooker.

Q. And what's the weight or the amount of material produced from the digester at the end of each batch cooking?

A. Roughly nine tons.

Q. Now, what is the chemical reaction, if you know, that occurs in the digesters?

A. If you want to go into that subject to the degree that wood research people do, it would be very complex, but in general, one of the major products formed as a result of those chemical reactions are the sodium salts of lignosulfonic acid; there are other products formed also due to the chemical reactions.

Q. And where do the raw materials other than the wood chips or wood materials you put into the digester that are required to make that reaction operate?

A. The chemicals are white liquor, and the two basic components are sodium hydroxide and sodium sulfide, although there are other trace chemicals present. . .

Comment:

Oftimes chemical names differ only in their suffixes or prefixes. Make sure that the distinction is entered on the record the first time the word is mentioned and spelled out carefully. Whenever there is a later possibility of confusion, repeat the distinction.

Q. Now, how do you put your sodium sulfide in, in liquid form or in solid form?

A. Liquid.

Q. And do you receive it at the mill in liquid form or in solid form?

A. Well, you do not receive it in that form. You receive sodium in a solid form and convert it to the form desired in cooking.

Comment:

Jump on the witness for the slightest example of lack of precision. Your deposition record must be accurate and unambiguous, if you are ever to get to trial.

Q. You don't mean you receive sodium metal?

A. No, you don't receive elemental sodium.

Q. What do you receive?

A. Sodium sulfate.

A. And sodium hydroxide.

Q. And you receive both of these in solid form?

A. No. The hydroxide comes in liquid form, the sulfate in solid form.

Q. What do you do with it after you get it?

A. Sodium sulfate, as is characteristic in a kraft operation, is fed into concentrated black liquor before it is fired in the recovery furnace, and it's reduced to the sulfide in the recovery furnace.

Q. Now, at some point you had to start up this reaction, am I right?

A. Correct.

Comment:

If you are to really understand an industrial process, make sure that you have the witness describe the manner in which the entire process began at the opening of the plant. Many witnesses, and many attorneys assume that industrial processes just are and that there was no beginning. Industrial cosmology aside, such processes do have a beginning and the start up of the plant can prove to be the start of environmental degradation in the region. Find out how it all began.

Q. Did you import some already made up black liquor or did you make your own the first day?

A. Well, neither.

Q. What did you do with the sodium sulfate you received in solid form and the sodium hydroxide you received in liquid form when you started up?

A. You don't buy any sodium sulfate to start up, you buy sodium hydroxide, and to initially get a kraft mill in operation is what you are asking me, I think, you buy sodium hydroxide in that case and in that case only you buy sodium sulfide and mix the two.

Q. And that makes your first white liquor, does it?

A. Correct.

Q. And then you dissolve your wood chips in that and the process becomes cyclical thereafter, does it?

A. Correct.

Q. Do you have operating logs for your process that indicate how much you add at various stages at various times to the process?

A. Yes, we do have.

Q. And what do you call these documents in the regular course of business?

A. The one I believe you are referring to now would be the operating log sheet used by the recovery furnace operator.

Q. And is this kept, or has this been kept in continuous form since the beginning of operation of the mill?

A. I would doubt that we go back 12 years; we go back many months. Now, whether it's a year or three or four, I am not sure.

Comment:

Here is an example of why skilled trial counsel take depositions before demanding interrogatories. If you cannot accurately describe a document, you cannot discover it. This is a device federal and state regulatory agencies have capitalized on for years and are still hiding behind even after the Freedom of Information Act. Now that the name of the document is in the record, it can be discovered and inspected by name.

Q. Now, after the wood spends some time in the digester and is mixed with—I think you call it white liquor, is that right?

A. Correct.

Q. And that white liquor, the basic constituents of it are what?

A. It's sodium hydroxide and sodium sulfide.

Q. Now, is the ratio of sodium sulfide to total sodium present as ionic sodium maintained at any particular level in your digesters?

A. I think, as I understand your question, the answer would be no, because other factors determine the ratio you refer to.

Q. Do you monitor the sulfidity range of the white liquor?

A. Yes, we know what it is.

Q. What is it?

A. Well, it's in the range of 27 to 32 per cent of total soda.

Q. Is that the range that's present now?

A. Yes.

Q. And that's in the Kamyr continuous digesters?

A. Well, you use one white liquor for all cookers, so it would apply to all of them.

Q. Has that ratio changed since the—or that percentage of sulfidity range changed since the opening of your plant?

A. It changed about six years ago as a result of a black liquor oxidation system we installed to hold odorous compounds in the liquor instead of venting them to the atmosphere, and naturally that increased the sulfidity then, you see.

Q. What was the sulfidity before that change in the black liquor oxidation process?

A. Approximately 25 to 27 per cent.

Q. Now, during the process of digestion, is heat required or is heat liberated?

A. Heat is required. In the cooking operation?

A. In all cases we use steam, which we generate, as the source of heat. The manner of adding it is not identical in all cases.

Q. Now, at any time are there any gaseous products produced during this cooking or digesting operation?

Comment:

Since the subject matter of this litigation is air pollution it is necessary to determine at what stages of the process gases are emitted to the atmosphere. Ask the witness at every point of the process what happens to the gases.

A. Yes.

Q. And what happens to these gaseous products?

A. They are collected; for the last four or five years we have collected all odorous gasses from the cooking process. The condensable fraction is condensed, the residue is burned or oxidized in a lime kiln to render it—to eliminate the odor.

Q. Are any of the gasseous products of the digestive process vented to the atmosphere?

A. None.

Q. Now, following digestion, what happens to the material in the digester?

A. Well, it passes from the cooking vessel—again, irregardless of which type cooker we are speaking of—it is conveyed from the cooking vessel to a large vessel we call a blow tank, which is really a surge chamber in the process, and logically the next step is to separate the pulp that's been produced from the spent chemicals, which we call black liquor.

Q. Now, is there a single blow tank for all of the digesters?

A. No, there are two.

Q. Were they installed together?

A. No.

Q. Does the blow tank in its operation vent in any way to the atmosphere?

A. No.

Q. Is the cellulose in any way mixed with any other substances as it enters the blow tank?

A. Yes, the spent liquor, black liquor.

Q. And what happens physically to the black liquor in the blow tank?

A. Well, in the blow tank nothing happens to it. It's just a surge vessel to contain those two components.

Q. Are the cellulose and the black liquor separated in the blow tank or elsewhere?

A. Elsewhere. . . .

Q. Let me simplify that procedure because we don't want all the details of the operation. Is there one outlet from the blow tank?

A. No.

Q. How many outlets are there?

A. Depends on which blow tank.

Q. Let's take the one with the least number of outlets first.

A. It has one.

Q. Now, in the blow tank that has more than one outlet?

A. Yes.

Q. Where do the other outlets go?

A. There are two, the purpose being that we treat the two different screens differently. The reason for having two streams, one of them is handled essentially identical to the first stream I mentioned on the single outlet blow tank, the second one is passed through, pumped through hot stack mechanical refiners before being screened, and then on the washing operation.

Q. What does the hot stack mechanical refiner do?

A. It takes the large particles that haven't been completely broken down and breaks them down mechanically.

Q. Now, is there any venting into the atmosphere from the mechanical system?

A. No.

Q. Now, in the washers, does all the pulp go to the same set of washers?

A. No.

Q. How many different sets of washers do you have?

A. Two. . . . Three different washing systems.

Q. Well, let's take the output of the single outlet blow tank, where does it go?

A. I might simplify this a little bit at this point to avoid some confusion. The one referred to as the single outlet blow tank is the one that receives the pulp from the batch cookers, and I think it will help if I point out that is the pulp produced for the bleaching operation.

Q. The liner board then takes its material from the Kamyr digesters?

A. The two Kamyr digesters, that's correct.

Q. Okay. Where does it go?

A. Well, in that case it is pumped through so-called pump through screens, their function being to remove any large particles that weren't completely cooked, such as a knot, you see, but that's rather an intermediate process. The next fundamental step is to separate the two components; that's done in large vacuum drum washers.

Q. Now, between the blow tank and the vacuum washer, is there any venting to the atmosphere, or is this a closed system?

A. That's a pump-through closed system. . . . Both have pump-through screens between the washers and the blow tank.

Q. Okay, let's take the bleach board and carry it through. After it leaves its blow tank and goes through its screens, what happens

A. The screening, you will recall I said is to remove large particles that are not completely cooked, you see.

Q. Then what happens in the washers?

A. Well, the basic function of the washer is to separate the two components you had in the blow tank, the spent cooking chemicals and the pulp fibers. But it passes over four drums in series; in other words, the total stream goes over drum number one, then two, then three, then four, and as it's passed over those drums it's subjected to a counter-current washing system.

A. They rotate at perhaps three r.p.m.

Q. And where does the liquid, this counterstream, come from?

A. On the fourth drum, which would be the last drum the pulp passes over, and from which the clean pulp is discharged, a stream of water is used on different showering devices. That water passes through the cake of cellulose fibers, then moves on to drum number three, and from three to two, and two to one, that's what I was referring to as a counter-current washing system. . . They are all in one building; they are very close to each other.

Q. At any point during the washing process is there any venting of the system to the air?

A. Yes. In this instance the four washers have a common transit hood over them, and any water vapor that passes from the drums goes out through a vent in the hood.

Q. Are there any pollution control devices located on the vent from that transit hood?

A. Not in any mill in the United States.

Comment:

This is the first attempt by the witness to assert the fundamental industry defense, "No one else is doing it." This defense must be met immediately.

Q. I didn't ask you about any mill in the United States, I want to know about Hoerner Waldorf.

A. Well, that includes this one.

Q. Now, are any tests, chemical or otherwise, made of the pulp, the black liquor or the gasses vented from the washing process at that point?

