

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

BEFORE THE POLLUTION CONTROL BOARD
OF THE STATE OF ILLINOIS

IN THE MATTER OF:)
)
PETITION OF PDV MIDWEST) R 98-14
REFINING, L.L.C.)
)
TO AMEND REGULATIONS)
PERTAINING TO WATER POLLUTION)

The following is the transcript of a hearing held in the above-entitled matter, taken stenographically by GEANNA M. IAQUINTA, CSR, a notary public within and for the County of Cook and State of Illinois, before John C. Knittle, Hearing Officer, at 14 West Jefferson Street, Joliet, Illinois, on the 6th day of March, 1998, A.D., commencing at 1:00 o'clock p.m.

A P P E A R A N C E S :

HEARING TAKEN BEFORE:

ILLINOIS POLLUTION CONTROL BOARD,
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(312) 814-6923
BY: MR. JOHN C. KNITTLE

SONNENSCHNEIN, NATH & ROSENTHAL,
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(312) 876-2380
BY: MR. JEFFREY C. FORT

- and -

CITGO PETROLEUM CORPORATION,
P.O. Box 3758
Tulsa, Oklahoma 74102
(918) 495-5548
BY: MS. DANA A. BURCH

Appeared on behalf of PDV Midwest Refining,
L.L.C.,

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY,
1021 North Grand Avenue East
P.O. Box 19276
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(217) 524-3157
BY: MR. CHARLES W. GUNNARSON, MR. STEVEN E. VANCE,
and MR. SCOTT A. TWAIT

ILLINOIS POLLUTION CONTROL BOARD MEMBERS PRESENT:

Dr. Ronald C. Flemal, Ph.D

Mr. Robert O'Brien

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E X H I B I T S

Marked for
Identification

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(Petitioner's Exhibit Nos. 1-5
marked for identification,
prior to the commencement of
the deposition, 3-6-98.)

THE HEARING OFFICER: As everybody already
knows, my name is John Knittle. I'm the hearing officer
in this proceeding entitled In The Matter Of Petition Of
PDV Midwest Refining, L.L.C. to amend 35 Illinois
Administrative Code 304.123.

Sitting next to me is Dr. Ron Flemal, the presiding
Board member at this hearing, and also with us today from
the Pollution Control Board is Mr. Rob O'Brien from the
technical unit.

This is the first hearing for this proceeding. The
petition in this proceeding was filed on October 17th,
1997. We are in courtroom 100 of the Will County
Courthouse here in Joliet, Illinois, and I do not think
there are any members of the public present.

If there is anybody here not affiliated with a private
party if they can identify themselves now. There is
not. So no members of the public are currently present.

I do have a service list along with copies of all the
prefiled testimony up front which everybody is welcome
to, but I think everybody has a copy of that that is on

the service list.

Okay. The order of the hearing that we're going to conduct today is we're going to have an opening statement by both sides, we're going to swear in the witnesses, and they're going to, apparently, read their testimony that's been prefiled.

After that, we will allow questions by both the Board and the other party and any members of the public that may show up in the interim.

That being said, I think I'd like to introduce Dr. Ron Flemal. Do you have any opening statements?

DR. FLEMAL: Nothing other than just to welcome everybody, and I would note as well that the Board Member of record in this proceeding is Board member Joseph Yi. Some of you may be aware that Joe has had a recent bout of illness which prevents him from being with us today.

The good news is that he's recovering well, and we hope to have him back in full force and energy at the Board real soon, and my assumption is that he will come back and begin to take reigns on this proceeding just as soon as he can.

THE HEARING OFFICER: Thank you, Dr. Flemal. I would echo your sentiments about Mr. Yi.

Well, does the attorney for PDV have an opening

statement that you'd like to make?

MR. FORT: Well, my name is Jeff Fort. I'm here with Ms. Dana Burch, Esquire. We're counsel for PDV in this proceeding. I don't think there's a necessity for any extensive opening statement here.

I would note that the reason that we are before the Board at this time is due to a transfer in ownership of the refinery which was previously known as the Union Oil Company Refinery, UNO-VEN, and now is owned by PDV Midwest Refining, L.L.C. as you've noted.

Because of that transfer in ownership, we felt it was appropriate to change the rule and, of course, once we start with that process, we get back into rejustifying the limitations and the conditions that are part of that rule.

We have done so, and in doing that process, we've talked with the Agency about the conditions of the site specific rule and we've looked at various ways of analyzing the situation and find that the existing limits are the most conservative approach to the circumstances existing for the refinery.

We will have three witnesses today; Mr. Claude Harmon, Dr. Robert Stein, and Mr. James Huff. We have prefiled their testimony. We also have the two technical reports

done by Dr. Stein and Mr. Huff, and we will also introduce those as exhibits here.

