BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

JOSEPH BOGACZ,	)	
	)	
Petitioner,	)	
	)	
vs.	)	No. PCB-96-47
	)	
COMMONWEALTH EDISON COMPANY,	)	
	)	
Respondent.	)	

The following is a transcript of a hearing held in the above-entitled matter taken stenographically by MICHELLE M. DOSE, C.S.R., a Notary Public within and for the County of Cook and State of Illinois, before JUNE C. EDVENSON, ESQ., Hearing Officer, at the Lake Zurich Village Hall, 70 East Main Street, Lake Zurich, Illinois, commencing at 10:00 a.m. on the 22nd day of November, 1996.

HEARING TAKEN BEFORE:

ILLINOIS POLLUTION CONTROL BOARD, by
MS. JUNE C. EDVENSON, ESQ., Hearing Officer
James R. Thompson Center
100 West Randolph Street, Suite 11-500
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APPEARANCES:

MR. JOSEPH BOGACZ, Petitioner
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Appearing Pro Se;

HOPKINS & SUTTER, by
MR. CHRISTOPHER W. ZIBART
MR. E. GLENN RIPPIE
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Appearing on behalf of the Respondent.

I N D E X

E X H I B I T S

(Respondent's Exhibits marked for identification.)

(Respondent's Exhibits admitted into evidence.)

THE HEARING OFFICER: Good morning and welcome. We are reconvened for the continuation of the hearing of PCB-96-47, Joseph Bogacz versus Commonwealth Edison Company, and we hope to conclude this morning.

We have two further witnesses by Respondent, and then I will give the Complainant an opportunity to present case in rebuttal.

Following that, we will discuss on the record the scheduling needs for the case prior to closure.

All right. We do have some persons in attendance, and I would like to distribute a pad of paper and ask the individuals that are in attendance to sign in for the day.

And I thought I would share with the persons present a little bit about the procedural history of the case.

The Board did deny a motion to dismiss the case in November 1995.

Is that correct?

MR. ZIBART: That's correct.

THE HEARING OFFICER: And following that, the parties were in discovery activities for a period of months and then agreed to this hearing date.

All right. Do we have any preliminary motions or stipulations?

MR. BOGACZ: I have an objection that I'd like to make at this time regarding a previous witness evidence.

THE HEARING OFFICER: And what is your objection, Mr. Bogacz?

MR. BOGACZ: Mr. Gary V. Johnson, Dr. Gary V. Johnson, testified regarding certain documentary evidence, certain calculations. He admitted that he did not make the calculations himself, and I feel that his testimony regarding that was hearsay.

The person that apparently did the calculations was a Brian Cramer, an employee of the Commonwealth Edison Company, and he was not here for me to examine him.

THE HEARING OFFICER: Okay. Thank you. Then your objection will be noted for the record.

MR. BOGACZ: Okay. I'd like to -- well, add to that, but the evidence or the testimony that he presented regarding those calculations be not allowed.

THE HEARING OFFICER: All right. That is a motion to strike testimony.

Do I have a response to the motion?

MR. ZIBART: Yes, Madam Hearing Officer.

I think the record would reflect that on cross-examination, Dr. Johnson explained how he, in fact, supervised and was actively involved in the calculations. I think he -- As I recall it, he described how Mr. Cramer assisted him and actually did the printing out of the spreadsheets and so forth. So we would oppose the motion on that basis.

THE HEARING OFFICER: Thank you, Counsel.

MR. ZIBART: Madam Hearing Officer, just in the interest of full disclosure and avoiding any future problems in the case, I would mention that Mr. Cramer is present in the hearing room today. And if it would give anybody a sense of comfort to hear from him, I

could certainly call him very briefly as a witness.

He was listed on our witness list, so I don't think there would be any procedural irregularity to that.

THE HEARING OFFICER: Thank you, Counsel.

All right. The motion to strike testimony is denied.

The Board will determine the reliability of the testimony given in their deliberations on this case. Whether Respondent's counsel wishes to call Mr. Cramer as a witness is up to Respondent's counsel.

Are there any further preliminary motions or stipulations?

All right then. At this time, Respondent may call their next witness.

MR. ZIBART: At this time, Respondent would call Brian Cramer as a witness.

Is that satisfactory?

THE HEARING OFFICER: Yes.

Hi, Mr. Cramer. Would you please be sworn?

(Witness sworn.)

BRIAN CRAMER,

called as a witness herein, having been first duly sworn, was examined upon oral interrogatories and testified as follows:

DIRECT EXAMINATION

BY MR. ZIBART:

Q. What is your name, sir?

A. Brian, B-r-i-a-n, Cramer, C-r-a-m-e-r.

Q. And could you -- And are you employed, sir?

A. Yes.

Q. In what position?

A. I'm employed with Commonwealth Edison. My title is technical expert for induction coordination and electrical effects.

Q. And what are your duties in that position?

A. I do various studies of induction, electromagnetic/electrostatic induction, and various electrical effects, electric fields, magnetic fields, corona, ozone, other related things.

Q. Could you briefly describe your educational background?

A. I have a bachelor of science in electrical engineering from Lehigh University.

Q. Have you done any postgraduate training in electrical engineering or electromagnetics?

A. Yes. Many courses, both graduate level college courses, short courses, and specialty training.

Q. Do you hold any professional qualifications?

A. I'm a licensed professional engineer in the State of Illinois, electrical engineering.

Q. And are you a member of any organizations of electrical engineers?

A. I'm a senior member of the IEEE.

Q. Mr. Cramer, I'm going to show you what's already been received into evidence as Respondent's Exhibit 14. Could you take a look at that document, sir?

Do you recognize that?

A. Yes.

Q. And could you tell us what it is?

A. This is the document that we provided as output of the work that I did together with Dr. Johnson.

Q. Were you involved in doing the TL work station and AC/DC line module calculations?

A. Yes.

Q. And what was your role in that?

A. I ran the -- these various calculations,

copied them to Dr. Johnson, he reviewed them, and in some cases we ran them to verify all aspects of input and function.

Q. Is it fair to say that Dr. Johnson sent you some revisions on the calculations?

A. Yes.

Q. And did you make those revisions?

A. Yes.

Q. Would you describe yourself as familiar with the TL work station software and the AC/DC line module?

A. Yes.

Q. Could you give me an estimate of how many AC/DC line runs you've done?

A. Several hundred.

MR. ZIBART: I have no further questions for Mr. Cramer on direct examination.

THE HEARING OFFICER: All right.

Mr. Bogacz, do you have any cross-examination for Mr. Cramer?

CROSS-EXAMINATION

BY MR. BOGACZ:

Q. Mr. Cramer, did you consider or is there a component factor within the AC/DC line program that includes humidity in your -- in the calculations?

A. There is a weather model. You select one of the available weather models which are basically regional. There is not the option to individually adjust, say, humidity separate from other variables.

Q. So you -- would you agree that you did not make any, as quoted in the document, fair weather calculations of any kind that included the various levels of relative humidity?

A. No, I wouldn't agree to that.

The model in determining corona provides -- it does the result -- it does the calculation, I should say, for various conditions. One of them is a fair weather condition. Another is referred to as average rain; another as maximum rain. You could see that on the first page of Exhibit 14 in the bottom third of the page. You can see the various outputs for the various conditions.

Q. What is the kilowatt factor used for fair weather in your calculations?

A. I'm not sure what you mean.

Q. The factor that's used to determine the output of ozone.

A. There are many. I'm not sure what you're referring to.

Q. Well, the one that's listed on that document

towards the end of the pages there where you list fair weather calculations for various voltages.

A. I'm still not sure which factor you're referring to. Can you refer to a page?

Q. I keep losing these documents.

MR. BOGACZ: Is it all right if I go over there and point it out to him?

THE HEARING OFFICER: Yes. You'll have to be more specific with your question.

MR. BOGACZ: Huh?

THE HEARING OFFICER: You will have to be more specific with your question.

MR. BOGACZ: Right.

MR. ZIBART: Mr. Bogacz, I have one more copy of this.

MR. BOGACZ: Oh, you have it. Thanks.

MR. ZIBART: We'll have to ask for it back.

MR. BOGACZ: Oh, sure. Thanks.

BY MR. BOGACZ:

Q. On -- well, for -- on page 2 --

A. The second page -- the second sheet or the page numbered page 2?

Q. It says page 2 with your name on it in the

back, the total ozone at the top. It says, total ozone, fair weather. It's a 138 kV double circuit.

A. Yes.

Q. Right below that, it says fair weather corona losses, zero kilowatt per mile.

THE HEARING OFFICER: Can you state your question?

BY MR. BOGACZ:

Q. The -- Is that the same figure that's stated in document number -- the EP -- the documents for the extraordinary losses and other sources of ozone?

I'm trying to get the documents straightened out here, and, unfortunately, I have to ...

The identification and characterization of missing or unaccounted for area source categories, are you familiar with that document that was submitted?

A. Yes.

MR. ZIBART: For the record, Madam Hearing Officer, I believe that's Respondent's Exhibit 6.

THE HEARING OFFICER: Thank you.

BY MR. BOGACZ:

Q. On page 2 -- 227 of that document, it states fair weather corona loss at 3 kilowatts per mile.

A. Which page?
Q. 227.
THE HEARING OFFICER: Could you restate your question?
BY MR. BOGACZ:
Q. Can you explain the difference in values that were -- that are stated in these two different documents?
A. For corona loss?
Q. Right.
A. As I recall, this -- yeah, this study, identification and characterization of missing or unaccounted for, et cetera, is looking at 765,000 volt transmission lines. They apparently have modeled a specific configuration that they feel is representative and come up with a fair weather corona loss level of 3 kilowatts per mile.
The sample that you referred to in Exhibit 14 is for a 138,000 volt double circuit transmission line.
Q. Could you look on page 1 of the calculations with your name on it down at the bottom?
A. Again, total ozone for fair weather?
Q. Yes. It says 765 kV?
A. Uh-huh.
Q. And the fair weather corona loss is stated as

zero kilowatts per mile?

A. Yes.

Q. What -- why -- why is there a difference? You just stated that the other document was calculated at 765 and -- as opposed to 138, but your calculations still reflect the same corona loss.

Is that a correct figure for that 765 kV?

A. The zero kilowatt per mile in our -- in our calculations?

Q. Right.

A. Yes, that is.

Q. Even though it's stated as 3 kilowatt per mile in the EPA document on page 227?

A. We've suddenly -- We've changed subjects here. These are, in fact, the same voltage, but that does not mean that other aspects of these lines are the same. A minute ago we were looking at a 138 line, which is radically different, of course.

You can still have -- There are many factors, I should say, that affect corona loss. We use a different bundle conductor spacing. We may well be using different conductors. I don't know the configuration of what the EPA model -- they don't give that detail in here.

Our number of a fair weather corona loss is as

designed zero kilowatts per mile for our lines, and that's correct.

Q. So you'd say that the calculation that you made is not really correct per the EPA determination?

A. No, I wouldn't say that at all. The EPA was not looking at our lines. Our lines I don't believe were built at the time that this was done.

Q. Did you use the average ozone production to corona loss ratio of 1.92 grams per kilowatt an hour?

A. Yes, uh-huh.

Q. Why did you -- why do you consider that a -- an appropriate figure if you did not use the 3 kilowatt an hour per mile figure for your calculations?