A. Well, it's quite a number. On the pulp, the two—well, the most critical test run at that point in the pulping operation is the residual soda left in the pulp. It's several different sodium salts at that point, you see.

Q. In any form, you don't care just so long as it's residual sodium?

A. Correct.

Q. Is this done on site?

A. At the mill, yes.

Q. And is this done on a continuous basis or a time basis?

A. The sample that the analysis is run on is a composite sample.

Q. Over a given period of time?

A. Yes.

Q. And this is a method that you find is adequate to maintain quality control in this process?

A. In that step? . . . Yes.

Q. What else is tested?

A. Either at that point or prior to that point a test is run on the pulp to measure the degree and uniformity of the pulping operation that occurred in the digester . . . The main test run on the liquor is concentration, the black liquor that's been separated.

Q. Now, where does the black liquor go after this washing process?

A. Well, it goes into a storage system, a surge system, but the next step in the process is evaporation of the liquor to concentrate it.

Q. All right, tell us the mechanism that goes on in the washers that separates the black liquor from the cellulose?

A. The chemical we use, or rather the material we use as initial wash water comes from two sources. One of them is so-called white water or used water from the paper mill operation which occurs downstream, which I presume we will come to. The other one is material called combined condensate or contaminated condensate, which is the water that is evaporated from the black liquor in the evaporation step. It's a very toxic material, and it's recommended that it be re-introduced in the process rather than discharged in the effluent.

Q. Now, when you make your tests of the black liquor, this is the combined liquid that includes the residue of this wash water plus what is separated from the cellulose fibers in this washer.

A. What we call dissolved solids. Dissolved solids, that being, of course, the solid organic or the organic matter that's been dissolved out of the wood in the cooking process.

Comment:

Whenever the opportunity arises, pin the witness down to the precise elements of the plant's quality control. Oftentimes, pollution levels are inordinately high because of sloppy quality control.

Q. Now, what happens to the black liquor following this separation during the wash process?

A. It is held in retention tanks or surge tanks. It does pass through one operation that we call soap skimming to remove what is called in our industry "soap" from the kraft pulping, usually of pine wood that you have a separation of soap, and this soap is the raw material for the one by-product I described this morning that we call tall oil. We do skim soap at two points, but that does occur following the washers.

A. It's a mechanical operation.

Q. Now, at any point from the washer to the soap skimming operation, are there any vents to the atmosphere?

A. The tanks are vented . . . the weak liquor holding tanks . . . the tank is equipped with a vent.

Q. And are there any pollution control devices on those vents?

A. I think what you may be leading to is the fact that in this series washing that I described, one drum after another, there is a filtrate tank that collects the material that passes through the matted fibers on the face of the drum; each filtrate tank is vented to a foam tower. Otherwise, if you vented to the atmosphere you would have entrainment of liquid particles going to the atmosphere. They are vented to foam towers. The foam towers are equipped with mechanical foam breakers to prevent entrainment passing to the atmosphere. They are primary and secondary foam towers in series. The larger one would be the order of magnitude of 24 feet in diameter by 70 feet high.

Q. And the liquid particles are broken up, the entrapped gasses are released and the liquid is recovered?

A. Correct.

Q. Where does the liquid go from there?

A. Stays with the black liquor system.

Q. Now, we have two venting systems during this wash process, the one you just described, the holding tower with the towers

that are going to break up the liquid entrainment, and a portion is vented directly from the transit hood during the wash operation, right?

A. Yes . . .

Q. What happens to the black liquor or the weak liquor at that point?

A. Well, it is next passed through a set of so-called pre-evaporators.

Q. Now, before it gets to the pre-evaporator, is there any venting of the system from the weak liquor holding tank to the pre-evaporator?

A. No.

Q. Now, are any tests made, chemical or otherwise, on the weak liquor or in the holding tanks?

A. No, it's identical to the test—to the liquor I described earlier . . . The liquor might be at 160 degrees fahrenheit, fahrenheit 160.

Q. Are you going to use fahrenheit throughout?

A. That would be fine.

Q. It's a little bit less than boiling water?

A. Yes.

Comment:

Always establish the units of measurement that the witness is using and if possible relate them to some common standard.

A. You see, the thing that makes evaporators work in series is the fact that you pull a great vacuum on them. You approach a perfect vacuum, so that the heat, rather—if you can visualize this, the waste heating from the cooking process is the hot vapor that acts as the heating medium in the first effect; the water vapor that is evaporated from the liquor in the first effect is drawn over the second effect and acts as a heating medium. The moving force through the series of evaporators is the great vacuum you put on the vessel on the tail end. Then this material that's condensed on the heating medium side of the heat exchanger is the liquid we use to wash again, so we

Q. Do the evaporators vent to the atmosphere at any point?

A. No.

Q. It's a completely closed system?

A. Totally.

Q. And the condensate makes its way back to the washers, and the

waste heat from the original digestion process is consumed as heat in the heat exchanger?

A. Yes.

Q. In the multiple effect evaporators where do you get your heat source?

A. Fifty-pound steam.

Q. Where is the steam made?

A. In our boilers.

A. No. When we get to boilers, we have several, and they—we have three steam system levels throughout the plant that are fed by virtually all the boilers. This 50-pound steam, is this a closed system also with a vacuum?

Q. So there is no venting then at that point? From the multiple effect evaporators?

A. Not to the atmosphere.

* * *

A. This liquid condensate again is used in pulp washing. The non-condensable odorous gasses are collected in a total system of all digesters, turpentine condensor, all evaporators, and burned in the lime kiln.

Q. Okay. Now, the black liquor as it gets out of the multiple effect evaporators is roughly what concentration?

A. Forty-three per cent.

Q. Now, are any chemical tests run on it at that point?

A. Only concentration.

Q. Now, where does it go after that?

A. It goes to the second and final step of soap skimming for the final removal of soap. . . . done in a holding tank like the first skimming operation. . . . And this tank is vented to the atmosphere.

Q. Well, all right. The black liquor, after it's skimmed, then goes where?

A. To a—well, the next step in the process is the recovery furnace from the 43 per cent concentration.

A. . . . the liquor that is free of soap is oxidized in a heavy liquor oxidation system.

Q. Now, how does it get to the heavy liquor oxidation system?

A. It's pumped there.
In a closed system

A. The heavy liquor oxidation process was developed by Champion Fibers some seven or eight years ago; heavy liquor oxidation is that new, some six or seven years old. I read a very fine paper on their process and sent a chemical engineer down there, and as a result we were the second or third mill in the United States to put in heavy liquor oxidation. What's involved is spraying this thick viscous concentrated liquor in the top of a large tank some few feet above the controlled level of the liquid. There is, near the bottom of this vessel—to give you a little better idea of it, the liquid is controlled at a level of somewhere around, I will say 16 feet as an approximation. About two feet from the floor of the tank is an air distribution system, and we pump air into the bottom of this liquor, and it passes up through then the liquid level, oxidizing the oxidizable sulfur compounds in the liquor.

Q. Now, what happens to the air that's bubbled through?

A. It doesn't just build a head of pressure. It's vented through an entrainment device on the oxidation system, manufactured by a firm called the Centrifix Corporation. It works on the centrifugal principle. And ultimately it's vented to the atmosphere.

Q. And is there anything else done to it other than to remove the entrained liquid particles?

A. No.

Q. Are any tests made of the gasses vented at that point?

A. Not as a routine test. Tests have been run. It's a constant, you see, it isn't a variable.

Q. Do you have the results of those tests, or can you tell me roughly what they indicate?

A. I am sure their analysis would include total reduced sulfur, for the presence of any reduced sulfur compounds. Perhaps So_2 and So_3. I think the composition would be roughly constant. . . . And the proportions of the constituent sulfur compounds are roughly constant too . . . a few tests are enough to bracket the area?

Q. Now, are any tests, chemical or otherwise, made on the black liquor following its treatment in the oxidation system?

A. Yes, we test there for concentration, and we test there for different sulfur compounds.

Q. What sulfur compounds do you test for?

A. Well, we test for sulfidity, and we test for efficiency of oxidation.

Q. And how do you measure the efficiency of oxidation?

A. Well, I haven't conducted the test, but the principle of the test is to measure what part of the sulfur has been oxidized. In other words, you measure the sulfur in and the sulfur out and calculate efficiency.

Q. Are the results of these tests maintained in the regular course of your operations for the plant?

A. Yes.

Q. Are they logged on a continuous or relatively continuous basis?

A. Yes.

Q. And how far back do you have records of the extent of this oxidation?

A. I can't say that with certainty. I would imagine several years. I don't know if we have them for the full six years or not.

Q. What specifically at your mill do you call these records?

A. Well, they would be included in records maintained by the technical department that run routine testing around the clock in the mill.

Q. Do they have a specific name? Does the test have a specific name?

A. Oxidation efficiency.

Comment:

You can't discover records unless you know what the defendant calls them.

A. the black liquor then goes to some kind of holding tank from the oxidizing facility . . . (and) this holding tank (is) vented to the atmosphere . . .

Q. And are there any devices, pollution control devices on this

and the next point where it's introduced into the system is in the Venturi scrubber that scrubs the gasses from the recovery furnace.

