NEW MEXICO OIL CONSERVATION COMMISSION

COMMISSION HEARING

SANTA FE, NEW MEXICO

Hearing Date JUNE 12, 1991 Time: 9:00 A.M.

NAME	REPRESENTING	LOCATION
JOHN KULSETH HINKLE LAW FIRM	SANTA FE ENERGY OPERATING PARTNERS	SANTA FE
William F. Carr	Campbell + Black P.A.	Santa Fe
[illegible] Kellahin	Kellahin Kellahin Aubrey	Santa Fe
[illegible]	Byram	Santa Fe
John Dean	Curtis + Dean	Farmington NM

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STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

IN THE MATTER OF: THE HEARING CALLED BY THE OIL CONSERVATION COMMISSION TO CONSIDER: APPLICATION OF SUNCO TRUCKING WATER DISPOSAL FOR A PERMIT TO CONSTRUCT AND OPERATE A COMMERCIAL WASTEWATER EVAPORATION POND, SAN JUAN COUNTY, NEW MEXICO.	)	CASE NO. 9955

REPORTER'S TRANSCRIPT OF PROCEEDINGS

COMMISSION HEARING

BEFORE: WILLIAM J. LeMAY, Chairman
WILLIAM WEISS, Commissioner
JAMI BAILEY, Commissioner

June 12, 1991
9:08 a.m.
Santa Fe, New Mexico

This matter came on for hearing before the Oil Conservation Commission on June 12, 1991, at 9:08 a.m. at Morgan Hall, State Land Office Building, 310 Old Santa Fe Trail, Santa Fe, New Mexico, before Susan G. Ptacek, a Certified Court Reporter No. 124, State of New Mexico.

FOR: OIL CONSERVATION DIVISION

BY: SUSAN G. PTACEK
Certified Court Reporter
CCR No. 124

I N D E X

June 12, 1991
Commissioner Hearing
Case No. 9955

E X H I B I T S

A P P E A R A N C E S

FOR THE DIVISION:	ROBERT G. STOVALL, ESQ. General Counsel Oil Conservation Division State Land Office Building Santa Fe, New Mexico 87504
FOR THE SUNCO TRUCKING WATER DISPOSAL	JOHN A. DEAN, ESQ. Attorneys at Law Post Office Box 1259 Farmington, New Mexico 87401
FOR THE PROTESTERS HAROLD & DORIS HORNER:	GARY L. HORNER, ESQ. Attorney at Law Post Office Box 2497 Farmington, New Mexico 87401

* * *

COMMISSIONER LEMAY: I will call Case No. 9955.

MR. STOVALL: I will ask the chairman to call this case as the division is going to have an appearance in it.

COMMISSIONER LEMAY: Case 9955, the application of Sunco Trucking Water Disposal for a permit to construct and operate a commercial wastewater evaporation pond, San Juan County, New Mexico.

Appearances in Case No. 9955.

MR. STOVALL: Robert G. Stovall, appearing on behalf of the division, and I will explain the division's role in this case in a moment in an opening statement. I have one witness to be sworn.

COMMISSIONER LEMAY: Additional appearances.

MR. DEAN: I'm John Dean. I represent the applicant, Sunco Trucking, and I have one witness to be sworn.

COMMISSIONER LEMAY: Additional appearances.

MR. HORNER: Gary Horner representing the protesters Harold and Doris Horner. I will be calling a witness that will be previously sworn.

COMMISSIONER LEMAY: Thank you. Will those witnesses that will be giving testimony please stand and raise your right hand?

MR. DEAN: My witness is using the phone, Mr. Chairman. He must have stepped out.

COMMISSIONER LEMAY: Those that are here will they

stand and raise their right hands?

(Whereupon the witnesses were duly sworn.)

COMMISSIONER LEMAY: If you will remind me that when we get to your witnesses that they have not been sworn in, I will do so at that time.

MR. DEAN: I will. Thank you.

MR. STOVALL: Mr. Stovall, did you want to explain the position of the division in this matter?

MR. STOVALL: I will. I didn't notice the podium was missing. I'm going slip that in real quick because it does make it easier.

COMMISSIONER LEMAY: Mr. Stovall.

MR. STOVALL: Mr. Chairman, Commissioners, what you have before you today is a unique case, and therefore it's requiring a unique presentation. Because the application is one with which you have not dealt with before and, in fact, it's not been dealt with by the division in this manner before, the division is, first, going to make a presentation which is intended to explain the framework of the application before you.