THE HEARING OFFICER: Thank you, Mr. Fort.

Is there anyone from the Agency who would like to speak at this time?

MR. GUNNARSON: Yes, just briefly. My name is Charles Gunnarson. I'm assistant counsel with IEPA, and for the record just to note, as was already noted in our prefiled testimony filed in this matter, in general we do not have any objections with the petition filed by PDV in this matter.

One matter that we did raise, which is described in our prefiled testimony, related to the length of the relief requested here and a feeling that, perhaps, some limit to that length of the relief should be looked at by the Board, and I, on behalf of IEPA, filed prefiled testimony on that matter, and if the Board or any member of the public or PDV so wishes, we can reattest or further explain our prefiled testimony at the proper time.

THE HEARING OFFICER: Thank you.

I'd just like to note right now as well when I initially introduced this matter, I noted that we were looking to amend 35 Illinois Administrative Code 304.123,

but I'd like to correct that. It is actually 304.213, and I just wanted to make that clear for the record one final time.

At this point, PDV, would you like to call any witnesses?

MR. FORT: Yes. We'd like to call Mr. Claude Harmon.

THE HEARING OFFICER: Mr. Harmon, if you could come up and have a seat.

Can you swear him in for us?

(Witness sworn.)

WHEREUPON:

C L A U D E H A R M O N,
called as a witness herein, having been first duly sworn, deposeseth and saith as follows:

E X A M I N A T I O N

by Mr. Fort

Q. Would you state your name for the record, please?

A. Claude William Harmon, Jr.

Q. Mr. Harmon, I would show you what we've already marked as Petitioner's Exhibit 1 and ask if that is your prefiled testimony in this matter?

A. Yes, it is.

Q. And it's true and correct to the best of your

knowledge and belief?

A. Yes, it is.

MR. FORT: Mr. Hearing Officer, I would ask that this -- Mr. Harmon's testimony be introduced into the record as if read.

THE HEARING OFFICER: Okay. Are there any objections to this testimony being entered as if read?

MR. GUNNARSON: None from my view.

THE HEARING OFFICER: Seeing none, it will be so admitted.

MR. FORT: Thank you. I have one further question for Mr. Harmon.

BY MR. FORT:

Q. Mr. Harmon, you're familiar with the petition in this matter?

A. Yes.

Q. And you've read that petition?

A. Yes.

Q. There are factual assertions made in that petition concerning the transfer in ownership from UNO-VEN to PDV Midwest.

Are you familiar with those assertions?

A. Yes.

Q. Are they true and correct?

A. Yes.

MR. FORT: I have no further questions.

THE HEARING OFFICER: Thank you. Can we go off the record for one second?

(Discussion had
off the record.)

THE HEARING OFFICER: I note that a member of the public has walked in today.

Sir, can you identify yourself for the record, please?

MR. SIMON: My name is Bill Simon with Mobil Oil.

THE HEARING OFFICER: Thank you very much. And I've noted that you have no objection to entering the testimony as if read?

MR. SIMON: Yes.

THE HEARING OFFICER: Okay. Were there any questions at this point for the first witness, Claude Harmon? Any from the Agency?

MR. GUNNARSON: None from the Agency.

THE HEARING OFFICER: Bob, do you have any questions?

MR. O'BRIEN: The way I've commenced these questions are basically per witness, but if anybody else

who is here to testify today needs to jump in or has anything to add, feel free to just -- anybody can jump in at any time as far as the witnesses that are here.

THE HEARING OFFICER: Of course, we want the witnesses sworn in before they jump in if that makes.

MR. O'BRIEN: Okay. The IEPA has proposed limiting the exception to ten years. This would equal two full cycles of the NPDES permit.

During that time, is it not possible that an advancement in technology or the process changes would enable your facility to comply with the standards of 35 IEC 304.122?

MR. HARMON: I guess I can't say that it's --

MR. FORT: Let me jump in here. When you're citing to the regulation, you're talking about the three milligrams per liter?

MR. O'BRIEN: Right. Correct.

MR. FORT: And the question is, is it possible?

MR. O'BRIEN: Well, yeah. I guess -- I mean, maybe that's a little too vague.

THE HEARING OFFICER: Go ahead. Answer it to the best of your ability.

MR. HARMON: Well, the answer is it's

possible. There's no way that I can say it's not possible. All I can say is that, you know, we've been at this for about 20, 25 years and nothing has developed yet that would help us beat that on a consistent basis.

MR. O'BRIEN: On pages five through seven of your testimony, you have listed a number of instances where the higher organic loadings have caused an upset at the treatment plant resulting in higher ammonia concentration in the effluent.

What measures are being addressed to -- are being implemented to address the occasions of higher loadings?