Q. All right. Now, does some of the black liquor enter the furnace itself?

A. Yes, ultimately, but not at that point.

Q. At this point you bleed off some for scrubbing purposes?

A. Well, yes, the stream is split; some of it goes to the Venturi scrubber, and some to the cyclone evaporator.

Q. Which one of the two devices holds it the longest?

A. That would be the cyclone evaporator. It has no so-called residence time in the Venturi scrubber.

A Venturi scrubber is an engineered restriction and a duct much like pinching the end of a garden hose, the purpose being to develop tremendous velocity and turbulence in the gas stream. By introducing the scrubbing liquor at the throat of this Venturi with this intimate mixing you get, through the turbulence and velocity, you get a scrubbing action of those gasses with the liquid. From that point the combined stream of scrubbing liquid and scrubbed gasses pass into the cyclone evaporator. And by the name cyclone we mean at that point this liquid action through a cyclonic action or centrifugal action is separate from the scrubbed gasses. . . . at that point you draw off liquid from the cyclone continuously; all of these things you and I have spoken of are continuous flows. You bleed off liquor at a controlled rate from the cyclone and pass it to a small mix tank where we add sodium sulfate. The waste gasses that have been scrubbed out go through a very large induced draft fan. . . . The fan vents to the atmosphere. . . . Before we move on, I have only described one recovery furnace, you recognize, and there are three, and they are not identical.

Q. Right. We are going to take them one at a time. What happens—are any chemical tests made of the back liquor following the—after it leaves the cyclone device?

A. No, not right at that point. No.

Q. Are any tests made of the gasses that have been vented to the atmosphere?

A. Three or four months ago. . . . it reasonable to assume that the composition and quality of those gasses will remain relatively constant. . . . you don't have to test them regularly. . . . There is some testing that goes on continuously. The stack gasses are monitored continuously and recorded.

Q. Well, when we talk about stack gasses, which one of the gaseous emissions we have talked about so far are stack gasses?

A. The one we spoke of most recently that passed through the large induced draft fan to the atmosphere.

Q. That's a stack gas?

A. Yes. . . .

Q. And that's monitored continuously . . .

A. To determine complete combustion in the furnace. It's monitored for excess oxygen to insure at all times there is a presence of oxygen or air, and it's monitored and these tests are recorded continuously for the benefit of the operator for the presence of combustibles, to make sure they are held to zero.

Q. What particular combustibles are measured?

A. Any form of—well, the type of combustibles you might expect, carbon monoxide would be shown up, you see. . . .

Q. All right. By the way, what method is used in this continuous monitoring?

A. Well, it's a Bailey Oxygen and Combustibles Analyzer. . . . Bailey Meter Company.

Comment:
Make and model must be established for every item of equipment in the process.

Q. All you are measuring effectively is the burnability or combustibility of what's coming through?

A. To make sure you have complete combustion. Now, the black liquor that has come out of the cyclone device then has something added to it, sodium sulfate . . .

Q. Now, roughly how much sodium sulfate do you normally have to add in a given batch?

A. This isn't batch, this is continuous stream. You add your sodium sulfate continuously . . .

Q. Now, before we get to the recovery furnace, are there any other venting points to the atmosphere other than the large fan that vents to the stack between the Venturi scrubber or the division of the stream before the Venturi scrubber and the recovery furnace?

A. The very small mix tank is an open vessel.

Q. All right, this is where you add your sodium sulfate?

A. Yes.

Q. And again you would assume that the output of this mix tank is the same as the holding tanks?

A. Essentially, yes.

Q. It's not monitored, is it?

A. Oh, no.

Q. Now, what happens to the black liquor after it has had its sodium sulfate added?

A. Well, then you are getting very close to the furnace. It is drawn from the mix tank past through what we call a line heater, a non-vented line heater, and it is—the flow is metered through an Omar meter, a very precise meter, and sprayed into the recovery furnace.

Q. Essentially the process up to this point is pretty much the same no matter which recovery furnace it's going to, is that right?

A. No, that isn't right. Your statement would be true for number one and two recovery furnaces, but not for number three.

Q. Now, these two furnaces receive some black liquor through this meter you described; how is it fed into the furnace, . . .

A. It's at this point a very viscous material, and one point we haven't touched on is, through the process you have now raised it to about 62 per cent solids, and it's very thick and gummy—but that heavy liquor is sprayed through a specially designed oscillating nozzle into the recovery furnace.

A. Physically, the furnace is a large square, or rectangular fire box. . . . the black liquor enters the fire box some distance above the floor, perhaps 16 feet above the floor.

Q. And what maintains the fire in the fire box?

A. Well, if you are starting up a cold furnace you start it up on some auxiliary fuel such as natural gas or fuel oil or some such.

Q. After the plant has been in operation . . .

A. Once you get up to temperature, the heating value of the black liquor sill supports combustion and normally it is the only fuel going in the furnace.

Q. Now, what is the purpose of the recovery furnace?

A. The basic purpose is to—well, it has several major functions, but what occurs in there perhaps may answer your question. You burn off the organic matter you dissolved out of the wood, serves as the fuel in the recovery furnace.

Leaving the inorganic, basically sodium compounds that were used in the digester for the cooking in the first place. . . . I mentioned the nozzle, when you spray the liquor in at some 16 feet, roughly from the floor of the sloping floor of the furnace it oscilates and distributes this thick, gummy material on all the walls of the furnace. Some burning occurs in suspension, burning is completed on the walls of the furnace, and as it's completed the inorganic smelt collects on the floor of the furnace in a molten puddle. This material flows out through two spouts out the lower side of the furnace and is referred to as smelt.

Q. Now, does the smelt leave the furnace in a closed system or vented system?

A. Well, there is no venting from the smelt spouts.

Q. Where does the smelt then go to cool off?

A. To cool off? The smelt leaves through these two spouts, and it's in molten form, and it passes through a steam shatter jet to atomize the molten smelt particles before it drops into a so-called smelt tank.

Q. Now, between the furnace floor and the smelt tank are there any vents to the atmosphere?

A. There is nothing vented, if that answers your question, either in the room or anywhere else. . . . the smelt passes through an open trough. . . . And ultimately some steam is injected into this flow of liquid smelt to break it up. . . .

Q. Now, after the steam is injected, it's still a molten smelt. . . . flowing through an open system . . .

A. Dropping into the smelt tank. . . .

Q. Is the smelt tank closed or open?

A. It is vented through a scrubber. . . .

A. It's called a mesh-pad scrubber to remove entrainment.

Q. Again you are breaking up the liquid particles that may be coming off with—

A. Not breaking them up, but trapping them.

Q. Catching them, and the gasses are going free?

A. Gasses? The water vapor goes free.

Q. Any other gasses with the water vapor?

A. Not in any great concentration.

Q. You monitor that vent?

A. Not day by day, but periodically analyzed. . . . And it's reasonable to assume that the composition and mix of those gasses remains relatively constant . . .

Q. And it's reasonable to assume that the composition and mix of those gasses remains relatively constant . . .

Comment:

If the defendant admits to only periodical monitoring, establish whether its is the defendant's position that the output is essentially constant. If it is, then this need not be proven by the plaintiff as the general level of emission from the process at that point; if it is not, then the plaintiff's expert will be able to demonstrate that the defendants are less than careful.

A. Yes.

Q. Now, what happens to the smelt after it leaves the smelt tank or the holding tank?

A. At this point it's in a form we call green liquor; the major component is sodium carbonate, soda ash, the minor component is sodium sulfide, inasmuch as the sodium sulfate or salt cake that was added in the mix tank has been reduced in the reducing zone of the furnace to sodium sulfite.

Q. Where does the green liquor go from that point?

A. It goes to the department that in this industry is called the recausticizing area or department where it is chemically converted back to white liquor.

Q. Does the green liquor go to this department in a closed system?

A. In a closed pipe. When it gets into this department, something is done to it chemically converting it back to white liquor, which is a mixture of sodium hydroxide and sulfide. . . .

Q. If we treat this recausticizing . . . If we treat this as a black box, are there any vents to the atmosphere from this black box?

A. There are points, but there is no appreciable even water vapor leaves that department. . . .

Excuse me, with one exception, the vent on the lime kilns. The basic step that goes on down there is recausticizing, and I say basic because there are points where you have settling tanks and you withdraw the sludge from the bottom and reprocess it, but the basic step in recausticizing is to treat green liquor with lime produced in our own lime kilns, and this is a causticizing reaction.

Q. All right. The lime kilns are located within this black box system?

A. Yes.

Q. And they vent to the atmosphere, don't they?

A. They vent to the atmosphere through the finest scrubber available in the world, with an efficiency of 99.6 per cent as measured by a team from the Montana State College at Bozeman.

Q. And what kind of scrubbing system is this?

A. It employs the Venturi principle, but with some modifications to it. . . . The technical design we are using, although there are some 15 companies that manufacture them, was Chemco, a New York company.

Q. And what is the material that goes into this scrubbing process from the lime kiln?

A. Well, essentially lime dust, you see. You are feeding the—the product fed into a lime kiln in a kraft pulp mill is not what we think of as limestone, but rather a lime mud, and it's a thick, sludge of maybe 40 or 45—no, no, I am a little low, between 50 and 55 per cent solids, and it's a green lime mud. Chemically it's the same thing as limestone, calcium carbonate, and it's fed into a slowly rotating kiln with devices in the kiln to keep it churning and breaking up; it is in the feed end of the kiln about what's really going on is breaking it into small particles and drying it. As it passes on down to the discharge end of the kiln you reach temperatures of 2200 degrees, and there you have what we call calcide lime, or you have converted the calcium carbonate to calcium oxite. So to answer your question, it would be the air, combustion air, combustion products that tend to entrain lime dust and take it back through the back end of the lime kiln.

Q. The lime mud comes into the lime kiln, and as it passes over the rotary system there is no venting at that point, is there?

A. Just the one I described out the end of the kiln.

Q. There is one vent in the lime kiln and that's the output?

A. Really, it's out the feed end of the kiln, you see. In other words, visualize the lower end where you are introducing your natural gas fuel, and the product is coming out as calcium oxide, well then, the draft—the kiln has a fan on it, an induced draft fan, that moves the air and so on back through the feed end, and it's at that point it goes through this Heil efficient scrubber.