A. Those two things are unrelated. One is the corona loss for the line, and then the other is the conversion factor that you use to get from corona loss to quantity of ozone. You can have a line that has higher corona loss and a line that has lower corona loss. You still use the same conversion factor.

Q. Where did you obtain zero kilowatt per mile? How did you make that -- or where did you obtain that figure?

A. For the 765 kV line now?

Q. Yes.

A. If you go back to the --
Q. Or any of them, actually. They are all zero for 765, 138.
A. For fair weather, they are all zero.
If you look at the first sheet of Exhibit 14 --
Q. First sheet?
A. Yes.
Q. Okay.
A. This is the output per AC/DC line for the 765 kV transmission line. It shows all the details of the model that we used, conductor type, location, voltages.
And at the bottom, you can see the corona loss results for the various weather models that the program used for our region. And you can see the average fair and maximum fair is zero. That's where that number came from.
Q. Does this page state anything about fair weather calculations?
A. It says that the corona loss in fair weather is zero for this type of line.
Q. But there's no evidence of describing how you came about obtaining zero, is there?
A. All the inputs are shown on this page. Beyond that, beyond evidence of the accuracy of this computer

model, that's not shown on this page.

THE HEARING OFFICER: Excuse me.

I think what Mr. Bogacz is attempting to get at is whether the zero for fair weather is an assumption or a calculation you arrived at through scientific measurement.

Can you tell us which it is?

THE WITNESS: It is a calculation.

As was described by Dr. Johnson yesterday, this computer modeling system was based on a great deal of research and measurement, and it is accepted in the industry as an accurate way of calculating corona loss for a line design.

THE HEARING OFFICER: And it itself was based on calculations of the amount of fair weather?

THE WITNESS: Calculations and measurements that went into validating that software package.

THE HEARING OFFICER: Thank you.

BY MR. BOGACZ:

Q. Was this document -- or are these calculations ever submitted to the U.S. EPA or IEPA?

MR. ZIBART: I'll object as beyond the scope of direct.

THE HEARING OFFICER: Sustained.

BY MR. BOGACZ:

Q. Are these -- So in your estimation, these calculations that you made generally indicate a major deterioration of ozone under foul weather or very rainy conditions?

MR. ZIBART: I'll object to that also as beyond the scope of direct.

Madam Hearing Officer, I put a witness on yesterday who testified about this model and who testified about the results of the model, and he was subject to cross-examination.

I have put Mr. Cramer on to verify as to how the actual calculations were made, but I did not ask him any questions nor do I think it's proper about interpreting the results that the model came up with.

THE HEARING OFFICER: What is your response to the objection?

MR. BOGACZ: Brian Cramer's name is on the report, and he is the one that apparently made the calculations. So, therefore, he

should be able to answer any specific detailed information that he has or used to obtain these calculations; otherwise, they are completely conclusion, and they'd be arbitrary.

THE HEARING OFFICER: Thank you.

The objection was made as to a specific question asked of Mr. Cramer, and the objection is sustained.

BY MR. BOGACZ:

Q. What really is the purpose of this document, Mr. Cramer, in your estimation? I mean, why did you make all these calculations?

A. Because there were questions -- I believe it's called an interrogatory -- that we received on this case that we did not have the answers to on file, so we did this.

Q. So this was done at the -- at my request for information --

A. Yes.

Q. -- basically?

A. Yes.

Q. So it's a fairly recent report --

A. Yes.

Q. -- or calculation?

Has it ever -- To your knowledge, has it ever been done before?

A. I don't think it's been done this way before. I mean, ozone calculations have been done in the past, mostly back in the late 70s. But exactly in this form and format, I don't believe so.

Q. And back in the late 70s, who did those calculations?

A. Many different people. A lot of that's --

Q. I mean, could you name a specific company or individual or ...

A. I could name many. Commonwealth Edison, IIT Research Institute, The Power Administration, and many more.

Q. But no governmental agency?

A. Governmental agencies as well, yes.

THE HEARING OFFICER: Mr. Bogacz, I'm going to ask you to limit your questioning to the subject of the direct.

MR. BOGACZ: That's all I have right now.

THE HEARING OFFICER: All right. Is there any redirect?

MR. ZIBART: No, there's not.

THE HEARING OFFICER: All right. Thank you very much, Mr. Cramer.

The Respondent can call their next witness.

(Comments off the record between parties.)

THE HEARING OFFICER: We remain on the record.

Will Respondent call their next witness?

MR. ZIBART: The Respondent will next call Dr. Jaroslav Vostal.

THE HEARING OFFICER: The witness may now be sworn.

(Witness sworn.)

JAROSLAV J. VOSTAL, M.D., Ph.D., called as a witness herein, having been first duly sworn, was examined upon oral interrogatories and testified as follows:

DIRECT EXAMINATION

BY MR. ZIBART:

Q. What is your name, sir?

A. Jaroslav, J-a-r-o-s-l-a-v, middle initial J, last name, V, as in Victor, o-s-t-a-l.

Q. And what do you do for a living, sir?

A. At present, I am the principle and the senior

medical advisor for the Environmental Health Assistant Consultants in Bloomfield Hills, Michigan.

Q. And what does your company do?

A. Practically, we are responding to all requests for evaluating the potential health effects due to environmental pollutants.

Q. Could you describe your educational background?

A. Yes. My background is in medicine primarily. I got my medical degree in 1951, and I got my Ph.D. degree in occupational environmental health in 1961.

Q. And could you just briefly describe some of the positions you have held over the years?

A. Yes. Shortly after I have completed my residency and my boards in internal medicine, I returned back to do research, research which has been aiming specifically to the questions of the health impacts of different environmental factors.

Practically since 1955, that means more than 40 years, I have been working as a research investigator, educator, consultant, and medical doctor in different functions up to the year 199 -- the end of the year 1992 when I have returned to this private consulting occupation.

Q. Dr. Vostal, have you prepared a curriculum vitae with more detail on your professional qualifications?

A. Yes, I have provided it.

Q. And I'm handing you a document, sir, that's been marked --

THE HEARING OFFICER: That will be Respondent's No. 16.

(Respondent's Exhibit No. 16 marked for identification.)

BY MR. ZIBART:

Q. (Continuing.) -- Respondent's Exhibit No. 16. Is that your curriculum vitae, sir?

A. Yes, it is.

Q. And if I were to ask you more specific questions regarding your experience and qualifications, would your answers be consistent with that curriculum vitae?

A. Yes.

Q. Do you have any experience during your professional career with the health effects of ozone?

A. Yes. Practically, when I have started my major research interests and major activities, it started in fluoride when I was the member of the National Academy

of Sciences, committee on the biological effects of air pollutant in the 1970s --

MS. REPORTER: I'm sorry. I'm having a little bit of a problem.

THE WITNESS: Sorry. I will slow down.

MS. REPORTER: Okay. Great.

THE HEARING OFFICER: Okay. Let's go back.

BY THE WITNESS:

A. (Continuing.) -- in the 1970s when I was with fluorides, and then later it changed to the heavy metals; after that, to the health effects of gaseous pollutants in connection with the exhaust of vehicles.

THE HEARING OFFICER: That is health effects, not heart effects?

THE WITNESS: No, health.

THE HEARING OFFICER: Health?

THE WITNESS: Health, yes, health effects of it.

BY THE WITNESS:

A. And this was the time when I started to be active in the question of ozone.

THE HEARING OFFICER: Did you say health effects of carbon monoxide?

THE WITNESS: Ozone. It was involved in it, but ozone was the last one.

THE HEARING OFFICER: Ozone.

And prior to that, health effect of what?

THE WITNESS: Heavy metals, carbon monoxide.

THE HEARING OFFICER: Carbon monoxide?

THE WITNESS: Yes.

THE HEARING OFFICER: Thank you.

BY MR. ZIBART:

Q. As to ozone, Dr. Vostal, do you have any experience with lab tests on people as to the effects of ozone?

A. Yes.

Q. Could you describe those and that experience?

A. I have been for about 20 years the department head of a research facility which was specifically devoted to do some studies related to the different pollutants. Ozone was one of them. We have done studies on animals as well as studies on human volunteers.

Q. Are you familiar with the medical literature on exposure to ozone?

A. Yes. I have been keeping myself abreast with all the literature data which have been either presented

in scientific meetings or published in the review literature.

Q. Are you familiar with the epidemiological studies regarding public exposure to ozone?

A. Yes. We have been reviewing some of those studies since about 1978, and we have been doing also the specifics, that is, where the people have been exposed in laboratory conditions to the very low concentrations of ozone while they were exercising.

Q. Dr. Vostal, have you participated in any of the United States Environmental Protection Agency's committees dealing with ozone?

A. Not specifically with ozone; but when the U.S. Environmental Protection Agency started to produce the second version of something which is called Air Quality Criteria document for ozone and for the chemical oxidants, which was approximately in 1978, I have been involved in many meetings with professional colleagues at the Environmental Protection Agency. And I was involved in many discussions. I have organized several meetings and several sessions dealing with the problem, how to evaluate, how it affects ambient ozone concentrations, up to recently.

The last meeting which I have organized was

the special conference on the critical issues in the laboratory process of tropospheric -- tropospheric ozone which was held in 1995 in Orlando, Florida. I was also the editor of the proceedings which came out from the conference.

Q. Dr. Vostal, other than the background that you've discussed, how have you prepared specifically for your testimony today?

A. Concerning -- I had the possibility to see written complaints which were submitted in this case, and I have been also able to review the issue of the potential contribution to the ambient ozone coming from the transmission lines with high voltage when they are in operation. And, specifically, I have seen also the data which were produced by Dr. Johnson in cooperation with his colleagues.

Q. I'd like to ask you some questions about the -- sort of some information about ozone generally.

Can you tell the Board what happens when people are exposed to high concentrations of ozone?

A. Yes. There is no question that ozone in high concentrations is a very powerful toxin for the respiratory system. We have seen cases -- those cases occurred primarily in some occupational exposures -- where

people who have been exposed to concentrations higher than maybe 10, 50 or 100 PPM and suffered from it such a big damage to their respiratory system that they have died. Those cases are published in the literature.

Q. How is it medically speaking that ozone hurts people?

A. Well, since as you have already heard in the previous testimony, ozone is a very powerful oxidant; and, therefore, it is prepared to react with any type of available molecules, including the biological tissues. If ozone is inhaled in high concentrations, it overcomes the natural defense mechanisms which could prevent some effects of ozone at very low concentrations. It penetrates deeply into the respiratory system, corrodes the lining of the respiratory airways, and practically permits that the fluid which is circulating in the interstitial space -- that means a space which is between the blood vessels and between the tissue -- could really penetrate into the respiratory airways and generate conditions which we call in clinical medicine as pulmonary edema.

Q. Do scientists observe the same effects at lower concentrations of ozone?

A. No. This is really where it all started

considering that we have had some experience from the occupational exposures to high concentrations.

When the Environmental Protection Agency was reviewing the air quality standard for ozone in 1978, there have been some members of the scientific community who were very much concerned that even the low concentrations of ozone, when they penetrate, again, deep into respiratory airways, could accumulate there and result in some type of an injury. It is not the same type of injury which is being produced by the high concentrations, but it is the injury which probably could really give the chance that we can observe the process like inflammation which could finally when it is not treated lead to some even permanent effects on the respiratory airways.