MR. HARMON: Improved preventative maintenance programs basically.

MR. O'BRIEN: Do you believe that your treatment plant includes adequate equalization time?

Do you believe that your plant includes adequate equalization time to avoid plant upsets caused by the higher organic loadings?

MR. HARMON: Well, Dr. Stein, he could probably talk about that a little more directly when he gets the opportunity, but I think yeah, from a reasonable -- reasonably engineered standpoint, yes.

MR. O'BRIEN: Is it possible to predict the instances of higher organic loadings at all?

MR. HARMON: Not really.

THE HEARING OFFICER: Can I jump in for a second, Bob?

MR. O'BRIEN: Sure.

THE HEARING OFFICER: You said what measures are being implemented when he asked you to address the occasional higher organic loadings, and I think you replied preventative maintenance, you improved your preventative maintenance?

MR. HARMON: Yes.

THE HEARING OFFICER: How have you improved it? Do you have a schedule set out, or do you have specific items in there that you're looking to improve?

MR. HARMON: I guess specifically the sour water strippers and the schedule of turnaround and maintenance for those particularly has been improved, and they've got a lot more attention over the years, and that, to me, is the heart of the program. If you keep those things on-line and operating efficiently, you avoid a lot of upsets at the wastewater treatment plant.

THE HEARING OFFICER: So that's the majority of what you're talking about when you're discussing --

MR. HARMON: Preventative maintenance programs.

THE HEARING OFFICER: -- preventative

maintenance, right?

MR. HARMON: That's correct.

MR. O'BRIEN: On page eight of your prefiled testimony, you note that one of the requirements of the site specific rule is the monitoring of the nitrogen concentrations of the refinery feedstock.

Does the chemical makeup of the feedstock make a huge difference in the amount of nitrogen loading, and, if so, please explain how such information, the monitoring of it, would be used to optimize the treatment of the wastewater.

MR. HARMON: Once again, I think Jim Huff can address that a little more directly when he gets the opportunity, but it doesn't make a huge difference. It makes a difference on the nitrogen loading for the wastewater treatment plant.

MR. FORT: I would just like to note for the record that that condition in particular was one that the Board placed in, I believe, the original petition for informational purposes. It was something that was thought to be helpful at the time.

I believe I can fairly characterize this witness' testimony in that we're not sure that that really advances the knowledge base very much. That's been our

experience over the last ten years.

MR. HARMON: We've handled a variety of feedstocks, and, you know, it doesn't seem to make a big difference in the wastewater treatment plant.

MR. O'BRIEN: Does the type of product that you're making on any given day or week make a huge difference?

MR. HARMON: No.

MR. O'BRIEN: That's basically all I have.

THE HEARING OFFICER: Bob, do you have any further questions for this witness?

MR. O'BRIEN: No, I don't.

THE HEARING OFFICER: You may step down unless anybody has any follow-up questions.

Mr. Fort.

MR. FORT: I would like to call our next witness, Dr. Robert Stein.

MR. STEIN: It's not doctor.

MR. FORT: Sorry.

MR. STEIN: I didn't want anybody --

MR. FORT: Off the record.

(Discussion had
off the record.)

THE HEARING OFFICER: Mr. Stein, if you'd have

a seat, please. Can you swear the witness in?

(Witness sworn.)

WHEREUPON:

R O B E R T S T E I N ,

called as a witness herein, having been first duly sworn,
deposeth and saith as follows:

E X A M I N A T I O N

by Mr. Fort

Q. Would you state your name for the record, please?

A. Robert M. Stein.

Q. And, Mr. Stein, you've prepared testimony in this
matter, which we've marked as Exhibit 2?

A. Yes.

Q. And to correct the record here, you also have your
vitae attached to that testimony?

A. Yes, I do.

Q. Thank you. Is your testimony true and correct?

A. Yes, it is.

Q. And it's also based upon your professional
expertise?

A. Yes, it is.

Q. I'll also show you what we've marked as
Petitioner's Exhibit No. 3, which is a final report. Did
you prepare that or was that report prepared under your

supervision and direction?

A. I both prepared it and part of it was under my supervision.

Q. And that reflects your conclusions with respect to the treatment options for the PDV Refinery?

A. Yes, it does.

MR. FORT: With this witness, I'd also ask that the narrative part of his testimony be introduced into the transcript as if read, but we do have some attachments to it that, you know, merit keeping this as an exhibit as well. So I'd ask Exhibits 2 and 3 be admitted.

THE HEARING OFFICER: As if read?

MR. FORT: Exhibit 2 admitted as if read, the narrative part of it, and then the combined -- the entirety of Exhibit 2 be admitted and also Exhibit 3 be admitted.

THE HEARING OFFICER: Are there any objections to these exhibits being so admitted?