And the heat for this process is furnished by natural gas . . . It comes from Montana Power Company. . . . It's not local. It comes in from eastern Montana, and I understand somewhere over in the eastern part of the state they feed in natural gas brought in from Canada into the line.

Comment:

After the deposition begin to investigate the outside fuels as an additional source of pollution, both searching for additional defendants and anticipating possible exculpatory defenses.

Q. Now, at the output level of the lime kiln your scrubbers remove any particulate matter, is that right?

A. About 99.6 per cent. . . . And that particulate matter is basically calcium carbonate. . . . Any scrubbed gasses go to the atmosphere.

Q. And when you say scrubbed, they have had their particulate calcium matter removed?

A. All particulates with that efficiency.

Q. Now, meanwhile back at the recovery furnace—(where) The black liquor was converted to green liquor . . . What happens to the gasses that are produced during that combustion operation?

A. Well, any recovery furnace, to utilize the heat released from the burning, is equipped with what you might call an overhead suspended boiler located immediately above the furnace or fire box. . . . Your boiler is used to generate steam. You boil the finest quality water you can to make that steam, you are not boiling waste water . . .

A. Well, you have several passes in a boiler including a super heat section, and the hot gasses—the heat then is exchanged through the different tube sections to generate steam and the heat is withdrawn from the combustion gasses. Then these gasses, we are getting back to a point where we were sometime ago—these gasses passing through the different heat exchange sections comprising the boiler go to recovery furnaces one and two, the Venturi scrubber. . . . This is the Venturi scrubber that we had the black liquor go through on the way into the boiler . . . And then it goes out ultimately into the atmosphere after being scrubbed . . . to remove particulates or dust that's been entrained in the combustion gasses.

Q. Does all the output gas from the one and two recovery furnaces go back to this Venturi scrubber and thence out into the atmosphere?

A. Yes.

Q. Now, let's take boiler number three, which is the different one. Pick up at the input to that boiler where it begins to differ from the inputs to boilers one and two.

A. All right. Everything through to the fire box in design is generally the same as one and two; all three of them are manufactured by Babcock and Wilcox. Number three is the newest and largest, generally fifty per cent larger than either one or two, approximately. When we bought that furnace we equipped it with a scrubbing system called a brine scrubber manufactured by Babcock and Wilcox, the first one sold in the world with a rated scrubbing efficiency of ninety-eight per cent.

Q. This is again to remove particulate matter?

A. That's correct. And what it consists of, and I believe you can visualize it if you stuck with me on the first Venturi, is two Venturi systems in series. You can get into some pretty complicated discussions here, because when you go into a system like this you are becoming involved in PH control, different viscosities and so forth. That is the big difference on number three is it's more complicated, considerably more expensive, and more efficient.

Q. But it does get rid of what level of particulates?

A. Oh, I would say 96 to 98 per cent efficient.

Q. Now, where do the gases go after particulates are removed?

A. To the atmosphere.

Q. Now, this in effect takes care of the non-paper portions of the kraft process at your mill, is that right?

A. Well, we have just reviewed typical chemical recovery and liquor making cycle in a kraft pulp mill.

Q. Now, way back at the washers, or just following the washers we started on the trail of the black liquor; what happened to the cellulose fibers that were separated from the black liquor at that point, where do they go ultimately?

A. They go into storage tanks that vent to the atmosphere, and then they can either go to the bleach plant for the bleaching process or to the paper machines, one or the other. About 85 per cent goes to the paper machines.

A. I would say that about 85 or 90 per cent of the batch cooked pulp goes to the bleach plant.

A. A fraction of it diverts over to the liner board machine.

Q. We have just done the batch cook process?

A. Yes.

Q. Now, let's pick up the pulp and go into the bleach plant.

A. All right. It goes into a high density holding tank at about 11 per cent solids, and then is drawn off and metered to the bleach plant. Do you want me to run

The bleach plant is a four-stage operation, typical of what you would find in a kraft four-stage bleach plant, although some of them are looking for higher brightness or whiteness product, go clear up to 6 and 7, but we go through four stages in this sequence. The first one being chlorination, where you bleach with elemental chlorine and do 70, 72 per cent of the bleaching in that one step.

Q. How does the chlorine come in, as a gas or liquid?

A. Well, we buy it in gaseous form, but it is mixed in with—through a chlorine mixer right with the pulp in an enclosed line.

It goes then into a holding tower and will spend approximately 45 or 50 minutes in that retention tower. . . .

From there it flows over a vacuum drum washer, as I have described earlier, and at that point we apply to the sheet on the washer the next bleaching chemical which is sodium hydroxide, and from there that sheet goes into a holding tank.

Q. Okay, hold it a minute. How do you apply your sodium hydroxide, liquid?

A. It's applied with a shower pipe right on the sheet leaving the drum washer.

Q. Is this sodium hydroxide any of the sodium hydroxide you start off with in the white liquor or is this separate?

A. It's separate. Having applied the caustic soda you go in a retention tower for the second stage bleaching. Some of these times I am pretty rusty on, I haven't thought about them for years. You come out of that tower and go over the next washer where you apply the third bleaching agent, which is sodium hypochlorite, applied with a shower as a liquid. From there you go to another holding tower and out of that tower up over the next washer where you apply the fourth and last bleaching chemical, which is chlorine dioxide, a liquid, into the last holding tower; out of that holding tower and up over the last drum washer.

Q. How do you receive your chlorine dioxide, or do you manufacture it?

A. We manufacture it.

Q. What do you manufacture it from?

A. Sodium chlorate.

Q. And What else?

A. Oh, let me see. I am a little rusty on that one, I guess I can't call that to mind.

Q. This is a relatively new process, this chlorine dioxide process, isn't it?

A. Yes, I think chloride dioxide bleaching has come on in the last eight to twelve years. . . . Well, following the fourth stage bleaching it's—that's the end of our bleaching; we bleach it to about a so-called 85 GE brightness. The next steps then are to dry it and bale it.

Q. Is this the same whether it's ordinary kraft pulp or the bleach pulp, whether it's liner board or the bleach pulp?

A. Well, the processes are totally different. We don't dry it and bleach it as some mills do on a large paper machine consisting primarily of steam heated dryers, we don't do it in that manner. We dry it in suspension in gas-fired rotary dryers, bale it in hydraulic balers and ship it at about 82 per cent dry.

Q. Let's go back now and pick up the unbleached material. We now go back to the Kamyr digesters primarily for making unbleached kraft pulp, . . . Or liner board . . . Now, after it leaves the Kamyr digesters, tell us where it differs, where the procedure differs from the batch procedure you just described.

A. All right. Basically the washing is the same and the black liquors are all blended together, so I have covered the liquor handling portion of it. And I believe you are speaking of the pulp; here again it goes into holding tanks at some eleven per cent solids, and from there it is fed on to the paper machines or into the paper mill.

Q. In the Hoerner Waldorf mill here in Missoula, what's your limiting factor for output?

A. It isn't always the same from month to month.

A. We got into a serious problem within the last two years that seriously curtailed and hampered production at our mill, the reason being that we had accumulated far too many chips prior to this last expansion. The chips deteriorated very badly and caused many serious operating problems, and also brought about a very reduced yield. By "Yield" I mean the amount of

pulp produced per pound of wood, and was a major curtailing factor for many months.

Comment:
One of the key elements in industrial litigation is the determination of the output production of the particular facility. This is the key figure for determining the economic margin for improvement of the operation as well as the potential for pollution. In a paper mill of course it is the figure that determines whether the facility is operating within the rated capacity of its recovery boilers, which in turn determines the level of air pollution.

Q. What is the output of the Missoula mill today in terms of total paper production?

A. Paper and pulp? Total end product?

Q. Paper and pulp.

A. Well, I deal in averages by the month, range from 1,050 to 1,080 tons per day.

Q. Now, is there a part of this kraft process that is the single limiting factor in determing production capacity of a given mill?

A. Yes, in general terms, and you said of any one mill, so of course it applies to any mill, there has to be a limiting factor. It could be the paper machine, it could be the recausticizing, it could be any department.

Comment:
Counsel must establish what elements of the plants production process are the limiting factors in terms of output quantity. This will prepare the case for consideration of the effects of pollution control upon production.

On a day to day basis, either the paper mill or the bleach plant can materially reduce and control total production. In terms of design, and I think you want me to cover that, in terms of how the equipment was sized, our total recovery boiler design capacity is rated nominally at 1,050 tons per day.

Q. That's the three boilers together?

A. Yes, 300 and 300 and 464, or 550, I am not clear to the ton on it. . . .

A. When you go into new equipment, it is never a panacea; it's all fraught with problems and bugs with anything new. The new continuous cooking system has had many, many serious operating problems to be resolved. The brine scrubber that I mentioned on number three recovery furnace I mentioned a short time ago was certainly not a delight; it's been most expensive

to modify and work with, and has caused some curtailment of production from time to time. So I recognize my answer is vague, but it's accurate.

Q. Now, those three boilers, . . . Is it possible to operate any one or all of those boilers at beyond their rated nominal capacity?

A. Well, I have heard of them being operated as high as 160 per cent.

Comment:

In litigation involving kraft paper mill operations, the most common cause of air pollution from the emissoin of mercaptans and hydrogen sulfide is the operation of the recovery furnaces in excess of rated capacity. As the furnace operation exceeds rated capacity, the emission of the noxious reduced sulfur compounds increases exponentially. It is imperative to establish the recovery furnace capacities in a kraft mill and then to determine whether the particular mill operates in excess of these capacities.