Now, those were the concerns which we have had in 1970s. You know, science is not a static system. We are developing continuously new data; and with the development of the data, we have learned that, first of all, within the respiratory system, there are some defensive mechanisms, mainly the special lining of the upper respiratory airways which is producing material which is called mucus. This mucus could function as a sink for the concentrations of ozone which are very low.

And if the rate of the intake of the ozone is not very high, then the mucus could practically bind to the ozone. And since the mucus is continuously being replaced by a new one, it doesn't really have the possibility to penetrate to the sensitive cells of the respiratory system. It is only when we are exposed either to high concentrations or if we are doing some heavy physical exercise.

In that case, at least with the help of very sensitive methods, like methods which are being used for measurement of the pulmonary function, it has been described that the people who are exposed, even the concentrations which are compatible with the levels of ozone to be found in American cities, could under the conditions of heavy exercise produce some results which are statistically different from those before the person has been exposed to the ozone. That data have been very intensively reviewed by the Environmental Protection Agency.

Since, as you probably know, the Clean Air Act amendments of 1977 mandate that starting with 1980 with a period of every five years, the Environmental Protection Agency is supposed to produce a new document, Air Quality Criteria document, which is prescribed. Based on the

production of such a product, the EPA Office of the Air Quality Planning and Standards then writes something which is called Assessment of the Scientific and Technical Information in connection with the version of the ozone standard. And this is a document which is finally going to the desk of the EPA administrator for the decision if the current ambient air quality standard should be changed or should be kept in the form and at the level as it has been set last time, which was in 1979.

In 1979, the Agency decided to relax the standard. Originally, the standard was set up in 1971 at the level of 80 parts per billion. And it stated that this is the level which in one hour should not be exceeded in any of the counties of the United States for more than once per year. Whenever it is exceeded for the second time, then such an area is becoming an area which is out of the compliance with the air quality standard for ozone.

And as a consequence, the local authorities have to prepare a special plan how to work on the reduction of the ozone concentrations.

Q. Okay. You've given us a lot to think about there. I'm going to bring out a couple of points that you made.

Can you tell the Board what concentrations of

ozone are considered background levels?

A. Yes. This is a very important issue which was very intensely discussed in connection with the preparation of the latest update of the Air Quality document. This was started in the year 1992, and, finally, it was completed in July 1996.

During the meetings which we have had with our colleagues at EPA -- and when I'm talking about we, that means the general scientific community -- we have been invited for public hearings, we have been invited to provide comments, and there has been very intensive discussion how significant is the generation of ozone by normal processes which are occurring in the environment, even without any human activities.

It has been finally concluded in our discussions that we can differentiate between so-called biogenic generation of ozone, which is the generation of ozone, practically by the same mechanism as we have been describing in the previous testimony. That means if there is a substrates, a precursor, present in the air and those precursors are coming from two classes of chemical compounds, the first one is nitrogen -- are the nitrogen oxides, specifically the nitrogen dioxide.

If a nitrogen dioxide is present, then through

the activity of the UV radiation, it could finally be exposed to a process which is called photolysis and produce the nitric oxide, which is NO. That means a molecule which has only one atom of nitrogen and one atom of oxygen in contrast with the nitrogen dioxide which has one atom of nitrogen and two atoms of oxygen.

That means that by that is generated one atom of oxygen which is in a state that it could be very actively reacting with any type of the substrate which could be found in the air. Obviously, there is oxygen present in the air. So if there is a molecule of oxygen, this ground atom of oxygen connects with the molecule and forms O3; that means ozone.

And if this is a process which is going on and we can duplicate it in laboratory conditions, then we assume that finally it comes to some type of a state of the balance. We call it steady state. And by that, we are seeing that all the ozone molecules which have been generated could, again, react back with the nitric oxide and to form the nitrogen dioxide.

Now, this happens only when there is nitrogen dioxide present there without any other chemicals in the air. Unfortunately, we know that there are many plants which are continuously emitting, you know, some

hydrocarbons. And it is mainly this presence of the hydrocarbons which can, you know, reinstate the formation of the nitrogen dioxide so that it could be, again, exposed to the radiation and become a new source of ozone.

Due to the presence of this second substrate, which is the volatile organic compounds, hydrocarbons, it is, therefore, that we are not seeing a formation of a steady state, but there could be a continuous formation of ozone up to levels which are higher.

When this issue has been discussed, then based on the inventories which are presented also in the latest edition of the Air Quality Criteria document, it has been computed that surprisingly those biogenic activities, that means biogenic sources of ozone, are at least the same size if not larger than all the human activities which are producing the ozone.

Therefore, we know that even if he stopped to generate any additional precursors of ozone, we will be always facing some certain background level of ozone. The document concludes that these background levels of ozone are at the concentrations of approximately 250 to 450 parts per billion of ozone.

Now, the ozone could be in some places even

higher than this one. I said the 25 to 45 -- no -- 250 to 450 parts per billion is the average level.

We know that we have also in the stratosphere high concentrations of ozone which are very protective which are protecting us against very intensive UV radiation, mainly in the area of very short, you know, wavelengths. And sometimes these concentrations of the stratospheric ozone could penetrate down to the troposphere and come even to the earth surface. And for a period which could be maybe one hour, maybe four hours, could increase this background concentrations up to a level which could be at about -- when we were talking about 25 to -- excuse me -- what -- I have probably misquoted the data. It was 25 to 45 parts per billion. And we can find even some levels like 60 up to the 100 parts per billion of ozone even without any other human activities.

Q. Now, Dr. Vostal, what is the current federal ambient standard that counties and states are trying to attain?

A. The ambient air pollutant standard at present is at the level of 120 parts per billion as a one-hour standard which should not be exceeded more than once in a year.

Q. Now, does that mean that the EPA has concluded that 120 parts per billion will hurt everyone?

A. Now, as you know, the level of the ambient air quality standard as it is mandated by the Clean Air Act legislation says that the U.S. EPA administrator should consider as an ambient air quality standard such a level which -- of which the attainment and maintenance in the judgment of the administrator and including even some margin of safety should not -- should not really result in any damage to the public health.

Now, this is really a very function of the administrator to make the final decision, first of all, what is the relationship between the concentrations of ozone and something which would be measured as a health effect, and it must be also decided by the administrator what should be considered as an adverse health effect. And this is not a very easy situation. This is the reason that we have been so frequently meeting in the scientific community and discussing those issues.

As I said before, if we had thought in 1970s that even some low concentrations of ambient ozone can produce some injury to respiratory airways, it seems that the most recent data, even the data which has not yet been published, but have been presented at the scientific

meetings, seems to indicate that the results of the testing where we are using this pulmonary function methods which we consider still that this is the most sensitive method of how to measure the accurate effects of ozone, might not be due to the fact that there is some injury being done by ozone to the sensitive cells, but could be only some type of irritation of sensitive receptors in the respiratory airways which are warning the exposed person that the exposed person should not take a full deep breath which is needed for testing the pulmonary function.

By that, we are having some data which are indicating that when we used a simple dose of an anesthetic -- anesthetic, that means a compound which is being used in the medical profession to take away the pain when people, for example, have to go through some surgeries -- if we are using a very low level of the anesthetic and we apply it to the respiratory tract of those people, then they are exposed to ozone. They are not displaying the effects, which have been shown when they have not been anesthetized before.

This indicates that rather than to be talking about that we are considering a process which would really produce adversity, which could result in some even permanent damage to our breathing, that we are seeing only

something which is a temporary interaction and which is relatively insignificant from the clinical point of view.

This has really been changing the view -- as I said, those are the data which have not yet been even included into the most recent Air Quality Criteria document because they have not yet been published, they have not yet been adequately discussed, and, therefore, they have to wait for the next revision of the document and of the standard probably in the next five years.

Q. I think one of the factors you mentioned before was the level of exercise.

Can a person at rest be exposed to higher levels of ozone without adverse effect?

A. Yes. As a matter of fact, it is very clearly stated in the Air Quality Criteria document that the people if they are at first surprisingly, they can tolerate relatively high concentrations of ozone.

Q. And what kind of concentrations are you talking about?

A. Concentrations which could be tolerated for maybe one or two hours without any effect on the performance of the pulmonary function tests would be as high as 500 parts per billion of ozone.

Q. And what about on the other extreme like

someone running?

A. Now, obviously when you start with physical exercise, there's effect levels. That means there's thresholds which we can observe which are well described in the literature are becoming lower and lower. But still, even when we consider such an intensive physical exercise as it is running off a marathon where we see that the ventilation rate could exceed levels which are extremely high like 60 liters per minute, that even at that level, it must be point -- it must be 160 parts per billion of ozone present before we can observe any impact on the performance of pulmonary function tests.

Q. Now, 160 parts per billion is higher than the 120 parts per billion standard that you mentioned.

A. Yes.

Q. Why would they -- Why would the government choose a standard lower than the 160 parts per billion?

A. As I have mentioned, the mandate of the Clean Air Act requires that the administrator must consider even something which we call margin of safety. And since we know that what we are listing here, those levels, are applicable to the group of the people, there could be sensitive individuals which could be a little more reactive than the others and maybe to display even, you

know, the same small decline in the respiratory function performance when exposed to a level as low as .120. That means 120 parts per billion.

Q. Are you aware that the Environmental Protection Agency monitors ozone levels in the various counties?

A. Yes. There's an extensive air sampling network which is all over the United States. This is the system of stations which are either operated directly by the EPA or operated through the local regulatory agencies and reporting all the data to one single center in the -- in North Carolina where the data are being processed and evaluated every year.

Q. And do you know how high the level must be before the EPA considers it a violation of the ambient standard?

A. Obviously, this all depends on the sensitivity of the methods which we have available for this monitoring. Those stations which are just, you know, distributed all over the United States are using now mainly some UV methods which are capable to measure the concentrations of ozone in very short periods of time. But then since the standard is defined as a one-hour average concentration, they are integrated into the

periods of one hour, and those levels are being reported to the EPA center in North Carolina.

Q. Okay. And is there a number that they use -- I think you said 120 is the standard.

A. 120 is the standard. But, you know, the operation procedure which is described in the Federal Register states that the sensitivity of the method is probably to measure about one parts per million. But the stability of the zero is not capable to do anything more than to measure the differences by five parts per billion.

So it is stated that we are considering that the standard has been violated only when the reading of this monitor has been changed from 120 parts per billion to the 125 parts per billion. Only when the 125 parts per billion reading occurs, then it means that this is a violation of the standard. And if it occurs on the average during the three years more than twice in a year, that county is out of compliance.

Q. Dr. Vostal, do you know, does the EPA regulate directly individual sources of ozone?

A. As you can really see, even as described in the Air Quality Criteria document, we consider ozone as a secondary pollutant. That means we are not really, you

know, aware that there is any substantial source which is producing ozone directly into the air and that the ozone which is being measured in our monitoring stations are all due to the fact that it is the effect of the UV radiation on the precursors which are present in the air. Therefore, the activity of the agencies, if they want to reduce the levels of ozone, it's not aimed directly on any specific sources of ozone, but they are concentrating on reducing the substrates; that means the precursors, like the hydrocarbons or the nitrogen oxides.

Q. What is a state implementation plan?

A. Oh, state implementation plan is a plan which according to the federal regulation must be submitted by all states to EPA. And if the state has some areas which are out of the compliance, it should indicate to the federal agency what are the processes by which the state plans to reduce the levels of the ozone in that state.