MR. GUNNARSON: No.

THE HEARING OFFICER: The exhibits are admitted.

MR. FORT: I have no further questions of this witness.

THE HEARING OFFICER: Is there anyone present who has any questions of this witness?

MR. GUNNARSON: No.

DR. FLEMAL: Mr. Stein, I note that in your prefiled testimony you characterize this as In The Matter Of The Petition Of Citgo where we otherwise have the matter characterized as Petition Of PDV Midwest Refining.

At this point, I just thought it would be useful if you could clarify that. I expect it will be noted by many members of the Board that we're using slightly different names here.

MR. FORT: Thank you. That is a mistake on our part. The rule change is being sought on behalf of PDV Midwest Refining.

Under a contract between PDV, Citgo is providing the operational facilities and activities to run the refinery, but the rule change we felt was more properly stated in terms of the owner of the refinery rather than the person who right now has the contract to provide facilities -- to provide personnel.

DR. FLEMAL: Thank you. That's all.

THE HEARING OFFICER: Mr. O'Brien, do you have any questions for the witness?

MR. O'BRIEN: I have a couple.

Based on your experience in the removal from the refinery -- from the refinery wastewater, are you aware of any other refinery wastewater treatment plants that are currently meeting the standard of three milligrams per liter or lower?

MR. STEIN: Not on a consistent basis, no.

MR. O'BRIEN: Okay. Page eight of your testimony notes that even though the treatment plant at the Lemont Refinery has been operated at conditions that are optimum to achieve a biological nitrification, this system has been unable to provide consistent biological nitrification.

Please comment on whether the Lemont Refinery treatment plant was designed to meet the standards of the three milligrams per liter.

MR. STEIN: I'm not sure of the original design, but, I mean, it's operating under the conditions and conditions for nitrification are pH, alkalinity, low F/M, adequate oxygen, and sludge age.

Sludge age, theoretically, for this type of waste you need a sludge age of more than ten days. In many cases, we've got sludge ages in excess of 100 days. F/M, you want to have F/M, which is a food to mass ratio or pound

BOD per pound of MLSS, which is your organisms, you want to be less than .3 and consistently less than that.

For nitrification, you want a pH of about seven to 8.5, and we normally have a good pH temperature of greater than 68 degrees seeing they actually -- for winter operation, actually we'll add heat, if necessary, to make sure that it's consistently above.

So all the conditions are there to maintain biological nitrification or what we see should achieve biological nitrification, but you don't -- you find that we will nitrify for a good period of time, but at times it does not consistently nitrify.

MR. O'BRIEN: Can you discuss reasons why that's happened -- that's been happening?

MR. STEIN: Not really. I mean, that's what we've been studying, and, you know, we've never figured out, you know, why. I think it's, you know, some of the inherent variability of just the type of waste that we're dealing with that you get some variability in treatment.

MR. O'BRIEN: Going back to -- I believe you said that the type of product that you're making on any given day doesn't matter at all?

MR. STEIN: Not really because, I mean, if you look at the treatment, you know, you've got a fairly well

mixture of organisms in the system that are able to handle, you know, the nature of the petroleum waste and the effluent quality remains fairly consistent even for all, you know, normal changes in, you know, product mix and everything.

MR. O'BRIEN: Does the nitrogen -- ammonia nitrogen loading going into the wastewater treatment facility, is that pretty constant or does that vary greatly?

MR. STEIN: No, it's relatively constant.

MR. O'BRIEN: That's about all I have.

THE HEARING OFFICER: Mr. Stein, the previous witness, Mr. Harmon, had suggested that you might be better able to talk about Mr. O'Brien's previous question as to whether or not the treatment plant includes adequate equalization time to avoid plant upsets --

MR. STEIN: Yes.

THE HEARING OFFICER: -- caused by the higher organic loadings.

Would you discuss that issue?

MR. STEIN: Yes. There is two -- I think it's a 4.6 million gallon equalization basin which is over four and a half days equalization which is really more than normal for industrial treatment plants.

So you've got, you know, very good equalization that you're going to definitely dampen out the variability of the waste. You'll find many industrial facilities have less than, you know, one-day equalization, and the refineries that I'm familiar with have less than that.

So I'm not sure. I forget if it's four-fourths or four and a half, I mean, days to bench time, but there's definitely more than -- more than enough equalization.

THE HEARING OFFICER: In your opinion, it's adequate to avoid any plant upsets caused by the higher organic loadings then?

MR. STEIN: Yes.

THE HEARING OFFICER: Are there any other questions for this witness?

MR. GUNNARSON: No.

MR. FORT: Just one clarification question for the record. I know the Board knows this very well, but we might as well put this up.