The division in this case is not a proponent or opponent for either side in the hearing, but the purpose here is to attempt to explain how we got to this point.

We have not done so at this time, but I believe

the parties have agreed, and with their concurrence, I will move the admission of the examiner record into the commission record.

MR. DEAN: I have no objection.

MR. HORNER: No objection.

COMMISSIONER LEMAY: Without objection then the commission record will become part of the record of the -- the division record will become part of the record of this commission hearing.

MR. STOVALL: I believe as all the commissioners are aware, that is a rather extensive record. The hearing before the examiner lasted three days and generated three transcript volumes of testimony. The reason for incorporating that record is to avoid having that same thing happen here.

Counsel for the parties and myself held a telephone conference last week, and we discussed the procedure which we're following today. The parties are truly going to rely on the examiner record, and supplement that record only where they feel necessary. So before the commission enters a decision familiarity with that record I think will be very useful.

At issue here is a permit for commercial surface disposal facilities to dispose of produced salt water from oil and gas operations in San Juan County, New Mexico -- in

San Juan Basin, New Mexico. The facility is located in San Juan County on a mesa outside of Farmington, Bloomfield area.

Sunco Trucking Water Disposal Company, the applicant in this case -- normally these types of applications are reviewed by the division through an administrative process, a give-and-take, an exchange of information which results either in the denial or the issuance of a permit administratively. However, in this specific case Harold and Doris Horner protested the application and requested a hearing, and the matter was set for hearing before a division examiner.

At that hearing the applicant presented evidence in support of the application. That evidence included engineering designs, operational criteria, all designed to address the various factors that must be considered in the approval or denial of the application.

The Horners, as interveners or protesters, actually presented no direct evidence in opposition but their attorney did cross-examine the witnesses, challenged through cross-examination some of the -- some of the points, but there was actually no direct evidence submitted.

At that hearing the division environmental staff presented some testimony, most of which was really based

upon an evaluation of the testimony previously submitted, was intended as a guide to the examiner.

Based upon the evidence, the order permitting the facility subject to certain conditions was approved. I have distributed a copy of that order. You have that, and we will be using it today in testimony to explain how that order was derived and what the significance of it is. How it works as a framework for this hearing. Procedures and review requirements were incorporated into that order to ensure compliance with the order and the permit conditions as set forth in that order.

Today the division is going to present one witness, who is going to go through and explain those permit conditions and requirements as approved by the division. You do have before you the record upon which those conditions and requirements were based. And the division's explanation here, the purpose of the witness, is to, as I say, explain those conditions and what they mean, the significance of them, the framework of them. I think that's essential to understand this case.

What is happening here; what you've got to do with the application of this sort is this is kind of a two-phased approval process. One is to determine that in fact the application is approvable. That is, what conditions must be satisfied for the application can be

approved if certain conditions can be satisfied. Primarily the things you are going to be concerned with are the protection of freshwater, and the major practical concern is the prevention of the generation of hydrogen sulfide gas, which, of course, is a dangerous substance, has the potential to cause illness and even death.

As I say, from a practical standpoint, those are the two major considerations that you have to look at, is can conditions be established which satisfy the requirement to protect freshwater and prevent the creation of H2S or other hazardous substances at the facility. Then the second part of it is, can the applicant satisfy and what does the applicant have to do to satisfy those conditions?

After the division has presented its testimony and outlined the nature of the permit, the structure of the permit, which was designed to accomplish the results I've just stated must be satisfied, the applicant will have the opportunity to supplement its testimony from the examiner hearing or whatever additional testimony it feels is relevant and useful.

Now, the applicant has the burden in this case to satisfy the commission that the permit can properly be approved, and under what conditions, and the applicant can satisfy those conditions to operate the facility.

Now, at the examiner hearing the applicant

carried that burden with the evidence which is before the record -- is in the record before you and the order was issued. In this case before you, again, the interveners have the opportunity to present evidence to show that either the criteria for approval are not correct, or the applicant cannot satisfy the criteria in the operation of the facility.

Now, as I stated, at the examiner hearing the interveners presented no direct scientific evidence, but they raised some very important questions, and those questions were exceptionally helpful in helping develop the approval criteria. We think the order that came out of the examiner hearing is better because of the questions that were raised by the interveners in this case. Again, that's all in the record.