Q. Do you know of any state implementation plans that seek to reduce ozone from transmission lines?

A. No. I have not seen, you know, the transmission lines as any source of ozone either in any of the state implementation plans or even in the Air Quality Criteria document.

Q. Dr. Vostal, based on your research and review

of the documents regarding Com Ed's transmission lines, have you been able to form a professional and medical opinion as to whether ozone from transmission lines is a significant public health issue?

A. Yes.

Q. And what is your opinion?

A. Practically, it is not different from the opinion which has been formed already by other authors and/or even some type of regulatory agencies like Department of Energy.

When they have evaluated what could be the contribution of the transmission lines as a source of the ozone, it has been concluded that the levels which are being produced are too small to be considered -- that could be really be a substantial factor in generating concentrations of ozone which would be harmful to human health.

As you -- As we have heard, even the calculations done by Dr. Johnson are coming to the point that they can estimate a contribution like which will result in a concentration at the level of a fraction of the parts per billion. It's easy to indicate that we are beyond the limit of the sensitivity of the method which is being used to establish the compliance with the ozone

standard since, as I said before, it must be a difference of about five parts per billion, between 120 and 125 parts per billion, before we can really say that the monitor or the county is out of the compliance with the ozone standard.

And in comparison with it, the level as small as .5 parts per billion is so low that it cannot really be resulting any -- in any significant impact on public health.

The second aspect to be mentioned as we were discussing a while ago, the levels of the biogenic ozone which are estimated to be at least even in the complete absence of human activities, at levels of about 25 to 45 parts per billion. Then even for that, it is really such a small contribution, that it could not really be responsible for any potential impact on public health.

Q. Based on Dr. Johnson's calculations, do you have an opinion as to whether Commonwealth Edison's transmission lines are causing a medically significant increase in the amount of ozone to which the public is exposed?

A. No, since practically what is very important to remember and what we have heard from Dr. Johnson that there is a large difference in the generation of ozone by

transmission lines between the foul weather and between the fair weather.

Now, if he should be considering that there might be a possibility that the -- even the small amounts generated by the transmission lines could aggravate the existing, you know, pollution which is in a specific site or at a specific time, we have to keep it in mind that we know, as we said, that ozone is a pollutant which is absolutely limited only to the daytime period and only to the warm months of the year. As a matter of fact, all of the elevation of the ozone pollution are not considering the total year. They usually are considering only the months when the ozone generation is by -- by the UV radiation from the substrates is highest. It means a period maybe between May up through the end of the September.

From this point of view, those are the months where we are really having most of the weather under fair conditions. If the generation of ozone by transmission lines, even if it is small, is occurring mainly during the bad weather conditions, mainly during the winter months, then obviously we are seeing, again, a difference that means that we could not expect that on the days when there is a high solar radiation, that there will be any

production of the transmission line; and if there is ozone being produced from the precursors, then there is no contribution.

If it is in the bad weather where there is no solar radiation, then the amounts which are being produced by the transmission line are so small, that they are completely negligible in consideration of potential public health effects.

Q. Is someone's health at risk due to ozone exposure because they live near a transmission line?

A. If the -- It can really depend on the measurements. If -- It depends mainly what is the concentration of the ozone from all sources. It doesn't exclude that if you are living somewhere near transmission lines and there are many other sources of the substrates for generation of ozone, that you can really have levels which could even violate the standard; but they are based on the data which have been presented by Dr. Johnson and based on the data which have been published before that even in the literature. There is a very good consistency with the other data that there could not be any effect whatsoever by such a small generated amount of ozone.

MR. ZIBART: I have no further questions for Dr. Vostal.

THE HEARING OFFICER: Let's take a five-minute break now, and then we will have cross-examination.

THE WITNESS: Thank you.

(A short recess was taken.)

THE HEARING OFFICER: We are back on the record now.

And, Mr. Bogacz, would you like to ask the doctor any questions on cross-examination?

CROSS-EXAMINATION

BY MR. BOGACZ:

Q. Dr. Vostal, you say -- you said during your testimony that you were on a committee with the U.S. EPA putting in some input regarding the Air Quality Standard Criteria?

A. Yes.

Q. Specifically, what was your input?

A. I have mentioned it already here during our discussion. It was mainly to point out what is the most recent development of the science. And I feel that the data of clinical experiment, which I have mentioned, that means the one in which a low dose of an anesthetic has been used before exposure to ozone and took away all the symptoms, took away all the declines in the pulmonary

function performance.

It's very important for us to consider and very important for the EPA administrator to recognize that it might not really be considered as an adverse health effect, but it could be considered as maybe a typical documentation that we have some natural defense mechanisms in our system. We have some receptors which are telling us that something unknown is coming into our respiratory system, and, therefore, this is telling us even subconsciously that we should not take the very deep breath.

And this is the one of the important aspects of consideration of how to evaluate the potential impact of low levels of ozone as we are having in the United States now.

THE HEARING OFFICER: All right. If you could try to be as brief in your response as is appropriate for the question, then we will be able to proceed.

BY MR. BOGACZ:

Q. Along with the -- Was there any input regarding ozone produced by transmission lines presented to the U.S. EPA regarding Air Quality Standard Criteria document?

A. No, during the meetings in which I have attended.

Q. I believe you mentioned acid rain or possibly. Do you know what acid rain is?

A. Yes.

Q. Is that a product of pollutants in the air, including ozone?

A. Not specifically ozone. It is mainly connected with the emissions of the very acidic gases like sulfur dioxide. Practically, all the concerns about acid rain, between us, between Canada, is coming from the large emissions of sulfur dioxide.

Q. But ozone is a component of acid rain. I mean, it could be -- Is it a component which would possibly accelerate the formation of acid rain?

A. Theoretically --

Q. Or allow the formation of acid rain.

A. Theoretically, yes. You could consider what is happening during -- mainly during the nighttime. As it has been mentioned here before, there is a large difference between the concentrations of ozone during the daytime. Peak of the ozone concentration is usually observed at 2:00 or 3:00 in the afternoon. In the night, levels are practically very low or zero.

Now, during the nighttime, one of the mechanisms by which the ozone decays is that the ozone molecules could really oxidate the nitrogen dioxide into the nitrate, and by that, contribute to the formation of nitrate particles and maybe some type of acid deposition.

But when we are considering what could really be a specific contribution of this mechanism through the acid rain, that it is very small in comparison with direct emissions of the sulfur dioxide. There have been specific studies which we're looking into the data from our monitoring network and trying to find out how much the peaks of ozone could be correlated either with the peaks of sulfur dioxide or nitrogen dioxide, which are both sources of the acid rain. And they have been found that there is very infrequent correlation between those two pollutants. Those are papers which were done by Dr. Lefohn, L-e-f-o-h-n, from Montana. They are published in the literature.

Q. You mentioned during your testimony the EPA -- U.S. EPA administrator determines or decides on the adoption of certain standards and regulations in the air quality document?

A. Yes.

Q. Does he also determine exemptions from the

Clean Air Act?

A. I don't think that there is -- There are some other parts of the Clean Air Act where the administrator has the power to determine some exemptions, but not as far as I know with the ozone issue or with the ambient air quality standards.

Q. Do you know of any exemptions granted to Commonwealth Edison by the U.S. EPA regarding emission of ozone from their transmission lines?

MR. ZIBART: I'll object to that question. The witness has just answered that the EPA does not grant such exemptions.

THE HEARING OFFICER: Any response?

MR. BOGACZ: The administrator has the authority, and his duty is to grant exemptions in accordance with the Clean Air Act; and, therefore, if there are any exemptions, Commonwealth Edison is claiming some sort of privilege in exemption from the basic fundamental Clean Air Act.

THE HEARING OFFICER: Your response to the objection, Mr. Bogacz?

MR. BOGACZ: The what?

THE HEARING OFFICER: Your response to

the objection?

MR. BOGACZ: Yes, I am responding.

THE HEARING OFFICER: Without making statements that are allegations.

Could you restate your response to the objection?

MR. BOGACZ: Mr. -- Dr. Vostal indicated that he knows of no duty or authority of the administrator of the U.S. EPA, but yet he has testified that he does determine or the eventual adoption of the air quality document.

I'm trying to determine whether that is his only or prime duty or he has other duties and how familiar he is with the Clean Air Act.

He has mentioned a Clean Air Act. He has mentioned that he has done a tremendous amount of work regarding pollutants, including the ozone, and I'm trying to find out whether he knows what -- anything besides what he has mentioned about the administrator's duty.

THE HEARING OFFICER: Thank you.

The objection is sustained. I believe the question was answered.

BY MR. BOGACZ:

Q. Dr. Vostal, are you familiar with the Clean Air Act at all?

A. Just mainly in the area where it deals with the problems of the effects on human health.

Q. Do you agree with the intent and regulations formulated from the Clean Air Act?

MR. ZIBART: I'll object on the grounds of relevance. I don't see -- The law is the law, and it doesn't matter whether Dr. Vostal agrees with it or not.

THE HEARING OFFICER: Sustained.

BY MR. BOGACZ:

Q. Dr. Vostal, I submitted a document as evidence of communications with governmental officials at the request of Commonwealth Edison, and one of the documents I have here is a letter from a James A. Raub, R-a-u-b.

A. Yes.

Q. Are you familiar with that gentleman?

A. Yes. I know him very well.

Q. Would you like to -- I don't know --

THE HEARING OFFICER: What is your question, Mr. Bogacz?

MR. BOGACZ: Can I -- Should I submit him

the document or can he get a copy or something?

THE HEARING OFFICER: What is your question?

BY MR. BOGACZ:

Q. Within this letter he sent to me, I'll read you a portion of it, and you could tell me if you agree, yes or no.

MR. ZIBART: I'll object to Mr. Bogacz reading something that's not in the record.

MR. BOGACZ: I'm sorry. It is in the record. It's a document I submitted.

THE HEARING OFFICER: What is the exhibit number?

MR. BOGACZ: It's offered -- It's entered as evidence in my case.

MR. ZIBART: This is the danger that Mr. Rippie warned us of of putting documents into the record all at once. Perhaps it's attached to a bunch of others. I'll locate it.

MR. RIPPIE: If it's the letter I think it is, it's one of the myriad pages attached to the exhibit that we entered into the record

at the end of yesterday's hearing constituting all of Complainant's responses in bulk to our discovery.

MR. BOGACZ: Right, interrogatories, right.

THE HEARING OFFICER: Okay. Continue.

MR. BOGACZ: Do you want me to read the document to -- or the portions and go from there?

THE HEARING OFFICER: Yes.

The objection's overruled.

MR. BOGACZ: Thank you.

BY MR. BOGACZ:

Q. Dr. Vostal, Mr. Raub answered my inquiry on the status of transmission line emissions of ozone. And he states, thank you for your comments on the December 1993 draft of the ozone Air Quality Criteria document dated 8-25-95. Although the scientific staff of the U.S. Environmental Protection Agency are certainly aware of the potential for direct emissions of ozone from high voltage power lines, we are not aware of specific peer reviewed papers identifying research, tests or data on this possible source of ambient air, in other words, outdoor ozone concentrations. And he goes on asking for any

additional information I might have to send him.

Do you agree with that?