Q. At any time in the course of the operation of Hoerner Waldorf's plant from the installation of boiler number one to the present time, have any of those boilers been operated beyond their nominal rated capacity?

A. Yes.

Q. And are they still being operated beyond their nominal rated capacity?

A. At the present time, very close to their rated capacity. By "close" I'd say plus or minus 12 or 14 per cent.

Q. But as much, perhaps, as 14 per cent over?

A. Yes.

Q. . . . When was the last time prior to the achievement of the plus or minus 12 or 14 per cent of rated capacity were they rated in excess of that? . . .

A. Oh, I am going to give you general answers, but they are the best I have with me. I would say in '64 and '5 we may have been around 130 per cent order of magnitude.

Q. And since '65 it's gradually gone down to 12 or 14 per cent?

A. Yes.

Q. And this has been a rather steady decline?

A. Steady by jerks, you know.

Q. In other words, you achieve various levels during this period?

A. Yes.

Q. . . . In the operation of this mill as you have just described it, are there any points during the operating process where an attempt is made to reduce the sulfur content of the emission gasses from any step of the process?

A. I really don't understand you.

Q. All right, we will try it again. At any point in the kraft process used at the Missoula plant of Hoerner Waldorf, are there any processes or any steps taken to reduce the sulfur content of the natural emission gasses from that step?

A. Yes.

Comment:

It is now time to determine the extent of any attempts made by the defendant to improve the quality of the air emissions from the process by removal of sulfur and its compounds during the process.

Q. Do you want to start from the head of the process as it were and name the points where these activities take place?

A. Yes. Beginning with the pulping area, this mill was one of six or eight out of the 94 kraft mills in the United States that has perfected and had in service for nearly three years a very efficient system to collect all of the non-condensable gasses from cooking, turpentine condensing and all evaporators, scrube them, condense out the condensables, burn them in the lime kiln and render them odorless; that leaves only one major source of odorous gasses left in the entire plant.

Q. And that's where?

A. That's the recovery furnace stack.

Q. And has anything been done with respect to the treatment of those gasses?

A. Yes. Less directly. We support an industry-wide association called the National Council for Stream and Air Improvement.

Q. This is a trade organization or an organization maintained by the pulp paper industry?

A. It's maintained by the pulp and paper industry, and it's an organization that, say through a period of 15 or 20 years [has been developing]

Namely what they like to call odor-free kraft recovery furnace operation, which involves a radical departure in both scrubbing and liquor concentration up to the desired concentration.

Q. What are the differences between odor-free kraft recovery

operations and the existing operations at the Hoerner Waldorf plant here in Missoula?

A. There are two very large differences. Instead of a cyclone evaporator, these people—and both of them operate—and when I say both I mean both of the two furnace manufacturers.

Q. In other words, you are talking about Combustion Engineering and Babcock and Wilcox?

A. That's right. Both employ the same general principle, but use a little different tools to arrive at the same point. . . . Babcock and Wilcox uses a cyclone evaporator, Combustion Engineering uses a cascade evaporator; both are direct contact, both involve the same problem. With the new shell and tube-type heat exchanger where there is no direct contact.

Q. All right.

A. The wet type scrubbers are also replaced with a different type scrubber, an electrostatic scrubber.

Q. Hold it a minute, let's stop right at that cyclone. In the direct contact evaporator, the cyclone evaporator or the cascade evaporator of Combustion Engineering, the gasses from the recovery furnace come in direct contact with both a source of heat and the black liquor, is that right?

A. Well, they contain heat. I think in principle what you say is correct. The hot gasses contain the heat and they do come in direct contact with the liquor.

Q. And the problem then is that the black liquor is reduced and produces mercaptans and hydrogens?

A. It's more of a stripping. It's more of a stripping action.

Q. In other words, these gasses that are being contained by the black liquor are then stripped and then passed out?

A. Correct. You didn't let me finish a moment ago.

Q. Go ahead.

A. I think it's significant and I think I should point out, this new odor-free system is so new that there is not yet one in operation on the North American continent.

Q. The theory is known?

A. According to the manufacturer, they believe in it, but they expect it to have many bugs in it to be worked out. In theory it appears sound.

Q. Now, how many of these cyclone systems do you have installed at the Hoerner Waldorf plant here?

A. Each recovery furnace has one cyclone evaporator.

Q. —when you buy a recovery furnace do you buy it with this cyclone,

A. Yes, you buy a complete system.

Q. What was the total cost of that system, of boilers one, two and three?

A. I don't know that without—it runs into millions of dollars, but I can't—

Q. Have you got your depreciation schedule for the Hoerner Waldorf income tax for this corporation? I think we asked for it.

A. Yes, it's here.

Q. May I have it for a moment?

(NOTE: Short recess taken.)

MR. YANNACONE: The defendants have produced the depreciation schedules for the Hoerner Waldorf Corporation tax return dealing with the mill operation in Missoula, and it's been agreed that they will remain available for examination at Mr. Garlington's office. However, at this time, for purposes of this examination, the plaintiffs do not wish detailed dollar information as to cost and will take Mr. Countryman's order of magnitude recollections.

Q. (By Mr. Yannacone) I think we were asking roughly what the boilers cost, and let's take the most recent, the 1965 addition of boiler number three; approximately what did that cost?

A. Well, you added up a number of three million dollars, and that's right, plus or minus twenty-five per cent.

Q. Okay. Now, of that three million dollar cost how much would you say is the cost of the cyclone direct contact evaporation system?

A. And I can just use my judgment on what tankage costs today, I would say fifty to eighty thousand dollars apiece. That's only a rough estimate.

Q. And I think preliminary examination indicated that boiler number one and boiler number two cost about a million and a half dollars apiece for a three million total, is that about right?

A. That would be right, within a third, on that order of magnitude.

Q. And on those two, they are direct contact evaporators, and a cyclone system cost on the order of what, fifty to eighty thousand dollars?

A. I would guess. You are only talking about the vessel you are not talking about the whole related system?

Q. The related system consists of mostly duct work and pipe work?

A. The Venturi itself can cost fifty thousand, you see.

Q. Okay. Anything else other than duct work?

A. Oh, yes. Very large pumps, very large circulating pumps, very large motors, couple hundred horsepower apiece.

Q. Are these electric motors?

A. Yes. Electric motor on one and a standby with a steam turbine so this adds and adds and adds. I can tell you this to help you get an order of magnitude, that the extra cost for the brine scrubber as opposed to a single-stage scrubber was $350,000, initially.

Comment:

From the financial data published in the defendant's annual report, counsel should begin the placing of this particular plant in the entire profit and cost scheme of the defendants corporate activities.

Q. Now, without going over actual details, looking at the consolidated financial statements of the Hoerner Waldorf Corporation it appears that there are three mills, one in Missoula, one in northern Michigan at Ontonagon, and one in St. Paul, Minnesota, is that right?

A. It was as of the time of that publication, but within the last 12 months our company purchased the Albemarle Pulp and Paper mill in North Carolina, so there are four mills in the mill division.

Q. Exclusive of the new one, which is the largest of the mills?

A. Missoula . . . It's the only kraft mill, Mr. Yannacone, of those three.

Comment:

The key question is what contribution the offending plant makes to the overall corporate profits.

Q. Okay, fine. Now, with respect to the total sales of your parent corporation, roughly what percentage does the Missoula mill contribute?

A. Well, you are talking apples and oranges, and I will explain why.

Q. All right.

A. We produce here liner board. True, ten or fifteen per cent goes

on the market as bleach pulp, but the main product is liner board—liner board being the inside and outside sheets in a corrugated box. Now, Ontonagon produces only corrugating medium, the little wiggly part in the middle; St. Paul produces two types of pulp, one of them is identical to what we do at Ontonagon, the semi-corrugated medium. The other is produced for box board, and that in itself gets complicated, but when I say box board, talking about the Cheerios box, you know, and that is produced from a blend of fibers. They can use some waste paper in box board, but none of our product in liner board goes on the market as a consumer item.

Q. I see. In other words, it's all utilized internally within the corporation?

A. Not all of it. We have at the present time an in-balance so that, oh, maybe two or three thousand tons a month are sold to other convertors outside our corporation, but the balance is converted by our own converting plant.

Q. I note also from the published Annual Report of your corporation that certain employees participate in profit-sharing plans, is that right?

A. It's a misnomer, but there is a plan. And I don't mean to be evasive when I answer you that way.

Q. I understand the problem in some corporations.

A. Well, wait, we are leaving the wrong impression now. What I meant to say, Mr. Yannacone, is for years it was almost a fixed amount. It's been changed recently.

Q. What I want to know is does your mill operation play any part in determining the profitability of the corporation?

A. Yes.

Q. And is the profitability of the mill determined as respects just this particular mill? In other words, does somebody at the home office of the parent corporation determine whether or not this has been operating efficiently and helping to profit the corporation?

A. I am sure we do. We have mill controllers, division controllers, corporate accounts; yes, I am sure that's true.

Q. Are you ever advised of whether or not your mill here in Missoula is producing or contributing to the over-all profitability of the corporation?

A. Emphatically.

Q. Now, over the last year or two—let's take the last three years, has your mill been contributing to the over all profit picture of the corporation?

A. Through quite a range of successful operation, and by that I mean two or three years ago, as a result of some things I have touched on earlier, it was a very poor operation, and only in the last—I would say in the last year and a half we have become more profitable.

Q. Prior to the—well, from the opening of the mill to the period where there was some difficulties with the pulp you described, or the wood you described, was the mill a profitable operation?

A. Yes and no. And by that I mean this: We have been producing bleach pulp for the market since 1960. Most of the time for the last year and a half we have operated our bleach plant at a loss. The only reason to operate it, the profit in market bleach pulp for—in case you followed it at all, has not been there for nearly two years due to a tremendous over expansion in western Canada, so the only justification for operating our bleach plant is that it did carry a little bit of overhead, but there was no profit, month after month it operated at a loss.