Now, today what you must do as a commission is make your own independent determination as to whether the permit should be granted and on what conditions.

I'm first going to call Mr. Roger Anderson, whose testimony is intended to help you establish the framework, to help you decide what must be satisfied in order for that permit to be issued.

COMMISSIONER LEMAY: Excuse me, Mr. Stovall. Were there going to be opening statements by the other attorneys? Did we agree to that or --

MR. STOVALL: Now, that I can't tell you. I will have to ask them.

COMMISSIONER LEMAY: You are welcomed to give opening statements if they wish to.

MR. DEAN: I don't need to at this time.

COMMISSIONER LEMAY: Mr. Horner?

MR. HORNER: Mr. Chairman, has the commission seen my prehearing statements in this matter? If not, I would like to give a brief position or statement.

COMMISSIONER LEMAY: We would appreciate that. I have not seen it.

MR. STOVALL: Would you like to do that now, or would you like to do it at the start of your case?

MR. HORNER: I will do it right now.

COMMISSIONER LEMAY: Do you have copies for us of that, Mr. Horner?

MR. STOVALL: We do have copies, Mr. Chairman. We can get those for you at the first break. I will make sure you get copies, if they're not in the file.

MR. HORNER: Interveners are first taking the position that this permit should be denied. The interveners' property, the protesters' property, is right next to the site where this facility will be set up. And more than that, the facility is located on Crouch Mesa, which is centrally located between Farmington, Aztec and Bloomfield.

It's within five miles of all those different municipalities, and there is a lot of people residing in this area.

Now, the applicant can show that within half a mile there are no residents, and the current regulations require notification and consideration of people within half a mile. But the protesters rely in large part on the findings of the district court in the Basin case, which was a similar facility that was set just north of Bloomfield that caused the emission of hydrogen sulfide levels up to and exceeding 300 parts per million, which is enough to kill people.

The plaintiffs in that case brought an action against the Basin for personal injuries and injuries to property and that sort of thing, and the court found that their claims were founded and ruled in favor of the plaintiffs to the tune of about a million dollars.

So it's well established that -- and protesters introduced at these hearings, the finding from the Basin case and the judgment and this sort of thing -- that these facilities can be extremely dangerous.

Now, then, applicant will try to show you that their facility won't cause these problems, but the engineering drawings that have been submitted so far and have been reviewed by the OCD are totally inadequate. For

instance, their aeration system, the drawings that have been submitted by the applicant so far require the use of a one-third horse power motor. We have testimony at the previous hearing it will take at least two 96-horse power motors to drive two separate aeration systems to get close to what they need in order to keep the ponds aerobic and prevent the emission of hydrogen sulfide.

What's being talked about here is three ponds, 20 million gallons each. The Basin pond was one pond with 4 million gallons. And the Basin court found that they couldn't operate that facility with water in excess of three-feet deep. Here they're looking at 18 to 20 feet deep of water. The Basin court found that sludge was a significant problem in the formation of the anaerobic conditions that caused the creation of the hydrogen sulfide.

The applicant here still refuses to acknowledge they're going to have a sludge problem, although they're putting in the same thing into this facility that they put in the Basin facility, and they have made no provisions whatsoever for removal or disposal or -- of this sludge or even what the nature of that sludge might be.

In addition, the applicant has not submitted at this point any engineering drawings to show how they are going to actually meet the criteria that is being set forth

in this order. It appears to the protesters that the criteria that is set forth in this order may be reasonable criteria, but should be something that is set out in regulations that should cover the whole industry.

What they've got is regulations that should be used -- or criteria that is set forth, but there is no showing at this point that the applicants can meet that criteria. Which to my way of thinking is what the permit process is all about. You've got to set a criteria, the applicant comes forward with his drawings, his engineering set up to show that they can meet the criteria. That's showing has not been made.

The order sets forth that these engineering drawings must be submitted and approved before construction. Protester is not going to be involved in the process at that point, and will not have an opportunity to review those drawings. It appears to the protester that the position taken by the OCD in not promulgating rules that apply across the board to all these different facilities and is letting all the other facilities go ahead and create these problems out there, create hydrogen sulfide with no regulations.

So it appears to the protesters that the OCD does really not have the desire to straighten out the problem industrywide.