THE HEARING OFFICER: Mr. Bogacz, this is the letter dated August 29, 1995?

MR. BOGACZ: Yes.

BY MR. BOGACZ:

Q. Do you agree with that statement he made?

A. Yes.

Q. That there are no peer reviewed papers?

A. If you could read it justly, he is requesting that if there are some peer reviewed documents which could really provide information for the EPA, that they should be sent to him.

Do I understand it correctly or do I quote it correctly?

Q. Well, that is at the end of the letter, but he states we are not aware of specific peer reviewed papers identifying research, tests or data on this possible source of ambient air, in other words, outdoor ozone concentrations.

A. We are taking it out of the context.

Could you just read the whole question once more?

Q. He states, Dear Mr. Bogacz, thank you for your

comments on the December 1993 draft of the ozone Air Quality Criteria document dated 8-25-95. Although the scientific staff of the U.S. Environmental Protection Agency, EPA, are certainly aware of the potential for direct emissions of ozone from high voltage power lines, we are not aware of specific peer reviewed papers identifying research, tests or data on this possible source of ambient air, in other words, outdoor ozone concentrations.

A. This is what he stated. This is what we have to take for granted. He is asking, therefore, if you have some material which has been discussed here during our, you know, testimony before, that it should be submitted to them.

THE HEARING OFFICER: Mr. Bogacz, I'm going to insist that you move on with your questions and that you limit your questions to inquiries that you have that are specifically related to statements that Dr. Vostal has made here this morning.

MR. BOGACZ: Well, I must assume then that he's not answered the question. Thank you.

BY MR. BOGACZ:

Q. There are regulations in a Clean Air Act concerning auto emissions and other sources of ozone, possible ozone?

A. No. There is no ozone emitted from any sources -- there is nothing written in the Clean Air Act which would identify that there are some emissions of ozone.

THE HEARING OFFICER: Mr. Bogacz, I have to ask you to make your question in the form of a question and not a statement.

BY MR. BOGACZ:

Q. Are there any regulations issued by the U.S. EPA pursuant to the Clean Air Act requirements governing automobile emissions?

A. Yes, there are regulations.

THE HEARING OFFICER: Mr. Bogacz, automobile emissions are not the subject of this case. I'm going --

MR. BOGACZ: The subject of --

THE HEARING OFFICER: -- to ask you to move on to --

MR. BOGACZ: The subject of this case is ozone.

MS. REPORTER: I'm sorry. One at a time, please.

MR. BOGACZ: Oh.

MS. REPORTER: The Hearing Officer is not finished.

THE HEARING OFFICER: I have to ask you to move to the subject of the case, which is transmission lines.

MR. BOGACZ: The witness testified to the deterioration of ozone and the atmosphere and other factors regarding ozone.

Auto emissions have everything to do with this particular subject since they are being regulated for their production of ozone from -- by photochemical means.

THE HEARING OFFICER: What is your next question for the witness?

BY MR. BOGACZ:

Q. Is it possible for the ozone to occur in fair weather plus smog conditions?

A. That -- In connection with the transmission lines or in general?

Q. Both, in general and transmission lines.

A. The answer is yes. It is mainly during the

fair weather when the ozone is being generated by the UV radiation from the substrates.

Q. Would you agree that the transmission lines produce ozone and that ozone is an air pollutant?

A. I think that we have heard here during the testimony that there have been measurements done and that there are literature data which indicate that there is a possibility that small amounts of ozone are generated by the high voltage transmission lines.

Q. That's not the question I asked you.

A. So could you repeat the question?

THE HEARING OFFICER: Mr. Bogacz, I have to ask you to be courteous of the witness.

BY MR. BOGACZ:

Q. Dr. Vostal, is it true that electric transmission lines owned by Commonwealth Edison Company produce ozone?

A. Yes.

Q. Is ozone an air pollutant as determined currently by the Clean Air Act and the --

A. Yes.

Q. -- U.S. EPA?

A. Yes.

Q. You mentioned oxidants from a previous

testimony. Could you explain that?

During your testimony, you said something about oxidants were mentioned from a previous testimony.

A. Previous criteria documents.

Q. Well, specifically, which comments were those or can you remember?

A. The first standard for ozone has been set by -- in 1971 by the EPA administrator as a standard for ozone and photochemical oxidants.

Since the term of the photochemical oxidant is not very specific and since it has been discovered that those photochemical oxidants are not as important as ozone in determining potential public health impact, in 1979, during the revision of the Air Quality standard, the standard has been changed so that it is now for ozone only and not for photochemical oxidants.

Q. I didn't quite get the last -- Photo what?

A. Photochemical oxidants, photochemical oxidants.

Q. Oh, okay.

You're talking about precursors?

A. No.

Q. Photochemical --

A. Those are more some type of a degradation

product which could exist in small concentrations, and it was given by the original method which was available in 1971 which measured practically the total amount of all oxidants present in the air rather than to be measuring ozone only. Since 1979, we are measuring ozone only and the standard is ozone only.

Q. Okay. That's in relation to the Clean Air Act?

A. Yes.

THE HEARING OFFICER: Do you have any further questions of this witness on cross-examination?

MR. BOGACZ: I am continuing, yes.

I wish to object to your interrupting me and putting a tone of impatience since you did not do that with the Respondents.

THE HEARING OFFICER: Let the record reflect --

MR. BOGACZ: I wish to file a formal complaint against you before the Board.

THE HEARING OFFICER: Let the record reflect that I did not interrupt the Complainant.

MR. BOGACZ: Well, you're insisting that

I move along faster, and you did not say anything about that to the Respondent, and I object strenuously to that.

THE HEARING OFFICER: Mr. Bogacz, I have the authority under Section 103200, Subpart G, to regulate the course of the hearing and the conduct of their parties and their counsel. I am attempting to administer an efficient hearing process here, and I believe that we are wasting time.

MR. BOGACZ: You're what? I object to that comment, that you are saying that I'm wasting time by asking the witness questions.

THE HEARING OFFICER: Complainant --

MR. BOGACZ: I insist that you retract that right now. I will file a complaint immediately after I leave this building against you and whoever else governs your legal profession.

THE HEARING OFFICER: Mr. Bogacz, you interrupted my statement.

I would like the parties to proceed --

MR. BOGACZ: You're not going to be sitting there insulting me.

THE HEARING OFFICER: Excuse me.

I would like the parties to proceed as efficiently as possible with their questioning and to limit their questions as much as possible to the issue, which is that a harm has occurred -- allegedly occurred due to the transmission lines of Commonwealth Edison to the Complainant.

MR. BOGACZ: Could I respond?

THE HEARING OFFICER: You may proceed with your questioning of the witness.

BY MR. BOGACZ:

Q. You say -- You mentioned during your testimony background ozone is always present.

A. Yes.

Q. The -- What is background ozone again?

A. The background -- excuse me -- the background ozone concentrations are concentrations which could be found even in the most pristine areas without any human activities, and they are explained by the presence of the ozone precursors which are coming either from the effects like lightening producing nitrogen oxides or emanation of hydrocarbons from the vegetation.

Q. Do you know of any regulations concerning

emissions -- ozone emissions from transmission lines?

A. No, I don't know that.

Q. Do you know of any reason why there isn't any regulation regarding them?

A. We have heard and it has been mentioned here that the issue has been already considered by another government component and that they have concluded that when they looked into the issue, they have discovered that the contributions of ozone from those transmission lines are very small and negligible.

Q. What is that government component?

A. I think that it was the Department of Energy.

Q. I see. It wasn't the U.S. EPA?

A. No.

Q. Did you ever do any consulting work or assist the American Lung Association?

A. I have not done any consulting work for the American Lung Association, but we have been very frequently in contact with them. And Dr. Arnold White, who is the executive director of the American Lung Association, participated in many scientific discussions in our meetings and in our symposium.

Q. Has -- have -- or do heavy metals have anything to do with ozone or are they -- does ozone react

more actively with heavy metals --

A. Ozone is --

Q. -- relative to other elements?

A. Ozone is a very active compound and prepared to react with any available molecule, including heavy metals; but I am not aware about some specific pre-election from the elements in the air for the ozone.

Q. So you would say that ozone is a general --

A. Oxidant.

Q. -- oxidant; right?

A. Yes.

Q. One more question, maybe two.

I have another document here that I submitted to the Respondent in answer to interrogatories. This is a copy of a preliminary draft for the Air Quality document. This one is, I believe, 1986, although, it might be already incorporated -- I don't know -- Well, wait a minute. This might be the latest -- No. It's probably a draft. I'd like to read some.

THE HEARING OFFICER: What is the number of the exhibit?

MR. BOGACZ: I don't recall if we ...

MR. ZIBART: I believe subject to checking with Mr. Bogacz, I believe it's

Complainant's Exhibit 9.

MR. BOGACZ: This is the one that's 413, 3-127 and 2-5.

MR. ZIBART: This is the one we had excerpts of a much larger document.

MR. BOGACZ: Right.

MR. ZIBART: These are the ones that's been stamped do not quote or site.

THE HEARING OFFICER: Thank you.

BY MR. BOGACZ:

Q. Dr. Vostal, you're fairly familiar with the preliminary draft documents for the Air Quality Criteria document?

A. Yes, I have been familiar with them.

Q. Within these -- this document that's dated December 1993, at 3.5.1.1.6, Calibration Methods for Ozone, it states electrical discharges in air or oxygen readily produce 03, in other words, ozone, at -- but at concentrations far too high for calibration of ambient monitors. Would you agree with that?

A. Yes. They are commercially available generators of ozone which could produce very high concentrations of ozone using oxygen as an substrate.

MR. BOGACZ: That's all I have right

now. Thank you.

MR. ZIBART: If I could have just a moment.

THE HEARING OFFICER: All right.

REDIRECT EXAMINATION

BY MR. ZIBART:

Q. Dr. Vostal, I'm showing you what's been marked as Complainant's Exhibit 9, which I believe is the document that Mr. Bogacz was just asking you about.

A. Yes.

Q. Is that the final version of the ozone Air Quality Criteria document?

A. No.

Q. Okay. Has the final version of the ozone Air Quality Criteria document been released yet?

A. It has been released in July 1996.

Q. Okay. Does the -- Let's see. Mr. Bogacz also asked you about this letter. It's a letter from James A. Raub, project manager at the U.S. EPA to Mr. Bogacz?

A. Yes.

Q. And what is the date of that letter?

A. August 29, 1995.

Q. So is that before the final version of the Air Quality Criteria document was released?

A. Yes, it is.
Q. Have you reviewed the final version of the Air Quality Criteria document?
A. Yes, I did.
Q. And do you know whether it has any mention of transmission line ozone in it?
A. Not to my knowledge.
MR. ZIBART: I have no further questions for Dr. Vostal.
THE HEARING OFFICER: Okay. Mr. Bogacz, do you have any question about what the doctor just stated?

RECROSS-EXAMINATION

BY MR. BOGACZ:
Q. The reason why -- The document has been released you say?
A. Yes, in July 1996 is the date on the document.
Q. The -- Do you know of any reason why the transmission lines emissions of ozone was not entered into the document?
A. There is no specific reason for it mentioned in the document. But, personally, I think that probably it has been evaluated the same way as the Department of Energy did it, and they have not found a substantial

contribution of this method of generation as a source of ozone.

MR. BOGACZ: That's all I have.