FURTHER EXAMINATION

by Mr. Fort

Q. Mr. Stein, would you talk about how the sensitivity of the nitrifying organisms and what happens if you have some sort of upset condition and, you know, just how quickly you can reestablish nitrification then

for such an upset?

A. Yeah. I guess the key thing here is that you've got -- in your waste treatment system, you've got two types of organisms, your carbonaceous organisms which really treat the organic waste, the BOD, COD, and the nitrifiers.

The nitrifiers are an extremely sensitive organism so that many of times you can produce effluent BODs. In fact, you'll see in the refinery waste less than ten parts per million, yet have a variability in the ammonia, and the nitrifiers are just an extremely sensitive thing, and, you know, that's a problem you have with many of the nitrifying facilities of these organisms.

There is just a wide range of things, temperature being among them, F/M, and what we've tried to do is control the ones we know about.

MR. O'BRIEN: Is that basically your biggest problem right now is trying to maintain a consistent organic ability to nitrify?

MR. STEIN: Well, normally, everything is okay, but there seems to be times where, for unknown reasons, we lose nitrification, and what happens is once you've lost nitrification, it is much more difficult to bring it back.

In other words, if you lose carbonaceous removal, I've seen plants that within a day or two that they're brought back, but I've seen, especially in the colder weather in the northern climates where I know of one chemical plant that I work with up in, you know, western Illinois where you lost nitrification and it took the next spring or late spring to bring it back.

So where it could take days or weeks to recover from a carbonaceous shock, it could be, you know, months before you recover from a nitrogenous shock.

THE HEARING OFFICER: Any other questions? You can step down.

MR. FORT: I call our last witness, Mr. Jim Huff. Swear the witness.

(Witness sworn.)

WHEREUPON:

J A M E S H U F F,

called as a witness herein, having been first duly sworn, deposeth and saith as follows:

E X A M I N A T I O N

by Mr. Fort

Q. Would you state your name for the record, please?

A. James Edward Huff.

Q. Mr. Huff, you have prepared prefiled testimony in

this proceeding?

A. Yes, I have.

Q. And I think we've marked that as exhibit --
Petitioner's Exhibit 4. Is that your testimony?

A. Yes, it is.

Q. And you've also prepared a report entitled
Environmental Assessment & Effluent Limit Derivation
Report of The Lemont Refinery Wastewater Discharge we've
marked as Exhibit No. 5. Is that your report?

A. Yes, sir.

Q. And was that report prepared under your
supervision and direction?

A. Yes.

MR. FORT: Mr. Hearing Officer, I'd also ask
that the narrative part of Mr. Huff's testimony in
Exhibit 4 be admitted as if read. There are some tables
that are attached that I think would be very difficult to
put in the transcript, but if we could have the narrative
part put in as if read and then have Exhibits 4 and 5
admitted.

THE HEARING OFFICER: Are there any objections
to the admission of these exhibits?

MR. GUNNARSON: No.

THE HEARING OFFICER: They will be so

admitted.

MR. FORT: I have no further questions of this witness.

THE HEARING OFFICER: Are there any questions for this witness from the Agency?

Mr. O'Brien, do you have any questions for this witness?

MR. O'BRIEN: Could you talk a little bit about the amount of wastewater that is generated on a daily basis? I've seen estimates on an average of 3.8 million to 4.1 million gallons per day, I believe.

MR. HUFF: Depending on what period of time that you're talking about, that number will vary. I believe the number that -- 4.1 million gallons per day is a reasonable number of what they're currently discharging.

MR. O'BRIEN: On page six of your testimony, you have ammonia loadings that's going into the stream or the canal; is that correct? It's a maximum, sir?

MR. HUFF: I don't think that's correct.

MR. O'BRIEN: I'm looking at the chart here, and you've got ammonia loadings and ammonia concentrations.

MR. HUFF: Those are permit limits that are in

the current NPDES permit, and I also believe they were contained in the previous adjusted standard.

MR. O'BRIEN: Correct. Those would be pounds going in the stream?

MR. HUFF: Oh, I'm sorry. Yes. Those are the effluent limits on the wastewater discharge.

MR. O'BRIEN: Okay. You identified basically in your testimony on page three and five that the refinery has discharged an average of 70 pounds per day ammonia, and that during 1996 and '97 you had a net loading of negative 13 pounds a day basically indicating that you removed 13 pounds more of ammonia than you were putting back in the canal.

Why is such a high headroom necessary, I mean, to go from, basically, taking 13 pounds more out to going up to 749 pounds?

MR. FORT: Object. I don't believe that --

MR. HUFF: I think -- I'm not sure that we're comparing apples with apples. So the 749 pound limit was derived based on USEPA categorical standards for best available treatment technology. That's what USEPA has determined for a petroleum refinery of this size and complexity what that refinery should be capable of discharging. That's BAT. That's what the 749 pounds a

day means.