Q. At the present time do you have—well, let's just say for the record you referred to the Barton Titrator as a device that enabled the operator of the mill to determine at what point what particular gasses were given off, is that right?

A. Yes.

Q. What's the approximate market cost of this instrument?

A. Oh, it isn't very costly; it's very new, I think you buy it for some six or seven thousand dollars.

Q. And is there one now on site at the Missoula plant?

A. We purchased one right after I checked the ones out at the Weyerhauser which they had just finished evaluating several months ago, and it was late in delivery, as those things get to be, and was shipped out for calibration, and it's installed at the present time.

Q. And what particular area of the operation does it monitor?

A. We have installed it, and I have no data yet—I am talking about within recent days—but it will be producing data very shortly. We have installed it on our number two recovery furnace at the furnace outlet.

Q. Now, is it possible to utilize the same instrument to monitor

different points, or must you get a different instrument at each point you want to monitor?

A. As a matter of fact, we paid an additional thousand dollars or fifteen hundred dollars to buy the portable version.

Q. At the present time have you received any estimate from either Combustion Engineering Corporation or Babcock and Wilcox as to the cost of converting your existing cyclone direct contact devices to the new, odorless devices?

A. Only very crude estimates.

Q. What is the order of magnitude?

A. Three to five million dollars.

Q. That's for all three?

A. Yes.

Q. Now, at the present time, do you happen to know what portion of the over all profitability of Hoerner Waldorf is the contribution of the mill at Missoula?

A. No.

Comment:

When asking a defendant's employee about financial details it is always wise to have a secondary market source for reference in case the witness denies your statement. In that event it is the word of the witness against a respected independent financial investment advisory service.

Q. If someone were to tell you that Standard & Poore Corporation indicated that the Hoerner Waldorf mill accounted for approximately twenty-three to twenty-six per cent of the profit of the parent corporation, would it sound too far out of line?

A. No, I think that would be in order of magnitude. You see, we these numbers can mean many things. For example, the published price for liner board, which is our major product for many, many years, three or four years at least, has been at a certain level, the published price, but as a practical matter the market price for that product has varied considerably. When there was an overproduction of liner board a year or two ago, it was going for, oh, twenty, twenty-five per cent less than the published price. But what we have done here is transfer our product at cost plus a percentage, so those are the numbers we look at. I do not see reports that show that we produce a certain percentage, but the ones you have reported would be gen-

he can improve the pollution control aspects of his operations, so it is necessary to inquire cautiously into possible ways of improving operations. Counsel must always remember that the witness is a potentially hostile witness and that although some latitude is allowed, he is essentially directly examing the witness rather than cross-examining him.

Q. Now, are the pulping times involved in your operation here as short as they can be?

A. Are you talking about the time in the digester?

Q. Yes.

A. No.

A. You are asking me if I could reduce the cooking time?

Q. Yes, below that—

A. If I was short of digesting equipment I could push it a little tighter, but I am not.

Q. Could you increase the temperature? As a means of shortening the time?

A. It's an academic question, because I don't care to, but it could be done within certain limits. It wouldn't be wise, but it could be done.

Q. Is there any way that you know of to reduce the sulfidity of the cooking?

A. Sulfidity is a characteristic from mill to mill, and isn't an operating problem until you get down below twenty per cent. The one thing that affects sulfidity is rate of salt cake makeup. If you will hark back to where we were discussing the operation of the kraft recovery furnace and the smelt tank, I mentioned that in the reducing you have both an oxidizing and a reducing zone in a recovery furnace. In the reducing zone you are taking this sodium sulfate or salt cake that you introduced and reducing it to the sulfide. As you—and you have a great incentive to reduce your makeup to a minimum because it reduces costs. In other words, you do that by reducing losses at the washers and other points, but there is a direct correlation between the rate of salt cake makeup and your sulfidity.

Q. What was the sulfidity of your white liquor?

A. I believe I told you around thirty-one to thirty-three, that order of magnitude.

Q. But it could be reduced to around twenty and still operate your process?

A. I have never seen a mill, and I have visited many, with as low as twenty.

Q. What's the lowest you have seen?

A. Without oxidation, twenty-three, that order of magnitude.

Q. In other words, it could be reduced consistent with practice somewhere down to twenty-three?

A. Well, you are dealing in an academic area now. We do strive continuously to reduce our salt cake makeup, one of the end results being a lower sulfidity.

Q. All right, and what keeps you from getting down to—from thirty-two to twenty-three?

A. Well, one of them is the fact that you oxidize your liquor to reduce odor. When you oxidize your liquor, you in effect retain these odorous compounds in the process instead of venting them, and because you have retained them you have maintained them and it effects the concentration upwards, you see.

Q. Now, is there any re-cycling of the black liquor to the digester?

A. Yes. When you charge the digester, the two important components are the wood and the cooking liquor, but to get the right volume relationships between liquid and solids you add some black liquor.

Q. Now, is this done in the batch digesters and the Kamyr digesters?

A. All digesters.

Q. Do you monitor, maintain or otherwise determine the Ph of the cooking liquor during the blow?

A. Other variables you control determine Ph. There is nothing you can do to alter the Ph at the end of the cook.

Q. Do you know roughly what the Ph of that liquor is at the end of the cook?

A. Not personally and offhand.

Comment:

After a number of feints, it is time to confront the witness with the key issues—recovery furnace operating practices, the principle local cause of air pollution in the case in point.

Q. Now, do you happen to know whether there is any relationship between the operation of the recovery furnace at a given level with respect to its nominal optimum load and the production of reduced sulfur compounds?

A. Yes, I have some feel for that. It will vary from furnace to furnace. Rated loading isn't a magic point, it's a conservative point. I have seen some furnaces where the emission of odorous sulfur compounds doesn't begin to increase until you are nearly one hundred twenty per cent of rated load; I have seen others where that may begin at one hundred five per cent.

Q. When the increase does occur after the exceeding of whatever this load point is, is it a rapid increase?

A. Yes.

Q. Very rapid, isn't it?

A. Yes.

Q. Is there anything in your operation here that monitors whether or not your recovery furnaces are operating at the per cent of capacity necessary to reduce that gas production to a minimum?

A. Oh, yes. I described earlier that we—I have a very expensive and very high quality Omar meter on the black liquor flow to each recovery furnace nozzle, and you see, you also measure every hour and control very closely the solids, so between having the volume flow rate and the concentration, and—

Q. All right, you measure the input and output of solid material in the furnace; do you measure the amount of mercaptans or hydrogen sulfide or anything else that comes out?

Q. As I recall, there was no measurement of the gasses coming out of that furnace, in terms of quality of composition?

A. That doesn't jibe with my recollection. You asked me earlier if the—wasn't it true that these concentrations and flow rates of odorous gasses were relatively constant, and I indicated that was true.

Q. Now, you have measured them ...

This is at the output end of the fan ...

And before you get to the top of the stack?

A. Yes.

Q. And you have indicated, I think, that the total reduced sulfur compounds were on the order of ....

A. Fifty to two hundred fifty parts per million.

Q. Now, at the present time are there any plans to add additional brine scrubbers on furnaces one and two?

A. You see, the brine scrubber in its short life of three years has been made obsolete by the later developments which I have described.

Q. But during those three years the brine scrubber—did reduce the amount of particulate matter escaping from furnace number three?

A. That's correct. Well, it was installed with number three, but it's superior to one and two, the older ones.

Q. Very superior?

A. Yes. I would say that it emits, or permits to be emitted perhaps only twenty or twenty-five per cent of what the older ones do.

Comment:

Perhaps the hardest task of any attorney entering the field of environmental litigation is the development of a feel for the kind of information necessary to establish a viable cause of action in a major pollution case. The tendency to seek absolute numbers and absolute or strict liability concepts must be resisted. The differences between air pollution and simply the normal introduction of by products of harmless operations into the atmosphere is very subtle. At all times counsel should encourage witnesses to discuss pollution problems in terms of criteria for action or inaction. In this case, one of the key elements of the case was the determination of the industry practice with respect to introduction of pollution control equipment.

Q. Now, based on your own personal knowledge, what are the principal components of the gaseous emissions from the Missoula mill?

A. Virtually no SO_2, and that's typical, again, of any kraft mill, H_2S and the mercaptans, which are a family of organic compounds. . . . relative quantities; I would say H_2S is the largest, however, but then typically again, we produce dimethyl disulfide, methyl mercaptans and probably the others in lesser amounts, but I am not real specific there.

Q. Do you have with you any records indicating the composition of any of the gaseous emissions of the plant?

A. No, not with me, but there are such records.

Q. And how are they maintained in the regular course of your business?

A. Gaseous emissions, and I presume you are speaking of sulphur gasses . . . Are not measured day to day or week to week, but are measured as we engage others to conduct a survey for us. At one time we had a team from Montana State College at Bozeman make a very thorough study, and we have used others from time to time, largely to give yourself targets to work on and priorities.

Q. Do you, in your operation here at Hoerner Waldorf, have any idea what the emission levels of combined reduced sulfur compounds, hydrosulfide mercaptans or sulfide, might be during your regular operation?

A. Yes, I have reports on that.

A. I can recall levels, emission levels, and the most significant one I have indicated before is a kraft recovery furnace, varying considerably from fifty to maybe two hundred fifty parts per million.

Q. Well, —

A. Grouped together as reduced sulfur.

Q. Now, at the present time is there any intention on the part of the management of the Hoerner Waldorf Corporation as it affects the mill here in Missoula to make any modifications in the emission control process as it affects reduced sulfur compounds?