THE HEARING OFFICER: Thank you very much, Doctor.

MR. ZIBART: At this time, the Respondent would move for the admission of Respondent's Exhibit No. 16, which is Dr. Vostal's curriculum vitae.

THE HEARING OFFICER: Thank you.

Counsel, did we admit Respondent's 13 through 15 yesterday?

MR. ZIBART: I believe we did. I mean, to the extent we didn't, though --

THE HEARING OFFICER: In case we did not, can we do that now? I didn't have a mark for their acceptance into evidence.

Is there any objection to the introduction of these documents into evidence?

MR. BOGACZ: No.

THE HEARING OFFICER: All right. Respondent's 13 through 16 are admitted into evidence.

(Respondent's Exhibit Nos. 13-16 admitted into evidence.)

THE HEARING OFFICER: Respondent may call their next witness.

MR. RIPPIE: Respondent's next witness is Mr. Mark Lorenz.

THE HEARING OFFICER: Will the witness be sworn?

(Witness sworn.)

MARK J. LORENZ,

called as a witness herein, having been first duly sworn, was examined upon oral interrogatories and testified as follows:

DIRECT EXAMINATION

BY MR. RIPPIE:

Q. Mr. Lorenz, would you please state and spell your full legal name for the record?

A. Yes. It's Mark with a K, middle initial J, Lorenz, L-o-r-e-n-z.

Q. Mr. Lorenz, by whom are you employed?

A. I'm employed by Commonwealth Edison.

Q. What is your position with Commonwealth Edison?

A. I am the siting and estimating engineer in the

right-of-way and site selection department of the transmission system area of Commonwealth Edison.

Q. Could you please briefly summarize your educational background?

A. Yes. I have a bachelor of science degree in electrical engineering from Valparaiso University.

Q. Are you a licensed professional engineer in the State of Illinois?

A. Yes.

Q. Could you briefly summarize your experience in the design and analysis of electrical transmission facilities?

A. In my present position, myself and engineers who report to me actually take electrical plans that have been proposed by our system planning folks to fulfill a need, that need being a power shortage or an area under a contingency situation where a transmission line or in the case of a distribution deficiency where a substation may be needed.

We would take and analyze those plans from a physical standpoint and determine routing alternatives or site alternatives for that substation or those transmission lines connecting that substation.

Q. Does this function include an analysis of the

feasibility of various methods of constructing and operating such lines and substations?

A. Yes.

Q. Does your function also include analysis of the comparative cost of such lines and substation facilities?

A. Yes. Cost would be one of the factors that we would use in our analysis to determine which would be the best plan of those that are feasible.

Q. Let me then summarize it this way, Mr. Lorenz.

If someone in Commonwealth Edison or someone inquiring of Commonwealth Edison wanted to know whether or not it would be possible to build a transmission line in a certain way, and if so, how much it would cost, who at Com Ed would receive that question and have the responsibility for answering it?

A. That would be me.

Q. Have you prepared a curriculum vitae that summarizes in greater detail your educational and professional background and experience?

A. Yes, I have.

MR. RIPPIE: Madam Hearing Officer, will that be Respondent's 17?

THE HEARING OFFICER: That will be Respondent's Exhibit 17.

(Respondent's Exhibit No. 17 marked for identification.)

BY MR. RIPPIE:

Q. Mr. Lorenz, I show you a document that's been designated Respondent's Exhibit No. 17, and I ask you if that is a true and correct copy of your curriculum vitae?

A. Yes, it is.

Q. Mr. Lorenz, have you been present throughout this hearing?

A. Yes, I have.

Q. You've heard some discussions about something called corona. Can you please explain to the Hearing Officer what effect corona has on Com Ed's transmission system?

A. Yes. The corona has the effect of a release of energy. Energy that we would otherwise wish to transmit through the lines unfortunately is released along the way in the form of corona.

Q. Because of this loss of energy due to corona, does Commonwealth Edison take any action to minimize corona?

A. Yes.

Q. Could you explain to the Board and to the Hearing Officer what those actions are?

A. Yes. There's really several things.

During the actual construction of a transmission line, great care is taken to try avoid marring or scratching the surface of the conductors as we hang them.

In the case of a 345,000 volt lines and 765,000 volt lines, we will actually use hardware to support those conductors that in and of itself is referred to as corona free. It has much smoother surfaces and -- again, in an attempt to try to avoid sharp corners in the electric field, if you will, as Dr. Johnson was describing yesterday.

We also add an item called a corona ring on certain types of hardware, suspension and dead-end insulator assemblies, that literally has that same effect as well.

Q. Mr. Lorenz, I know that you mentioned these rings and bundled conductors with respect to 345 and 765 kV lines.

Can you explain to the Board and to the Hearing Officer why those features are not uniformly used on 138 kV lines?

A. Essentially, 138,000 volt lines does not have a level of corona that makes any additional application of reducing or eliminating corona practical.

Q. Does Commonwealth Edison take the corona reducing measures that you've just described -- does Com Ed undertake those measures because of the potential, if any, of a line produced ozone?

A. No.

Q. Why does Com Ed take them?

A. Again, because corona in and of itself is a loss of energy. We attempt to try to avoid that loss of energy.

Q. Mr. Lorenz, are there any other practical methods as a matter of transmission engineering of reducing corona which Commonwealth Edison does not undertake?

A. No.

Q. Can you please identify and describe to the Board and to the Hearing Officer the major structural components of both an overhead and an underground transmission line?

A. Yes. In the case of an overhead transmission line, besides the conductors that I have described before that we use to actually transmit power from one area to

another or interchange electricity from our neighboring utilities as we discussed yesterday, the conductors are supported by insulators. I described those before. They serve two functions. They support the conductor in air from a structure, but they also insulate that conductor from the structure itself so that the path of the electricity would not be directly to ground by weight of that structure.

In addition, there is the structure themselves that support all of the above. In the case of underground, the underground transmission, they also have conductors, not unlike the conductors that I described in overhead. They could even be made up of the same material. However, in the case of underground, the insulators or insulation, if you will, is something that's not a structural number. It strictly keeps the electricity from going directly to ground, especially in a case where that conductor is truly buried in ground.

The support of an underground transmission line is in the form of concrete encased conduits or a pipe.

Q. Can Com Ed underground its entire system of transmission lines?

A. No, it cannot.

Q. Why not?

A. Well, in the case of 765,000 volt lines, there simply isn't technology that allows that to occur. In the case of 345,000 volt lines, the difference electrically in an underground 345 kV line versus an overhead 345 kV line introduces a tremendous amount of capacitance between that conductor and ground.

I believe Ms. Manning mentioned this yesterday. The difference between an overhead 345 line and an underground 345 line in terms of capacitance is approximately 40 times more. If we did not add additional what we would call shunt inductors into the system, which essentially is a -- it's an impedance component that is the opposite of the capacitance, all of the energy that we would attempt to transmit across an underground transmission line would be used up in fulfilling that lines need for capacitance.

Q. These shunt inductors are -- I'm going to speak now as a lay person -- they are large components that sit in a substation or a yard above ground; they are not in the -- they are not part of the underground transmission line?

A. Correct. They are yet another component, maybe not quite as big as a house, that would sit inside a

substation yard to offset that capacitance.

Q. Now, Mr. Lorenz, where it is physically possible to place a transmission line underground, is it more or is it less expensive than an overhead line?

A. Underground transmission is far more expensive than overhead. In the case of 345,000 volt lines, our experience is that the cost is at least 10 times more. And that's even for an underground line that has not nearly the capacity, if you will, of an equivalent overhead circuit.

In the case of 138,000 volt lines, the cost of undergrounding a circuit is about five to seven times the cost of an equivalent overhead circuit.

Q. Can you briefly explain to the Examiner, to the Hearing Officer, and to the Board why that's true?

A. It's strictly a function of the cost of the components themselves. The fabrication of cable with proper insulation qualities and levels to keep that conductor from going to ground and the electricity from going to ground is dramatically more expensive as compared to its equivalent overhead component. And, frankly, the cost of construction, the labor cost of underground installation versus overhead is also significantly more.

Q. Do underground transmission systems cost less

or more to operate and maintain than overhead systems?

A. Our experience is that underground transmission systems are -- cost slightly more to maintain than overhead systems as well as the initial installation cost.

Q. Can you tell the Board then why Com Ed ever builds an underground line?

A. Well, unfortunately, there are instances where an overhead transmission line simply will not fit. There's also other situations where our feasible routing would take an overhead transmission line past a facility that would concern us from a reliability standpoint. It may actually pose a danger to our line.

Q. Mr. Lorenz, have you been able to prepare an estimate of what it would cost Commonwealth Edison and its rate bearers to construct underground those portions of its existing overhead transmission system that physically could be built underground?

A. Yes. The cost of undergrounding the existing overhead circuits that we have would be approximately $14.3 billion. This cost, though, does not include any additional right-of-way we may need or the cost of acquiring the rights to put even the overhead facilities that we have, replace them in place with underground

facilities. We are assuming no environmental issues that we would have to come across, so to speak, be they wet lands or rivers that we would have to traverse. It does not include any of those substation components that I described before such as the inductors.

There's also an issue with underground -- underground transmission as well that it does have a much lower impedance than overhead and would cause a higher level of fault duties available at the various substations that we presently have and, frankly, it would have to cause us to upgrade those substation components as well. Those costs also are not included.

Q. I am not going to ask you to do a mini course in electrical engineering, but for the sake of completeness of the record, can you explain what a fault duty is?

A. Simply -- Not so simply. If an energized electrical component at no matter what voltage it is, if it was to accidentally contact ground such as I described before, if for some reason a conductor suspended on a transmission structure were to contact that structure, that would cause what we would describe as a fault. What happens during a fault condition is given the amount of generation we have available in the system and the amount

of other lines interconnecting at substations to that particular component, it could cause a large in-rush of current through that line to ground. It's a path of least resistance, so to speak.

Q. Mr. Lorenz, have you been able to estimate approximately how much it would cost in addition to the $14.3 billion involving undergrounding the line to do the other ancillary functions that you've described, namely, acquiring land and upgrading substations and the like?

A. No. That would require a very detailed planning study in order to analyze exactly where substation upgrades would need to occur, where additional inductors may need to be added, et cetera, et cetera.

MR. BOGACZ: Excuse me, Hearing Officer.

May I object to the testimony and questions?

THE HEARING OFFICER: You may raise an objection.

What is your objection?

MR. BOGACZ: I object to these questions that are not directly or specifically addressed to transmission line emissions creating ozone.

THE HEARING OFFICER: Do you have a

response?

MR. RIPPIE: The complaint seeks supposed mitigation of transmission line production of ozone in response to interrogatories; and as stated in the complaint, the remedy sought is undergrounding or other isolation from air.

Mr. Lorenz has commented on the technical feasibility of other methods of reducing corona, and he is now commenting on the cost and feasibility of undergrounding. It is directly relevant.

THE HEARING OFFICER: The objection is overruled.

I'm sorry. Can you continue with your response to that last question or should we have the question repeated?

THE WITNESS: No. I think I can continue.

THE HEARING OFFICER: Okay.

BY THE WITNESS:

A. The $14.3 billion that I quoted before for just the actual undergrounding of the existing overhead circuits would most certainly be doubled by all the additional ancillary needs to support an entirely

undergrounded transmission system.