MR. O'BRIEN: That's where you're getting those numbers from, right?

MR. HUFF: Right. And then I think you were confusing a gross number, the 70 pounds a day, to a net number of a minus 13 pounds per day. So you just need to be careful if you're talking gross or net.

MR. O'BRIEN: Okay. But being that -- so basically with like a -- the 9.4 milligram per liter per day, like a daily average max, that would only allow you to put out 321 pounds, roughly, per day?

MR. HUFF: I have not done that calculation, but that sounds correct.

MR. O'BRIEN: Okay. And when your system fails, I mean it goes to that degree of -- when you have problems meeting the consistent standard, normally you appear to be pretty low and meeting the standard very well, but when it fails, does it fail that big going from, you know, an average of 13 pounds or negative 13 pounds all the way up to 749 pounds?

MR. HUFF: I think you're comparing it really to apples and oranges again. There's two issues. One is a pounds limitation which was derived in accordance with the BAT limits. Generally, in Illinois, there are

predominately concentration limits and then there may be some corresponding pounds limits to that.

If you look at Table 1 attached to Exhibit 4, you can look at the daily maximum concentration numbers to see what kind of levels that they're discharging on a concentration basis and then you can go through the math, if you'd like, to convert that to the number of pounds.

MR. O'BRIEN: But we were just curious on the actual pounds per day.

MR. FORT: I think -- can I interject here? I think there's -- the issue here is mixing the data versus an enforceable limit, which is what the NPDES limit goes to, and I think we have to be careful to make sure that we're making the distinction between the two.

I'm not sure if you have any further information that would help answer that, Claude.

MR. HARMON: Well, I just want to make sure we were understanding the question.

THE HEARING OFFICER: Can you state your name for the record if you're going to speak?

MR. HARMON: Claude Harmon.

So the way I understand the question is when we have an upset, do we reach that limit?

MR. O'BRIEN: Right.

MR. HARMON: And I think there's some information in the prefiled testimony that says yeah, we have exceeded that limit on occasion.

MR. HUFF: Again, though, the limit is the concentration limit, the pounds limit, and I don't believe they've ever exceeded the BAT limits. If you take 26 milligrams per liter and you assume there's an average flow of 4.1 milligrams per liter, that's under --

MR. O'BRIEN: Milligrams --

MR. HUFF: -- a million gallons per day. That's under a thousand pounds a day that they would be discharging under an upset condition typically.

So you can compare that number to what the BAT limits were.

MR. O'BRIEN: That's basically what I was, you know, going for as far as --

MR. HUFF: So to my knowledge, I don't believe they've ever exceeded the BAT limits.

MR. O'BRIEN: Okay. Were you able to -- we talked a little bit earlier about monitoring the ammonia levels in the feedstock basically.

Do you have any -- well, skip that.

Do you have information regarding how many pounds per day your highest limit in the last two years that you've

put into the stream is? You haven't converted it all? Because it gives you -- you've given us milligrams per liter, but your effluent, how much you're putting out, isn't stated there.

MR. HUFF: Again, I have not calculated that. Predominately, when the refinery came before the Board five years ago approximately -- in fact, we had asked for pounds limitations instead of concentrations because the refinery had some limited capabilities to control the pounds. They can cut back the flow rate for a while and build water and equalization and they don't have the ability to control concentration under upset conditions.

That concept was not supported by the Agency. We ended up basically with the limits that are in the adjusted standard today. So, frankly, we just have focused -- I focused on the concentration basis as being what is deemed appropriate in Illinois and more than the BAT limits. That was really done by Mr. Stein.

MR. O'BRIEN: Okay. Thank you. Page five of your testimony you compared the incremental cost unit of achieving compliance with the ammonia multiplication with the unit cost for the Calumet River Reclamation Plant.

Wouldn't the unit cost of the -- I'm going to strike that.

DR. FLEMAL: There are a number of things, Mr. Huff, regarding the environmental impact that might be useful to put on the record in the hearing here as well as within your report.

What is the classification of the waterway to which the discharge occurs?

MR. HUFF: Secondary contact water.

DR. FLEMAL: And -- but that water eventually as it moves downstream enters waterways that are general use waterways; is that correct?

MR. HUFF: That's correct, on the Des Plaines River at the I-55 bridge.

DR. FLEMAL: And how many miles downstream is that?

MR. HUFF: I don't know off the top of my head. It's approximately ten though.

DR. FLEMAL: Okay. And in between there, is there any change in the volume discharge related to --

MR. HUFF: Well, at the Lockport lock and damn where the ship canal basically ends, which is approximately five miles downstream and that merges with the Des Plaines River, yes, there's a significant change there.