A. Yes.

Q. And what are those plans?

A. Well, to fully answer that you need to understand that such considerations are continuous, that you don't decide 'Well, in year such and such I will do thus and so.'

Q. I am aware of that. All I want to know is what's the situation of the plant right now, the status?

A. In general what you do now is the same thing you do every year, you keep yourself abreast of the evolution in air pollution scrubbing equipment, and I can cite a couple of classic examples.

Q. We are talking about scrubbing equipment; scrubbing equipment, as I understand from your prior testimony, is designed basically to remove particulate matter?

A. No, that's an oversimplification, I think.

Q. At the present time I think you have testified that your scrubbing equipment is operating at ninety-eight per cent efficiency or ninety-nine per cent efficiency, so basically we can assume that there isn't much coming out of that plant in the way of particulate?

A. I am not quoted correctly when you say that. These different efficiencies relate to different scrubbers, so they can't be lumped as you did. I described one that was about 99.6, but I wouldn't have you believe they are all that efficient.

Q. In other words, there is some particulate emission from the plant?

A. Yes.

Q. At what point in the flow sheet does it occur?

A. The greatest source of particulate emission is the recovery furnace.

Q. And this is in spite of the Venturi scrubbers?

A. Yes.

Q. And what kind of particulates?

A. Largely sodium sulfate.

Q. Any other point in the process where you get some substantial particulate emissions?

A. No.

Q. Now, tell us what the current plans, if any, are of the corporation to reduce the amount of sulfur emissions?

A. Well, I must begin back a short distance to give you a complete answer. Following the installation of the brine scrubber some two and a half years ago, in talking with the boiler manufacturer that builds our equipment—

Q. Excuse me. The brine scrubber is on boiler number three, right?

A. Yes. About two and a half years old. So as of the time it was put in it was recommended and considered quite good, and did represent quite an improvement over what we had on the two earlier ones.

Q. And it was responsible for reducing what?

A. This same sodium sulfate particulate emission.

Q. And your own observation indicated that it improved, it was an improvement over the existing operation on one and two?

A. That's correct . . . In the next conversation with the major equipment manufacturer, Babcock and Wilcox, they had schemes on a device called an agglomerator—and I tell this because it's very pertinent to what we are talking about. An agglomerator was an electrostatic collector, not an electrostatic precipitator as we think of them, and both of these major manufacturers were sure they had found a panacea. But you learn that all of their panaceas aren't going to work out a hundred per cent, so we looked into it some, and in a matter of just a very few months they had shifted away and decided that was not the best way to go. I believe there was a relationship between their shifting away from that approach and this research work I described that occurred some 12 to 16, 18 months ago. But it's important to understand that you could have rushed out and spent millions on an agglomerator only to find in a year, before it was ever operational, that you had made a great mistake. But in talking with them they soon moved away from that concept and urged me to keep in touch with them and keep abreast of this new scheme they were working on, the new scheme being what I alluded to a short time ago as their new, odor-free approach to scrubbing for kraft recovery furnaces. And that has evolved slowly but surely; there are two being installed on the west coast now. There are none in operation yet. We have met with the Babcock and Wilcox research engineers in the last ten months at least five times to be brought up to date with how that equipment is coming along. We are the only operation in the continental United States that has contracted with a firm like that to make a feasibility study for adaptation to our particular operation. I think that answers your question.

Q. When is this feasibility study supposed to be completed?

A. Oh, to be safe, I would say within the next few months; more specifically, the next six.

Q. Now, will you tell us the mechanism whereby you will determine, or whoever is in charge of the operation will determine when the next pollution control device is added to the existing mill? . . .

A. When you look into the future like that it's hard to be precise. What you do is follow the development of the first ones going in.

Q. In other words, you have to wait for somebody else to do it?

A. Well, let me expand on that. As I have related to you, our

three recovery furnaces are Babcock and Wilcox. One of the first ones to start up on the new concept is by Combustion Engineering. Combustion Engineering will not quote on a second one until the first one is de-bugged. That gives you some feel for what I have said here, I think. Their first one is going in for Crown-Zellerbach at Port Townsend, Washington. It's due to start up, as I understand it, within the next six, seven months. I would expect they will have a few months of de-bugging. If this thing follows most evolutionary, or equipment developed right out there on the frontier, it's going to be fraught wit' problems. But at some logical point, you would expect withi four to eight months, this thing would be decreed to be a failu or a success.

Now, exactly what Babcock and Wilcox will experience is too different. Their first one is going in at Halsey, Orego a new mill American Can is building; that one is expecte start up this summer or fall also. Based on my own ex ence, I would, if I had to make a decision today or make diction today, I would think it might be slightly less t free than the one at Port Townsend . . . Combustion neering wouldn't be very happy to say that, but based experience with that I think it would be less troublesor the one at Port Townsend.

Q. The B & W would take less time?

A. That's a guess.

Q. We are still talking about four to six months?

A. That's correct.

Q. At the present time is it possible to buy a Babcock brine scrubber for furnaces one and two?

A. Well, that is under consideration at the present tir installing something like that in a totally new ins you might relate this to your own automobile to h stand it better—is a lot different to order it or than to go tear apart your old car and try to ir is a feasibility study being made on that for present time; this is something that's been v for B & W for just about 10 or 12 months.

Q. Now, this stack gas that contains these proble at the output of the fan; is there anything t those gasses or with those gasses before the atmosphere at that point?

A. That's a vague area for this reason: Nc equipment manufacturers offer a program

I have heard reports on differ
You must be careful in trying
lution problem you don't create
lem. So if you are going to use
to reduce the concentration of n
are talking about here, then it m
liquid stream back into the liq
bought yourself a different probl

**Q. All right. Are you familiar w
processes that are in use today in**

Comment:

Be alert to test the extent of the w
existing state of the art as represented
countries or other industries.

A. Not directly, no. I have heard thi
kraft recovery furnaces tend to b
which is an interesting happenstan
their design from ours wasn't base
it was based on the exceedingly high
part of this new technology is influe
Sweden.

**Q. In other words then, what you are lo
cox and Combustion Engineering fo
done somewhere else in the world,
reason?**

A. At least partially.

**Q. Does your investigation, in terms of
the mill here at Missoula with respe
reduced sulfur compounds, include the
odor control systems from Europe?**

A. To the best of my current knowledge, t
in the Swedish or European approach,
the two domestic manufacturers are p

Q. But they are in operation now, are the

A. Yes.

**Q. And they represent to that extent the
art?**

A. Well, academically, it's never been expor
fore, you see.

**Q. But they are available? They are in oper
de-bugged, they have been reported, have**

A. Very recently.

Q. Now, are these emission standards law? . . .

A. Yes.

Q. Are you complying with them now?

A. No. . . .

A. We have been given a period of time. . . .

A. To change equipment.

Q. That's as to particulate matter?

A. Yes.

Q. How long have you been given?

A. In general, the Forest Products industry has be
I think about mid-1970.

**Q. Would it be possible to comply with those emissio
to particulates by the addition of additional br**

A. I doubt it.

**Q. Is there any available system that you can pu
1970 that will reduce this particulate emission?**

A. In our recent studies I understand the very best
electrostatic precipitators will.

Q. And do you have any idea yet roughly what th

A. I don't just look at that. I think it would be
look at that to the exclusion of evolution in o
well, because I can see what's coming into the
cies on odor reduction.

**Q. I am aware of that, but I am interested right
what's the cost of one of these electrostatic
ficient to comply with this emission standards**

A. Do you want it on an installed basis in this m

Q. Roughly.

A. Order of magnitude of a million and a half

Q. Per boiler?

A. No, total . . . for a million and a half to tw

**Q. Are there emission standards as to any
produced by your mill?**

A. I don't believe the State Board has adopted
sulfur compounds, they held off waiting fo
their recommendations.

Q. Do you know what the HEW recomendations are?

A. I have them in my office, I don't recall the recommendations.

Q. Do you know whether or not your plant is presently within those limits?

A. No, I do not.

Q. Would it be fair to say that they are not as to hydrogen sulfide and the mercaptans?

Comment:
Now the question arises of the federal emission standards. It should be noted by counsel that federal standards do not cover many of the most dangerous and noxious pollutants being admitted by industrial operations today and this fact should be introduced into the record at every opportunity.

A. I really can't answer, because I don't remember the number the federal government has adopted.

Q. Do you know whether or not your company was represented at the hearings where these HEW emission standards were promulgated?

A. Well, I don't believe any—not directly. If they were, it would be through some organization like the National Council I described earlier.

Q. Do you know whether or not your industry was represented?

A. I am sure they were.

Q. And do you know whether or not it is possible, from your knowledge of your own industry, with equipment that's orderable today to meet the standards?

A. Reduced sulfur compounds?

Q. Yes.

A. To meet the standards HEW adopted? I must say I don't know, because I don't recall the number they adopted.

Q. Would you give us an idea of what level of reduction you can achieve now at the Missoula mill?

A. Well, I have said they range from fifty to two hundred fifty. I am told that with this new equipment they are able to hold it under five parts per million, for example, but with some of the —and I will call it more make-shift equipment that's been used from mill to mill, I do not know what level they reduce it to.

Q. Do you have any idea how many pounds of sulfur gasses you are producing per ton of pulp produced?

A. No, I do not. It could be calculated from the numbers I have given you, but I don't have those units in my mind.

Q. Have you got any rough idea, maybe?

A. No, but you could have it calculated from what I have told you.

Comment:

The question now is whether the witness knows just what level of pollution control is really possible for his industry and if he knows and it is a reasonable level, why his plant is not at that level.

Q. Do you know whether or not it's possible to hundred per cent oxidize or close to hundred per cent oxidize black liquor?