Q. Aside from cost, are there any other reasons why Commonwealth Edison Company could not as a practical matter underground its 345 and 138 kV transmission systems?

A. Well, there is one other issue, and I believe Ms. Manning described it yesterday, and that is the fact that -- and I mentioning it earlier -- to an underground system has a much lower impedance than an equivalent overhead system. And as such, our system, again, by the path of least resistance that I quoted before, our system would tend to want to absorb power from all of the other electrical systems around us. We would have -- We would frankly have no way of controlling power flow through our system from one utility to another.

Q. Mr. Lorenz, are there sufficient -- Let me strike that question and start over, please.

In view of the level of underground construction undertaken today, are there sufficient engineers, equipment, and trained construction personnel to accomplish the undergrounding of Com Ed's transmission system with any degree of speed?

A. No. Again, assuming other resources besides cost, there simply are not enough underground transmission

engineers to design such a system. We would be putting quite a burden on the manufacturers of such underground components as cable, as manholes, as conduit systems.

And aside from cost, as I say, those resources would be extremely hard to come by to try to underground a transmission system as large as Commonwealth Edison's with any speed.

Q. Mr. Lorenz, I now want you to put aside all of the difficulties and possibilities you testified about.

And I ask you, if putting all those issues aside Com Ed was somehow able to underground all of its transmission lines, do you expect that that would reduce the amount of ozone produced by Com Ed's utility function?

A. Likely not. Some of the substation components that I described before just like a transmission line conductor or its support hardware, these items also have a tendency to cause corona. In a substation, there may be very many volted connections, electrical connections, between wires and supports, for example, or between inductors and transformers and conductors. And just by the nature of the sharp edges on these volted connections, for example, there would certainly be corona generated.

Q. Would the undergrounding of the transmission system require an increased number of substation

components and connections?

A. Absolutely.

Q. And those would be the inductors and the like that you have referred to earlier in your testimony?

A. Correct.

MR. RIPPIE: That's all the questions I have for Mr. Lorenz.

THE HEARING OFFICER: Okay. Do you have cross-examination of Mr. Lorenz?

CROSS-EXAMINATION

BY MR. BOGACZ:

Q. Mr. Lorenz, would you describe your testimony you just presented as basically a description of a private company's economic health?

A. Could I ask for a clarification? I'm not sure I understand the question.

Q. Well, all your testimony you just presented, okay, specifically describes Commonwealth Edison's capabilities or restrictions regarding transmission lines bearing underground and as opposed to building overhead or vice versa. And you mentioned various costs that would be related to building underground rather than putting overhead. It would be more expensive?

A. Yes, that's correct, bearing transmission

facilities is more expensive than building overhead facilities.

Q. So, basically, your testimony describes how a private company which Commonwealth Edison is more or less makes considerations regarding continuing their existence -- in other words, continuing their profit-making operation; right?

A. Well, I'd like to point out that Commonwealth Edison is not a private company. We are, in fact, a public utility. We are regulated by the Illinois Commerce Commission. The function that I described before of reviewing feasible routes or construction alternatives, if you will, of transmission facilities is something that we also present to the Illinois Commerce Commission before we undertake such a project to quite frankly satisfy the justification that what we propose to design and build is, in fact, the least cost alternative to satisfy the need.

Q. You said it's a public company. Is there such a legal designation?

A. Yes, I believe so.

Q. I mean --

A. We are a public utility.

Q. I don't quite understand how Commonwealth Edison is a public corporation.

I mean, is it a government or is it a separate entity provided in a constitution or could you explain what you mean by that?

MR. RIPPIE: I'm going to note an objection, if I can.

Mr. Bogacz and counsel for Com Ed are perfectly capable of arguing about the legalities of this. This exceeds the scope of Mr. Lorenz's testimony considerably at this point as well as his expertise to the extent that Mr. Bogacz is asking questions about the constitutional origins of public utilities.

THE HEARING OFFICER: Do you have a response?

MR. BOGACZ: Mr. Lorenz is -- according to his resume, is charged or responsible for acquisition of property and permits and presenting testimony to the ICC, and I'm just trying to determine whether -- He mentioned that it's a public corporation. I'm trying to have him define to me what a public corporation is or whether how -- how does Commonwealth Edison apply to that.

MR. RIPPIE: I believe -- and I don't

mean to get into any sort of a dispute -- but I believe Mr. Lorenz's words was that it was a public utility.

MR. BOGACZ: Oh, okay. Sorry for my ...

BY MR. BOGACZ:

Q. Mr. Lorenz, on that same line, though, Commonwealth Edison is concerned about basic -- primarily to continue as a profit-making corporation?

A. Within the limits that the Illinois Commerce Commission allows us.

Q. Right. In your site plans for these transmission lines, do you ever consider the effect they would have on property values?

MR. RIPPIE: Object to lack of relevance.

THE HEARING OFFICER: Any response?

MR. BOGACZ: Property values are affected by transmission lines, and I'm wondering if the Commonwealth Edison considers them in any way or -- and when they decide to acquire property and in its transmission line routing. Mr. Lorenz is responsible for that, rights of ways and everything that's related to presenting -- to presenting their case before the ICC.

THE HEARING OFFICER: The objection is sustained.

BY MR. BOGACZ:

Q. Mr. Lorenz, do you know what the public convenience and necessity is --

A. Yes.

Q. -- in reference to Commonwealth Edison's applications before ICC?

A. Yes, I do.

Q. Do you know what -- Do you know if the ICC considers the public health in any way or the environment in their consideration of Commonwealth Edison's application?

A. Yes, they do.

Q. In what way?

A. They are, as I stated before -- Part of my testimony to them describes line routing. And in the process of seeking the least cost reasonable route alternative for a proposed transmission facility, we review environmental impacts.

Q. So environmental impacts are a consideration for other governmental agencies, say, regarding wet lands or some other environmental consideration?

A. Yes, yes. If a proposed line route, for

example, would take us through a wet land area, we have an obligation to apply for a permit to cross through that wet land area from the Corps of Engineers.

Q. And -- So that would cost extra money to possibly divert the route or mitigation of the wet land in accordance with wet land laws?

MR. RIPPIE: I thought that this might be coming back to ozone, but it doesn't appear that it is; so I have a relevance objection again.

THE HEARING OFFICER: Do you have a response to the objection?

MR. BOGACZ: I object to your objection in that Mr. Lorenz testified that he is responsible for site planning and he is responsible for determining whether certain -- the lines go in a certain direction and how they affect certain property, and a wet land and any other environmental factor is something that he considers and he has information on; and the cost involved in diverting that line because of an environmental consideration, he has information on that. So that's the question

I'm asking him to determine what, if any, difference in costs there are from his -- their possible original plans or if that factor is even considered.

THE HEARING OFFICER: The objection as to the question that was asked previously, previous to the objection being made, and the objection is sustained.

BY MR. BOGACZ:

Q. You did testify about costs, didn't you, Mr. Lorenz on -- during your testimony on how much more expensive it would be regarding environmental issues?

A. No, I did not specifically.

Q. You did not?

A. I believe I stated the cost of undergrounding versus overhead to be a certain value; but as I then stated, I did not take into account necessarily what exact additional costs there would be due to environmental effects.

Q. But you did discuss environment considerations, didn't you?

A. Yes.

Q. In your opinion or with your experience in site planning for Commonwealth Edison, do you know of any

extra costs involved in accommodating environmental considerations?

A. Yes.

Q. And where was that?

A. Such as traversing a wet land as opposed to going around a wet land, we would weigh the cost of each alternative. To traverse a wet land requires us to perform our work in a very certain set way as described by a permit, which we would obtain from the Corps of Engineers, such as matting a wet land to avoid rutting it as we drive our trucks in different facilities in or through it in order to construct our own.

Q. Does the EPA -- United States Environmental Protection Agency or the Illinois Environmental Protection Agency have regulations concerning the site planning or construction of transmission lines?

A. Not that I'm aware of.

MR. BOGACZ: I believe that's all I have right now.

MR. RIPPIE: There is no redirect of this witness.

THE HEARING OFFICER: All right. Thank you very much, Mr. Lorenz.

Do we have a motion for the introduction

into evidence of the last exhibit?

MR. RIPPIE: Respondent moves into evidence Exhibit No. 17.

THE HEARING OFFICER: Is there any objection?

MR. BOGACZ: No.

THE HEARING OFFICER: All right. Exhibits -- Respondent's Exhibit 17 is entered into evidence.

(Respondent's Exhibit No. 17 admitted into evidence.)

THE HEARING OFFICER: Does Respondent have any additional witnesses?

MR. RIPPIE: That would conclude the presentation of witnesses in the Respondent's direct case.

THE HEARING OFFICER: All right. Then at this time, I would like to ask the Complainant if they would like to make any further statements at the hearing in the form of a rebuttal case?

MR. BOGACZ: Could I take a break first?

THE HEARING OFFICER: Would you like to make such statements, Mr. Bogacz?

MR. BOGACZ: Oh, yes.

THE HEARING OFFICER: Okay.

MR. BOGACZ: But can I take a break first?

THE HEARING OFFICER: Can we come back in five minutes?

MR. BOGACZ: Yes.

THE HEARING OFFICER: Thank you.

(A short recess was taken.)

THE HEARING OFFICER: We are back on the record.

And at this point in time, we'll entertain Complainant's case in rebuttal at hearing.

The case in rebuttal is an opportunity, Mr. Bogacz, for you to contest any aspects of the Respondent's case-in-chief that Respondent's witnesses have made.

You may proceed if you would like to make a statement.

I think perhaps because you are your own witness in your own case, then we might have a re-swearing of the witness.

(Complainant sworn.)

THE HEARING OFFICER: Thank you.

You can proceed.

(Complainant's Case in Rebuttal.)

MR. BOGACZ: As I stated in my preliminary statement regarding this case, this is a case of air pollution. This is a case of air pollution caused by Commonwealth Edison by their emission of ozone from their transmission lines.

Their contention is that they are sacrosanct through arbitrary decisions or no decision from governmental officials, including the United States Environmental Protection Agency.

Their only evidence points to a self-interest on their part and/or those particular witnesses and the evidence that they presented.

None -- None of their evidence indicates an approval by the United States Environmental Protection Agency, which is the primary, the primary agency that governs pollution -- air pollution in the United States. It's not governed by the IEE, it's not governed by the

Bonneville Power Administration, it's not governed by the Illinois Institute of Technology, it's not governed by Dr. Vostal, it's not governed by Gary Johnson, it's not governed by Linda S. Manning, it's not governed by Mark J. Lorenz, and it's not --

MR. RIPPIE: Madam Hearing Officer, I think there may be some confusion. I certainly understand that Mr. Bogacz has a right to a closing statement or a brief which contains argument.

It is my understanding that this was an opportunity to introduce more factual testimony into the record as opposed to his opportunity to make his closing statement.

And it's my impression that what Mr. Bogacz is doing now, while appropriate for argument, is not factual testimony.

THE HEARING OFFICER: I will permit the Complainant to continue.

MR. BOGACZ: I was going to say that according to --

THE HEARING OFFICER: You may continue, Mr. Bogacz.

MR. BOGACZ: Okay.

THE HEARING OFFICER: The objection is overruled.