MR. STOVALL: I object

COMMISSIONER LEMAY: Mr. Stovall, I think this is opening comments --

MR. STOVALL: He is making a statement as to the OCD's intent and desire, Mr. Chairman. I don't think that's appropriate in any way.

COMMISSIONER LEMAY: This is opening statement.

MR. HORNER: This is protesters' position and they can produce evidence or whatever to counter that. But this is the protesters' position that the OCD does not have a significant, or is not showing a significant interest in eliminating hydrogen sulfide emission problems from these facilities. And in that regard it looks like they may not really have a sincere interest in eliminating hydrogen sulfide emissions from this facility.

MR. STOVALL: Again, I'm going to make an objection for the record, Mr. chairman.

COMMISSIONER LEMAY: So noted, Mr. Stovall.

MR. HORNER: For instance, in the administrative process with regard to this facility, in the course of information going back and forth between the applicant and the OCD, the OCD stated to the applicant that they were going to be required in the event of a leak in the pond to lower the level of the pond below the level of the leak within, I think it was, a week in order that the leak could

be repaired, and then operations started up again. And this would entail transporting fluid from the pond to another facility.

Now, the applicant came back and said, "We can't practically do that." So in the process the OCD backed off and said, "Okay, we're not going to require you to transport the fluid out of the facility. So what we're going to ask you to do is just not take anymore fluid until the evaporation lowers the level of the pond below the level of the leak."

Well, in the hearing it was discussed, well, how long is this going to take? And it could take as much as nine months or more to get the level of the pond below the level of the leak and the primary liner, and all this time the applicant intends not to take any action whatsoever except to let the water evaporate.

So the OCD is -- appears to the protester -- backs off when they come against the applicant and some sort of a problem. It appears to the protester that the OCD's interest is to facilitate the industry and to get these facilities going out there in the state someplace, for a place to put the water, and to disregard the problems and the affects upon the surrounding population, the environment and this sort of thing.

I just would like to show the commission that

Section 70-2-1222 NMSA 1978 -- 1989 Supplement does set forth that the -- that the purpose -- one of the purposes of the Oil Conservation Division is to protect the public health and environment. When you look at the function of any regulatory agency, including the OCD, they are established for one purpose, and that's to protect the interest of others, and the interest of the public.

You have industries that go about their business and may be encroaching on rights or -- in this case health of others, and that is the function of the regulatory agency, to protect those others who do not have sufficient resources to stand up against the businesses involved, to protect themselves.

In that regard I think the primary function of the OCD should be the consideration of the surrounding residents, the surrounding environment and that sort of stuff. We do have a problem in that the OCD refuses to acknowledge the EIB Air Quality Control Regulation 201 that sets forth that the maximum hydrogen sulfide emission from such a facility should be .01 parts per million.

The OCD continues to refuse to utilize that standard. The Basin case -- the Basin court found that that standard should definitely be imposed on the Basin facility.

The EIB or the EID apparently doesn't have

sufficient resources to regulate these facilities themselves. As I understand it, the EID does not even regulate wastewater treatment facilities or sewage disposal facilities for municipalities that also can create significant hydrogen sulfide problems if not properly treated.

Hopefully most of them are properly treated to the point where they don't emit the hydrogen sulfide, but their regulations require the permitting of such facilities where there is a potential if untreated or the emission of these different hazardous emissions. So the EID is taking the position in this particular instance that they are not involved, which leaves the entire burden then on the OCD through their permitting process of these facilities to protect the public with regard to these types of emissions.

And it appears to protesters that the OCD, if they were sincere in trying to protect the interest of the public in this case, would take the criteria that they have established in their order, make rules out of them that govern the entire industry. And in this particular case would require that a permit not be issued, and this particular order does issue a permit for this facility, but would not let a permit be issued with regard to this facility until they have seen the engineering drawings and approved the engineering drawings that establish concretely

that the applicant can actually meet the criteria that's being set forth. That's not -- that is not what is happening here, and the protesters are taking the position that this particular application should be denied.

COMMISSIONER LEMAY: Thank you, Mr. Horner.

Mr. Stovall, you may proceed.

MR. STOVALL: Call Roger Anderson.