DR. FLEMAL: Because there you're adding the

canal water to the Des Plaines River water?

MR. HUFF: That's correct.

DR. FLEMAL: You make the observation, and for purposes of the record here, I'll note that in your prepared testimony it occurs on page eight, that the water that's used at the refinery is withdrawn from the ship canal. It is true that all of the water used in the processing is from that one source; is that correct?

MR. HUFF: Other than drinking water. So substantially all of it, yes.

DR. FLEMAL: So in some sense the water experiences a cycling from the canal through the plant operations and then back in the canal?

MR. HUFF: With some loss for evaporation, that's correct.

DR. FLEMAL: And the water that's the intake water itself has a significant ammonia contribution?

MR. HUFF: Yes, it does.

DR. FLEMAL: Can you characterize that in terms of concentration or load -- weight load for the record here?

MR. HUFF: I can do both. On Figure 1 on Exhibit 4 it shows the annual average influent ammonia concentrations with time, and there's been a dramatic

improvement in the ship canal over -- from 1985, '87 it was 0.3 milligrams per liter. In 1996, it was down to 1.28 milligrams per liter.

On a pounds basis, I believe we compare on Figure 3 also attached to Exhibit 8 the average influent and effluent ammonia levels on a pounds basis and the solid lines are the influent. We pull in approximately somewhere in the order of 50 pounds per day out of the canal.

DR. FLEMAL: You didn't make an additional -- on page eight the statement that the net ammonia contribution from the refinery, and I won't read in all the numbers, but ending with the statement that at present, at any rate, or since 1996 the refinery has removed an average of 13 pounds more of ammonia than it has discharged back to the canal. I guess I would ask you simply to elaborate on how those numbers derive.

MR. HUFF: Well, the refinery measures the intake ammonia concentration on, I believe, an almost daily basis. They also meter how much water is withdrawn. So if you know the concentration and how much is withdrawn, you can compute the mass. That's how the influent and the effluent is the exact same way. They know how much they're discharging and they know the

concentration and they compute the mass.

So what we did was look at the monthly average values and compared those and then computed it on an annual basis, and since 1996 through the first three-quarters of '97, they had extracted from the canal 13 pounds per day more than what they had discharged over that same period of time.

DR. FLEMAL: So in some sense, the presence of the refinery at that spot decreases the total loading within the canal?

MR. HUFF: Yes.

DR. FLEMAL: Have you attempted to do an analysis of what the effect of the refinery's discharges are on the in-stream concentration as you go down the secondary-use waterway at the Des Plaines and finally into the primary?

MR. HUFF: We did in the previous report that was done approximately five years ago. We modeled both -- we modeled the effect of the incremental ammonia loading on the dissolved oxygen all the way down the Illinois River, and basically it was found negligible at that point in time that we didn't go through that exercise, sir.

DR. FLEMAL: Okay. You just used the term

dissolved oxygen. Did you mean ammonia or --

MR. HUFF: Dissolved oxygen. Go back to ammonia. Why did we look at ammonia, and the answer is that there are no ammonia water quality violations downstream of the refinery looking at the last couple of years of data, not only on the secondary contact waters, but then under the recent R 94-1B ammonia water quality changes there are no ammonia water quality violations along the Illinois River.

If I could just kind of elaborate, the Illinois River and the Chicago River system are unique in Illinois. When the Board originally promulgated these, it's the only waterway that they put effluent limits on for ammonia, and the reasons that the Board did that was because of the very low dissolved oxygen and elevated ammonia nitrogen that occurred in those waterways.

Those two conditions no longer exist. We're getting successful ammonia removal in the ship canal today which we weren't getting 20 years ago due to the low dissolved oxygen. So I think if the Board were to go back today and say why do we have the three and six milligram per liter ammonia monthly average and daily maximum limits on this waterway, the reasons that they put that on there no longer exist today. I think this is kind of an anomaly

on the record today, if you will.

DR. FLEMAL: In your mind, it is -- it would be a fair statement to say then that the impact of the ammonia discharges at the refinery on the ammonia in downstream areas, be that measured as concentration or as mass, is negligible?

MR. HUFF: Yes. It's not causing -- there's no water quality violations, and just to expand a little more, if we didn't have the three and six milligram per liter effluent limits, then the appropriate question would be what would be the appropriate effluents limits that the Agency would write in an NPDES permit today, and I believe the answer is it's exactly what we're asking for here is what the Agency would write as a permit today if that unique regulation didn't exist in the Board's rules.

THE HEARING OFFICER: Mr. Huff, I just want to bring your attention back to an earlier question that was asked the first witness.

One of the requirements of the proposed site specific relief is to monitor the nitrogen concentration entering at the feedstocks. Do you recall that?

MR. HUFF: Yes.