MR. BOGACZ: I wish to object to the interruption from the Respondent regarding the argument. Respondent's attorney -- or claims to be an attorney familiar with the legal procedures in these cases which are spelled out very specifically in the regulations of the IPCB, and I wish to note that this particular interruption is uncalled for and done to interrupt my argument, and I object strenuously.

Could you read me back or -- Can you read back or you can't?

MS. REPORTER: I can read back.

MR. BOGACZ: Where I stopped on my ...

MS. REPORTER: Sure.

(Record read as requested.)

MR. BOGACZ: Thank you.

Yes. It's not governed by these private individuals or companies or groups. It's governed by a public agency. An agency who has a duty and a responsibility to enforce the

air pollution laws in this country. It's an agency charged with determining whether certain individuals, companies, or even governmental agencies must abide by certain air pollution standards.

There is no evidence presented by the Respondent to prove that they have an exemption from the United States Environmental Protection Agency to continue emitting ozone from their transmission lines.

It appears that there is some sort of a gentleman's agreement between agencies possibly and Commonwealth Edison and the power industry. I really don't know what it is, but there is no evidence of any official exemption which has a duty and a responsibility of the United States Environmental Protection Agency administrator to issue to any person or company or group or party, whatever, who wishes to be exempt from any air standard pollution regulation.

Commonwealth Edison claims that there are no permits required. There are no regulations governing their ozone emissions. That is

true. But why is it true? They have not shown why that should be true. Why that should be -- Why should they have the special status to be immune from the air standard pollution regulation of the Clean Air Act.

THE HEARING OFFICER: Excuse me.

Let the record show there was some question as to that.

MR. BOGACZ: Huh?

THE HEARING OFFICER: Mr. Bogacz, you are asserting something as factual that you have not established as factual yourself. So I am stating let the record reflect that there was a question as to that.

MR. BOGACZ: Oh, okay, about the administrator. Is that my understanding of what you are --

THE HEARING OFFICER: About the exception.

MR. BOGACZ: Exception?

THE HEARING OFFICER: Yes. You mentioned an exception to regulations.

MR. BOGACZ: Yes. Oh, okay.

Yes. There is no exception. There is a

privilege existing for Commonwealth Edison and apparently the entire power industry in the whole country.

This privilege, immunity, exception, exemption, whatever you want to call it, can only be determined by United States Environmental Protection Agency and enforced by state agencies by their -- under direction from the U.S. EPA.

None of their witnesses provided any Environmental Protection Agency authorized studies. All these studies were provided by private groups or research organizations or persons. None of the studies, calculations were approved by the EPA. They are not looked at by the EPA. And yet the Respondent asserts these as some form of authority which is superior to the U.S. EPA or for that matter the IEPA or for that matter the IPCB.

There is definitely ozone being produced by Commonwealth Edison transmission lines. Ozone is an air pollutant. Their own witnesses testified to that fact. Because costs are involved which would possibly

undermine the profitability of Commonwealth Edison, they assumed that they have a right to continue in their old ways, their old ways going back to the Victorian age over a hundred years. They are still using the same technology of building overhead lines and spewing out this poison, this poison that everybody else in the country generally has to respond to and obey laws, including automobile emissions, myself included.

I object alone on that basis as a citizen that I -- my equal protection rights are being deprived because other parties are being treated differently because they assume an immune status in this country, so they can continue making millions of dollars.

It may be true that the construction of underground lines may be technically not feasible. It may be true. What has Commonwealth Edison and the power industry been doing for the last hundred years with their money regarding research? There is -- Apparently, they haven't been doing anything. They want to continue spewing out this air

pollutant and making millions of dollars at the expense of the public interest.

Well, I say I think it's time that we stop it. There are apparently others maybe more responsible for their -- for Commonwealth Edison's failure to prevent pollution from their transmission lines. That may be down the line to be found out by other citizens or maybe myself.

I mean, the cavalier attitude of Commonwealth Edison regarding ozone and the cavalier attitude presented by their witnesses that ozone is something that's, well, you know, it's just a little tiny amount, well, I call that a lot of baloney because the U.S. EPA does not consider ozone a cavalier topic.

Everybody has to take their automobile vehicles into -- just about everybody has to take their vehicles in for emission control. Why? Because ozone. We have to go there and gravel and wait in line and get our test done with as a good citizen, but certain corporations like Commonwealth Edison can continue on without any regulation or control

to emit their ozone directly into the atmosphere. Why? They should be stopped. It's insanity. Just because they haven't done anything for the last hundred years regarding new technology. There is new technology to bury transmission lines. It can be found in Europe primarily. And they apparently don't want to do it. It may cost a few extra more bucks, maybe less for the stockholders.

A private company in this country does not have more rights than a public interest. I know that well. If it does, then we're -- this country's in real deep do-do.

The environment is more important than company profits. The public interest is more important than company profits. Public convenience and necessity, that is, the bulwark rat battering ram used by Commonwealth Edison and the power industry. They feed on pollution actually. They create it. They follow it wherever it's spread in the sprawl of the country, in the Chicago area. They feed it.

I read an -- The article that I read

fairly recently described our society as a -- as being in a mental situation where we are in a dilemma. We don't know what to do. On the one hand, we are asking for protection from pollution; on the other hand, we are running around like crazies wanting to make millions of more dollars. And it's time we bite the bullet. I think it's probably one of the foundations of drug addiction. That's probably why a lot of people are going to it to forget their problems.

But Commonwealth Edison did not present any evidence to support their case that they should not abide by the Clean Air Act and the IEPA and the Environmental Protection Act.

My case, my documents, the evidence I presented show that the air is being polluted by ozone, which is an air pollutant. It is confirmed by the witnesses from the Respondent and the -- there are no regulations currently regulating or controlling this emission, and this particular pollution activity should be stopped or regulated to protect the public health.

Thank you.

THE HEARING OFFICER: Thank you very much, Mr. Bogacz.

MR. RIPPIE: There is no cross-examination of that statement.

THE HEARING OFFICER: All right. Then at this time, we have a couple of administrative matters to discuss prior to closing the record of the hearing.

MR. BOGACZ: Excuse me, Hearing Officer.

THE HEARING OFFICER: Yes.

MR. BOGACZ: I'm just looking at the order of enforcement hearings.

Was that considered my opening argument or letter G?

THE HEARING OFFICER: That was E, Complainant's case in rebuttal.

MR. BOGACZ: Oh, okay. I'm jumping ahead.

THE HEARING OFFICER: Now, at this point, the parties in the case determine whether they wish to brief or not.

I had the impression that you did wish to brief the issues in the case. Is that

correct?

MR. BOGACZ: Yes.

THE HEARING OFFICER: All right. That can occur after the conclusion of the collection of documents which are going to be a part of the case, and we had discussion yesterday about documents that will be entered into evidence once I have seen them and determined that they are relevant to the proceeding, and those are the documents we discussed that are a part of a FOIA request at this time.

MR. BOGACZ: Yes.

THE HEARING OFFICER: Mr. Bogacz, when you get those documents, if you would see that I receive a copy of those. Then we can discuss -- and also, Mr. Zibart -- then we can discuss perhaps in a phone conference the documents that have come in.

At that time, we will have the date on which they have come in since we do not know now what date we will obtain those documents; and, therefore, the case schedule for closing and briefing will not be determined here on

the record today. We will determine that once we receive the documents that will be the documents we will enter into the record.

All right.

MR. ZIBART: Would the Hearing Officer consider it prudent perhaps to set sort of an outside limit conference in case time drags on and we haven't heard anything from the U.S. EPA?

I assume they have some obligation to respond in a timely manner, but ...

THE HEARING OFFICER: What is the timeline, Mr. Bogacz; do you know?

MR. BOGACZ: I don't -- I don't think I brought it with me, a document I got the other day stating they have 14 days or something to respond to my request. I may have to specify more.

THE HEARING OFFICER: I would like to suggest that we have a phone conference call in about a month. We have done this for purposes of reporting status, and that's what we'll call it. We'll call it a status reporting phone conference.

And you are welcome to contact me prior to the date that we come to hearing --

MR. BOGACZ: Oh, okay.

THE HEARING OFFICER: -- if you receive the materials sooner.

MR. BOGACZ: Okay.

THE HEARING OFFICER: But in case we do not have any contact prior to that date due to the receipt of materials on the FOIA request, then perhaps -- Well, that takes us to Christmas.

Is there any date in that area of days when you could agree to have a phone conference.

I plan to be in the office that week, but for the holiday, and also the following week.

MR. BOGACZ: The week of the 15th?

THE HEARING OFFICER: The week of the 30th.

MR. BOGACZ: Oh, the 30th. Right before New Year's Eve you mean?

THE HEARING OFFICER: Yes. Christmas is on a Wednesday, the 25th.

Mr. Zibart, are you in the office that

week in general?

MR. ZIBART: Yes. Perhaps we could try something like Monday, the 23rd?

THE HEARING OFFICER: Mr. Bogacz, would that be suitable for you for a phone conference?

MR. BOGACZ: Yes. I think it would be all right. I might be -- It might be something about going out of town, but I'm not quite sure yet. But it looks good now.

THE HEARING OFFICER: We can change that date if necessary.

MR. BOGACZ: Okay.

THE HEARING OFFICER: Just call to change it if necessary.

Then why don't we say Monday the 23rd of December at 10:00 a.m.

MR. BOGACZ: Okay.

MR. RIPPIE: That's fine with us.

THE HEARING OFFICER: All right. I have identified no issues of witness credibility. I am determined by the rules to make a statement as to witness credibility at the hearing. I identified no issues of witness

credibility at yesterday's hearing, and I am identifying no issues of witness credibility at the hearing today.

The closing schedule will be ordered after receipt of the documents from U.S. EPA requested by Mr. Bogacz on October 31, 1996, I believe was the date of your request that went with your subpoena.

MR. BOGACZ: Oh, yes.

THE HEARING OFFICER: And indications are that the U.S. EPA is processing the subpoena with respect to the documents as a FOIA requests.

Other administrative matters; Mr. Rippie, I would like is a separate written appearance for you, if you don't mind.

MR. RIPPIE: That will be prepared and filed with the clerk of the Board on Monday.

THE HEARING OFFICER: All right. Thanks very much. And be sure that you bring the proper number of copies.

And then with respect to the filing that occurred at the hearing, I will make sure that the clerk receives the proper number of copies

on that.

MR. ZIBART: Thanks very much.

THE HEARING OFFICER: Now, the closing schedule will be forthcoming.

And I want to thank all of the witnesses that are present today for coming to the Pollution Control Board's Hearing. I know that I appreciated your testimony very much, and I know that the Board will appreciate hearing from all of the individuals in this case and their testimony very much.

This concludes the hearing of this case. Thank you for your attendance and cooperation in our process.

Off the record.

(Which were all the proceedings had in this matter at this time.)

STATE OF ILLINOIS)
) SS.
COUNTY OF C O O K)

I, MICHELLE M. DOSE, C.S.R., do hereby state that I am a court reporter doing business in the City of Chicago, County of Cook, and State of Illinois; that I reported by means of machine shorthand the proceedings held in the foregoing cause, and that the foregoing is a true and correct transcript of my shorthand notes so taken as aforesaid.

_____
MICHELLE M. DOSE, C.S.R.
Notary Public, Cook County, IL

SUBSCRIBED AND SWORN TO
before me this_____day
of_____, A.D., 1996.

_____
Notary Public