ROGER ANDERSON,

the Witness herein, having been first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. STOVALL:

Q. Would you please state your name and place of residence?

A. Roger Anderson. Place of residence, Santa Fe, New Mexico.

Q. How are you employed, Mr. Anderson?

A. I'm employed as an environmental engineer through the Oil Conservation Division.

Q. Specifically, would you just give -- very briefly describe your duties in that position?

A. Basically my duties are to review and evaluate and recommend either approval or denial of permits, discharge plans for gas plants, refineries, permits for surface disposal -- commercial surface disposal facilities.

Q. That would include permits such as the type that is at issue here; is that correct?

A. Yes.

Q. Are you familiar with the application in this case?

A. Yes, I am.

MR. STOVALL: I would offer Mr. Anderson as an expert in environmental engineering.

COMMISSIONER LEMAY: His qualifications are acceptable.

Q. (By Mr. Stovall) Mr. Anderson, let's just go back and -- as I told the commission at the start, we are here just to lay the framework so they can understand how to evaluate this case.

Would you please explain what the authority is for the commission to hear this case?

A. This case was -- the application was submitted pursuant to Rule 711 of the Oil Conservation Division rules and regulations, which is authorized by the Oil and Gas Act.

Q. What does 711 address just generally?

A. Rule 711 is the surface -- commercial surface disposal facilities.

Q. What is the purpose or need for such a disposal facility?

A. There is a definite need for a financially viable, environmentally proper method of disposal of produced water and other oil field exempted wastes in the oil field so they are not illegally dumped because there is no place to put them.

Q. You're talking about water produced from oil and gas operations; is that correct?

A. Yes, sir.

Q. And Mr. Horner raised the context of the Oil and Gas Act and the protection of public health and environment. Generally speaking are such facilities in compliance -- assuming they meet all conditions, does that satisfy that requirement?

A. If they meet all the conditions that we put on there, yes, they would be environmentally sound.

Q. Do you have a feeling as to whether or not it is better to have such facilities go through a permitting process and evaluation rather than to just in effect prohibit the presence of such facilities?

A. Oh, definitely, yes. There is very few -- there are very few alternatives to the disposal of the massive quantities of produced water, and to have them to go through a permitting process is much more acceptable than having water just dumped down an arroyo into a river.

Q. By bringing them under the division, the

jurisdiction of the division, are you able to monitor and ensure operations in a safe manner?

A. Yes. After a permit is issued and the facility is constructed pursuant to the terms and conditions of the permit, then we can continuously monitor those facilities; and if problems arrive or if regulations change, we can change the terms and conditions of their permit.

Q. Mr. Horner talked briefly in his opening statement about the location of this facility as being within the tri-city area of Juan San County.

Does the commission have any jurisdiction to consider whether a site is appropriate from a land use standpoint, considering neighboring uses?

A. No, we -- the commission by statute has no land use authority, no zoning authority. That's left up to the local governments.

Q. So in other words, in making the decision, the commission can't deny an application simply because it's in an area which is unzoned --

A. No.

Q. -- based on surrounding uses?

Would you just, again, for background for the commission, please, describe the historical process by which the application for surface disposal facilities have been handled under Rule 711?

A. Rule 711 has the -- most permits that are applied for under Rule 711 go through an administrative process, which means it comes to the environmental bureau -- the permit application comes to the environmental bureau. Our bureau goes through the administrative process of evaluating and reviewing that application for technical accuracy and completeness.

And we have a method where we communicate back and forth through letters to the applicant and advise him of things that are in the application that we do not agree with, or items that are omitted from the application that are needed in the application. We will write a letter to the applicant, informing him of our review, what we find deficient in the application. They will return to us a letter either complying with our requirements or asking -- or explaining why those requirements do not fit this certain facility. And we can go back and forth with three, four, five times with letters like this until we get what we consider a facility that will meet the terms and conditions that we can put on the facility.

Q. Again, the objective is to ensure that it can be reasonably safely operated and prevent --

A. Yes.

Q. Was this application handled differently from the usual?

A. Initially it was handled the same -- through the same procedure. When we do get an application, as soon as we get the application, we issue public notice. The rules also require that the applicant notify all landowners within a half a mile of their intentions. And this application after the public notice and after the landowners were notified, there was a protest that came in, and we took about a month to figure out -- since it never happened before, figure out how we wanted to handle it. We decided to go ahead and continue the administrative process of reviewing the application and come to an application -- come to a permit that was approvable.