THE HEARING OFFICER: And the first witness had

suggested you might be better able to talk about that particular issue.

I guess the question would be does the chemical makeup of feedstock or the crude oil in feedstock being crude oil have a significant affect on the effluent ammonia concentration?

MR. HUFF: I think I would answer that by referencing Exhibit No. 5, our full report, and comparing Figure 2.4, which is the percent nitrogen in crude oil which has really gone up. It's gone up threefold since 1974, 1975 up to the current period of time, and then comparing that to Figure 3.1, which was the annual average effluent ammonia limitations, which has shown that we've gone from 22 milligrams per liter back in 1985, '86 and the effluent in that period down to under three milligrams per liter on an annual average basis for the last three years.

So I don't think there's a very strong correlation. There certainly isn't a strong correlation between effluent ammonia levels and the nitrogen level in the crude.

Perhaps, a follow-up question to that would be well, is there a correlation between the amount of nitrogen in the crude and influent ammonia levels, and the answer to

that is maybe there is. It's more complex than that because you've got two sour water strippers that are major ammonia removal units. You also have some organic nitrogen that actually is converted to ammonia nitrogen in the wastewater treatment facility. So that's a really complex question to answer, I think, statistically.

So I guess the short answer is I don't see any real strong correlation between those, and is it worthwhile to continue to report that type of information, not to my mind. Perhaps, that's a question for the Agency, are they looking at that data and doing anything with it, but I don't see where that's providing anything useful.

THE HEARING OFFICER: And you don't think the makeup of the crude oil has a significant impact on the effluent concentration?

MR. HUFF: Oh, no, and, in fact, I think if you compare Figure 2.4 to 3.1, you can conclude that same way.

THE HEARING OFFICER: I have no further questions. Are there any questions for Mr. Huff?

MR. GUNNARSON: Nothing from the Agency.

FURTHER EXAMINATION

by Mr. Fort

Q. I'm going to ask him -- Mr. Huff one further

question along the lines of Board Member Flemal about the level of ammonia nitrogen in the -- on average, an annual average, in the discharge and the level of dissolved oxygen and that same discharge in terms of the relative impact on the stream looking at the entire discharge component of ammonia nitrogen and dissolved oxygen.

Can you comment on that relationship?

A. I think so. I think I understand your question. If you look at Table 1 in Exhibit 4 on the annual average ammonia level 1996, '97, they discharged approximately one milligram per liter of ammonia. To fully nitrify, that will consume about four and a half parts per million of dissolved oxygen.

The refinery's wastewater effluent contains probably on average about eight milligrams per liter of oxygen. So I think the answer to your question is there's more than enough oxygen present in the discharge to compensate for any oxygen demand for the ammonia.

MR. FORT: Thank you.

THE HEARING OFFICER: Any further questions?

You can step down.

MR. FORT: We have nothing further.

THE HEARING OFFICER: I want to go off the record for just a second, if I may. Can we go off?

(Discussion had
off the record.)

THE HEARING OFFICER: We can go back on.

Are there any further witnesses today? Okay. Seeing none, the only issue so far as we can tell is the matter of the Sunset provision that the Agency had noticed in their prefiled testimony and talked about in its opening statement today.

I wanted to ask you what is your position on the Sunset provision?

MR. FORT: Well, we just received the Agency's position -- statement position. We have it under consideration. We would like to hear if there's anybody else that has ideas before we go any further.

I did talk to Mr. Gunnarson yesterday about the possibility of, you know, letting the record develop and then maybe sitting down to see if we could come to a consensus on this. So I guess right now it's too early for us to take a formal position on it.

DR. FLEMAL: The Board, of course, is quite interested in having your perspectives entered into the record whenever you feel that it's developed and important that you want to share with us.

MR. FORT: And we will be glad to do that.

THE HEARING OFFICER: And to that point, I want to talk about -- and we should go off the record again.

(Discussion had
off the record.)

THE HEARING OFFICER: Okay. After a discussion off the record, we have decided that April 6th, 1998, will be the deadline for comments after this hearing. So all comments must be submitted by April 6th, 1998.

Which brings us pretty much to the end of the hearing. I note that there are -- aside from the one member of the public that we saw walk in, no other members of the public have attended this hearing.

Are there any other comments at this point that anyone would like to make on the record? Seeing none, I'm going to close this hearing. Thank you very much for coming here, and we appreciate your time. This hearing is closed.

(Which were all the proceedings
had in the above-entitled
matter.)

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

I, GEANNA M. PIGNONE-IAQUINTA, 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.

Geanna M. Pignone-Iaquinta
Notary Public, Cook County, IL
Illinois License No. 084-004096

SUBSCRIBED AND SWORN TO
before me this ____ day
of _____, A.D., 1998.

Notary Public