A. Yes. Before our expansion we were able to oxidize with an efficiency in the range of 97 to 100 per cent.

Q. What's your efficiency now?

A. It's about 25 to 30 per cent oxidation. And there is a good reason for that.

Q. All right, do you want to tell us the reason?

A. Sure, I'd be glad to. Number one, the liquor composition to the Kamyr digester is much different now than Kamyr told us it would be at the time we bought their continuous cooking equipment.

Q. Meaning what?

A. Meaning that they wanted a higher residual alkali in the liquor at the end of the cook than they had told us when we bought the equipment. But more importantly, that they wanted a much higher ratio of active chemical to unit of wood in the cooker to get the job done. These things result in producing a much higher sulfide or sulfur compound that can be reduced to sulfide in the liquor than we had anticipated. . . . But what I am telling you is that as the evolution of the operation of the continuous cooker developed, it continually increased the load on our oxidation system so that as you would conclude from the efficiencies I have given you, it would have required that we quadruple the capacity of our oxidation system. Now, in discussing that and talking to the Babcock and Wilcox people, they said, "We think you would make a mistake to do that, because you are never going to reduce the odor through oxidation or the emission of these gases through oxidation to anywhere near the degree that you can reduce it by going to this new scrubbing concept." So at that point we had a choice which way to go.

Q. You have a third choice, and that's to go back to the batch digesters instead of Kamyr digesters?

A. No, that is not a third choice. That's not a third choice for the reason that you materially changed your whole system around. You couldn't begin to do the same thing with your batch cookers that you can with your continuous cooking equipment.

Q. Has the addition of the continuous cooking equipment substantially increased the profitability of the operation?

A. Well, when you ask me that, do you mean profit per unit produced? The plant was expanded through it, are you speaking total numbers or per unit?

Comment:

Return to profitability at every opportunity and try and establish that the profit motive can be satisfied with pollution control techniques that are consistent with the state of the art.

Q. I am talking per unit cost.

A. It has not.

Q. So in other words then, basically that Kamyr digester which has reduced the per cent of oxidation is not increasing the profitability of the plant, it's only increasing its capacity, is that correct?

A. No, that is not what I said. No, you are playing with two numbers at the same time.

Q. All right, do you want to separate them?

A. You are playing with profit per unit and total profit, you see, and they are not interchangeable. They are two distinctly different items.

Q. I see. In other words then, the profit per unit, which is the measure of the efficiency, is no better?

A. That's correct.

Q. And it may be worse with the Kamyr digesters, but the total profitability which is based on total increase in capacity is greater?

A. Yes, that's true, but it would be incorrect to say that's because you have installed this Kamyr cooker; if you are suggesting that, then I must disagree with you.

Q. Well, it's true not necessarily because you installed the Kamyr cooker, but because you increased the capacity?

A. No, that isn't true either.

Q. Well then, what is true?

A. It's much more complicated than you would conclude from your remarks, don't you see.

Q. Okay, fill me in.

A. It's less profitable. One of the major reasons I described in detail here earlier because of what happened on the profit on market bleach pulp, that's a major factor in what you and I are speaking of now.

Q. Again now, we are talking about cost per unit in one case, and now you are talking about apples and oranges.

A. No, I am not. We are not talking cost per unit. You began speaking of profit per unit, Mr. Yannacone. The price goes down, it reduces the profit per unit.

Q. Let's back up a bit. Since the addition of the Kamyr digesters, has the cost per unit produced increased, decreased or remained the same?

A. Decreased.

Q. Since the addition of the Kamyr digesters, has the total output of the plant increased?

A. Yes.

Q. Since the addition of the Kamyr digesters, have the total sales of the plant increased?

A. Do you mean production?

Q. Yes.

A. Yes.

Q. Do you have excess pulp laying around you haven't sold?

A. Yes.

Q. Now, you told us that the majority, 75 to 80% of your output is utilized in house by the corporation?

A. Correct.

Q. Now, you sell that to the corporation for a price, is that correct?

A. Yes.

Q. Is this a market price or a price determined internally within the corporation?

A. The latter.

Q. And this price is cost plus something, right?

A. Yes.

Q. And cost includes all the operating expenses and costs of production, including cost of original materials and the cost of the process, is that right?

A. Correct.

Q. And this extra you add to the cost, has this remained the same or changed since the addition of the Kamyr digester?

A. The same.

Q. Now, in other words then, the gross sales of the bulk of your output, the 70–80% that utilized by the parent corporation have increased since the production?

A. That's correct, yes.

Q. And this increase has been due to addition of the Kamyr digesters, among other things?

A. The higher production, yes.

Q. And in other words then, at the present time if you were to eliminate the use of these Kamyr digesters or to reduce their productivity by increasing the oxidation efficiency of the plant, you would then reduce the profitability of your Missoula mill, wouldn't you?

A. Yes.

Comment:

The purpose of the following line of questioning was to establish the operating criteria of the equipment and obtain copies of the technical specifications for the equipment. We did not expect to reap the bonanza that came from the apparently innocent questions.

Q. Now, when you purchased the Kamyr digesters, did you purchase them on a specification which included the operating characteristics?

A. Well, there were—it was with an understanding on how the supplier recommended it be operated, if that's what you mean.

Q. Was this understanding in the form of a purchase order or memorandum or sales advertisement prior to the purchase?

A. No. Operating conditions such as that are not a condition on the purchase order.

Q. Were there any other Kamyr digesters in operation in the country?

A. Many, but the Kamyr digester has had—has gone through such a rapid evolution there are no two the same in the country, you see.

Q. In other words, you bought a brand new one, an untried device?

A. Well, I should think that's an overstatement. In other words, the basic concepts are there in other digesters, but each one has several new innovations in it, you see.

Q. I see, and you bought one with new innovations that weren't tried anywhere else?

A. Basically, that's correct. For example, it was the largest one they had ever built, you see.

Q. And you bought this to increase production?

A. Oh, yes.

Q. And increase profit?

A. Oh, yes.

Q. Was there any reason that you can point out that made you buy that new one with the untried features as opposed to a duplicate of one of the most recent existing models?

A. Yes. The new features built into the digester in theory appeared to be attractive, or of course you wouldn't buy them.

Q. I see. One more question. I show you a letter, copy of one, dated December 20th on Hoerner Waldorf letterhead, and I ask you to look at page two and tell me if that's your signature at the bottom?

A. No, I didn't sign this personally.

Q. That's your name, though?

A. Oh, that's my name, and I am sure the person who signed it had my authorization to do so. It's a form letter.

Q. It is a form letter?

A. Yes.

MR. YANNACONE: I would like to have it marked as Plaintiff's Exhibit No. 1 and identified for the record.

MR. YANNACONE: I am going to offer it into evidence.

Professor Nathan B. Blumberg
202 Pattee Canyon Drive
Missoula, Montana 59801

Dear Professor Blumberg:

As you know, a suit has been filed against our Hoerner Waldorf operation here in the Missoula Valley by an eastern group known as the "Environmental Defense Fund".

This action, scheduled for hearing on February 13, 1969, apparently is the cumulation of a variety of allegations, charges and statements aimed with increasing frequency at our mill in recent months. At best, some of these statements suggest that our operation is a source of annoyance to many of you; at worst, they suggest that our presence is detrimental to your health.

Because of all this, I sincerely believe that we of Hoerner Waldorf have an obligation to the responsible members of our community to comment publicly on this issue—which is why I'm writing to you at this time. Certainly to remain silent would ignore our responsibility to the many friends and working relationships that we have developed over the past 12 years.

In this spirit, I would like to assure that the following points are made absolutely clear:

1. We at Hoerner Waldorf support—and agree with the necessity for—a clean, healthful, pleasant and productive environment for the Missoula Valley.
2. We do not believe that our environment here is as clean as it can, should and must be made.
3. We agree with, and support, the need for more rigid pollution controls and standards for all individuals and businesses that may contribute to the situation in the Missoula Valley.
4. We acknowledge our continuing responsibility to further reduce the amount of vapor, odor, and particulate matter being emitted by our operations because we are not now satisfied with the extent to which we currently can control these discharges.
5. We do not believe that any atmospheric emissions by the plant constitute a threat to plant, animal or human life in the Missoula Valley.
6. We point to our past record with respect to air pollution control. Over the past few years, we have made substantial investments in pollution control equipment. It is a matter of record that our Missoula mill has been among the first in the paper industry to

adopt some of the newest, most advanced concepts and systems for pollution abatement that are constantly being developed.

7. We would much prefer working *with*, rather than being forced to work *against*, any groups or individuals striving for a cleaner environment. We assure you that all of our resources, support, and encouragement will be made available to anyone willing to demonstrate an intelligent, reasoned and responsible approach to this problem.

I sincerely hope you'll take a few moments to carefully consider these points. Certainly you may choose to agree or disagree with what you have been seeing, hearing and reading. I'm confident, however, that you will take the time to fully acquaint yourself with all of the facts before you reach a conclusion on this issue.

Perhaps we have been remiss, or at least less aggressive, than we should have been, in keeping you appraised of our continuing concern about pollution control and the steps we *have* taken to improve the situation.

We will take the liberty of writing to you again to describe other aspects of this situation.

Sincerely yours,

HOERNER WALDORF CORPORATION
Roy E. Countryman
Vice President and Resident Manager

REC/tb

Comment:

Now the record contained the actual corporate policy statement with respect to the litigation in the same context as the testimony of the defendant. The second stage of public education had begun with the media now contrasting the public relations statements of the corporation with the sworn testimony of its officers at the deposition. The plaintiff or plaintiffs counsel made no statements to the press, issued no publicity releases and held no press conferences, but the record of the deposition was made available to all who wished to examine it. The record spoke for itself.