Q. Let me interrupt you for a moment. Is that how this particular application was handled or did you --

A. It went through another round of questions and answers before we decided to terminate the administrative process and go ahead and set it for hearing. I think after the protest came in, we went through another round of administrative questions and answers, and then we terminated the administrative process and went for an examiner hearing. Set it for an examiner hearing shortly thereafter.

Q. Let me just ask you one question. How was the half mile notice -- is that in the rule itself?

A. That is in the rule itself.

Q. Has anybody ever filed an application to change that or indicated that a half mile is not an appropriate radius?

A. Not that I'm aware of.

Q. Now, you indicated that essentially after one round of administrative processing that the processing ceased, then the case went to hearing; is that correct?

A. That's correct.

Q. And the result of that was a three-day hearing which I previously discussed and the record of which has been incorporated in this proceeding?

A. That's correct.

Q. Would you, again, primarily for informational background purposes, explain to the commission what, if anything, we have learned as a result of that hearing process in terms of handling applications of this nature?

A. Because of the length that the hearing took, we have determined that the -- our bureau will go through the complete administrative process, whether there is a protest or not. And if there is a protest by an individual on an application, we will continue with the administrative process until we reach a decision as to whether the permit application is approvable or deniable -- or should be denied.

At that time we will set the application -- or

set it for hearing before an examiner, at which time if it's approvable, the protestants can come into the hearing, or if it's denied, the applicant can also come to the hearing.

Q. Would it be the division's intent to include any interveners or protesters in the correspondence involved in that administrative review process?

A. Certainly. As soon as we get -- it has been determined as soon as we get a protest, that protester -- the protestant and his attorney will be included in the evaluation of the permits and all subsequent submittals from the applicant.

Q. In other words, they participate in the protest -- or excuse me -- in the review process?

A. They will become part of the review process.

Q. In this case is it fair to say that what really happened was that the examiner hearing served as the review and approval process?

A. That's correct.

Q. So much of what you would normally do at an administrative setting was done in the examiner hearing setting?

A. That's correct.

Q. And thus the length of the hearing?

A. That's correct.

Q. Are you familiar with the examiner order which was entered in this case?

A. Yes, I am.

Q. Now, this order did approve a permit for this facility, did it not?

A. Yes, it did.

Q. Would you just go over in general the format for the permit as it's set forth in the order. How do the mechanics of it work?

A. The order goes through -- it starts off with findings that are intended -- that back up the actual order. The order sets down certain terms and conditions that must be met for the permit to be valid. That the applicant, or the permit holder, must meet these generalized terms and conditions.

This order also included an exhibit which set forth certain specific terms and conditions, some of them relating to the generalized ones in the order, and some of them new specific terms and -- different specific terms and conditions for the permit holder to meet.

Q. In other words, as you look at this, you've got to read the declaratory paragraph of the order, and Exhibit A to the order in order to understand what must be satisfied for this facility to operate; is that correct?

A. That is correct. There are a number of

different types of conditions in the exhibit. Some of them are construction conditions. Some of them are operational conditions.

Q. Let's go through Exhibit A and discuss the various initial conditions and identify what is required in order to operate this facility.

A. The basic engineering or the construction conditions are located in section number 7, which is the engineering design. That sets out specific construction requirements that the permit holder must accomplish prior to starting operation.

Q. Let me stop you right there, and Mr. Horner in his opening statement indicated that there were no design -- no engineering plans submitted.

Would you go to paragraph A of Roman numeral VII and discuss that, please?

A. Yes, sir. Rather than put -- make the order overly cumbersome we -- the examiner accepted the exhibits that were presented by the applicant and referenced them by exhibit number in our order. Section A says that this facility shall be constructed in accordance with the engineering designs presented at the hearing as Applicant's Exhibits Nos. 1, 2, 2A, 2B, 3, 4 and 6. And those are the exhibits that detail the construction of the ponds and of the related equipment at the facility.

Q. Then as you look at those and you look at the order and see that -- again, you read it all together to understand?

A. That's correct.

Q. Those exhibits are part of the -- they are specifically identified exhibits which are part of the record which is now before the commission?

A. That is correct.

Q. Let me ask you one thing before we go any further in this. What are the objectives of these permit requirements as set forth in the order, in Exhibit A to the order?

A. Objectives --

Q. I'm sorry. The division order established these conditions. Were there specific reasons for the conditions?

A. Oh, okay. Yes, I understand what you're asking. The reason -- the conditions in these -- in this order are designed to protect ground water from contamination and to prevent the generation of hydrogen sulfide gas.

Q. Are those the major concerns?

A. Those are the two major concerns at this time, yes.

Q. And just in your opinion, as an environmental engineer, do these conditions as set forth meet those

objectives in this specific situation?

A. In my opinion, the conditions we put on here meet those objectives, yes.

Q. How do they accomplish those objectives? Describe that in a broad --

A. Well, one objective at the time -- the objective to protect ground water, which will protect surface water, is that the facility is to be designed as a double-lined, double-synthetically lined disposal pond with leak detection between the two lines. If there was a leak in the primary lining, the secondary lining will contain it, and the leak detection will notify the operator and us that there is a leak in the primary liner.

The second objective to prevent the creation of hydrogen sulfide gas I feel is accomplished by the many redundant systems that are in it, such as the circulation system, the aeration system, the spray system. They are not necessarily linked together, but each one in itself can accomplish the goal that we want.

Q. If I understand what you're saying, it sounds to me like in the one case -- and you specifically refer to the exhibits under engineering design -- portions of this permit approve a specific design for the facility; is that correct?

A. That's correct.

Q. In other words, there were drawings that say it will be built this way, and we approve this particular design; is that correct?

A. That's correct.

Q. With respect to the H2S generation, and Mr. Horner is properly concerned about that, is there a specific design requirement in terms of aeration systems to prevent H2S?

A. No, sir, we did not have a -- we did not put a design requirement on it. We put an operational requirement on it, and this is that no H2S is generated. We have placed certain conditions and testing requirements to assure that there is no H2S generated. The primary testing and monitoring requirement -- requirement was the dissolved oxygen content in the water, in the pond, one foot off the bottom of the pond will remain at .5 parts per million. The generation of H2S, the synergy generation of H2S in the pond, is created by anaerobic conditions. If we keep the pond in an aerobic -- I better restate that. That doesn't sound right. If we keep the pond aerobic, then there can be no hydrogen sulfide generated.

There was also a further condition, operational condition, of the receipt of incoming loads. That if they did, in fact, carry some hydrogen sulfide, they would be treated in the truck, in a closed system, prior to being

disposed to eliminate all that hydrogen sulfide prior to being disposed of in the pond.

Q. Mr. Horner, again in his opening statement, referred to the Environmental Improvement Board regulations regarding air emissions, and correctly stated that the division did not adopt those regulations or place any requirements for an emission permit; is that correct?

A. That's correct.

Q. Why not?

A. Well, first of all, we are not authorized by statute to enforce the Environmental Improvement Board regulations. We can't enforce them. Second of all, it is my understanding that the air quality standard for hydrogen sulfide was -- well, not the air quality standard, but the for hydrogen sulfide generation are -- and permits are required for those facilities that are designed and are known to -- will generate hydrogen sulfide. The facility we permitted is designed to not generate hydrogen sulfide. Therefore, it is my understand that an EID permit -- or EIB permit is not required.

Q. In other words, if I hear what you're saying, you're saying that they are being told to operate this facility in a way which will not generate H2S gas?

A. That is correct.

Q. If any H2S gas is generated, they're going to be

required to do something about that?

A. There are many requirements; and if H2S is detected in the facility or in the pond, there are a number of requirements that they must fulfill. Those are in item number XII in the exhibit.

Q. Roman numeral XII on page 9 of Exhibit A; is that correct?

A. Yes.

Q. Now, let me turn first -- before we discuss that specifically, let me turn back to the order itself, and direct your attention specifically to paragraphs -- order paragraphs 11, 12 and 13. Would you explain the significance of those paragraphs, please?

A. Paragraph 11 is what I mentioned before, the requirements that they -- that the aeration system is designed to provide a .5 parts per million residual oxygen concentration in the pond.

Q. Let me interrupt you for just a moment on that question. In your opinion as an engineer, if that oxygenation level is maintained, that residual of dissolved oxygen level, is that sufficient to prevent the creation of H2S?

A. Yes, it is. The .5 parts per million was an arbitrary number, something above zero. Any aerobic conditions will prevent the generation of hydrogen sulfide

gas and anaerobic bacteria, and .5 parts per million is an attainable number. And a foot off the bottom of the pond, that means the dissolved oxygen level at the surface of the pond will be much higher.

Q. If I hear what you're saying, as long as there is any dissolved oxygen in the pond at all, H2S will not form?

A. That's correct. Any residual dissolved oxygen, yes, that's correct.

Q. And do I understand you correctly to say that .5 parts per million of dissolved oxygen in fact provides a buffer to allow for fluctuations in the oxygen level?

A. Yes, it will.

Q. Is it a sufficient buffer that if oxygen demand were increased, that you could go back in and oxygenate, increase the aeration quickly enough to prevent H2S?

A. In my opinion it is a sufficient buffer.

Q. Now, let me -- continuing on looking at the paragraph XII. You talked before about the redundant design in systems. I think you referred to the spray system as well. This order talks about that, does it not?

A. That's correct. There are actually three systems. There is also a circulating system that was not mentioned here, but the spray system and the oxygen system, the aeration system is used as a circulating system to

circulate the pond also.

It was decided that the systems will be required to stand on their own. In other words, the aeration system would be required to impart enough oxygen into the pond to create a .5 parts per million residual without having to have the spray system on.

Q. Let me back you up. Is the spray system ordinarily an oxygenation system, or does it have another purpose?

A. No, sir. The spray system is primarily for enhanced evaporation, to increase the evaporation of the water in the pond. But it also can -- it also does impart oxygen into the pond. But that will not be -- that will not be used as a design criteria for the aeration system. The use of the spray system will not enter into the design criteria for the spray system -- or the aeration system.

Q. Again, Mr. Horner in his opening statement referred to the question about design of the aeration system and the size of the motors required and the various aspects of the aeration. It raises, again correctly a point, there is no specific design approval for the aeration system under these permit conditions; is that correct?

A. That is correct.

Q. Why not?

A. The end result is what we were interested in was the .5 parts per million residual dissolved oxygen. We will not limit the applicant or the permit holder as to the size of the pipes that he wants to put in that line as long as his -- and they are required to have a registered professional engineer do this, submit the drawings. As long as their system can accomplish the end result, and also allow for expansion if need be.

That was number XIII that required the designing of the system to allow for expansion, which is large enough piping that if they ever were confronted -- after the initial startup, we find that .5 parts per million is not -- is not in the pond, then they can add a larger compressor.

Q. So in other words, what you're saying is the importance is that there be no conditions allowed which would permit the creation of H2S?

A. That is correct.

Q. And you don't care -- the division doesn't care what it takes to get there, but there is a measurable way to determine that the conditions are appropriate to prevent H2S?

A. That is correct.

Q. Again, if we go back to the Exhibit A, going through Roman numeral XII, talking about H2S, discuss again

those standards. There is a paragraph about pH, explain that.

A. In XII A 1 we required the daily test be conducted for the pH of the pond, and we require the pH to remain at 7 or above. There is an equilibrium of which the S double minus radical the HS minus radical and H2S itself is an equilibrium. If you fall below 7, or actually if you fall below about 6, 5 or 6, it's almost all hydrogen sulfide dissolved in the pond if there is any hydrogen sulfide in the pond.

Above 9 -- I believe it's 9 that it's all the S double minus radical that is dissolved in the pond with no H2S present. So the pH 7 was a middle point to keep -- to keep -- if there is hydrogen sulfide in there, it keeps an equilibrium between hydrogen sulfide as the HS minus radical and the S double minus radical.

Q. Does that become, say, redundant with the oxygenation requirement?

A. Yes, it does. The idea that the oxygen -- there is enough oxygen in the pond to create the formation of anaerobic bacterial, which prevents the formation of hydrogen sulfide gas. If there isn't any hydrogen sulfide gas, the pH really won't make that much of a difference.

Q. In other words, if the pH fell below 7 for any short period of time, provided there is sufficient oxygen,

you would not get the formation of H2S; is that correct?

A. That's correct.

Q. And if the oxygenation fell somewhere below .5 as the pH is up, that still prevents it?

A. It will keep -- keep it down -- it will keep the hydrogen sulfide down to a minimum. It will keep an equilibrium between hydrogen sulfide and its various radicals without -- as you lower the pH, it pushes the equilibrium over on to the hydrogen sulfide side.

But even if the dissolved oxygen goes down, as long as it does not go to zero or below -- I should say just zero. It can't go below. That there won't be any formation of hydrogen sulfide from anaerobic bacteria.

Q. Now merely keeping the pond in an -- in aerobic state --

A. Yes.

Q. -- keep the particle out of there, by maintaining sufficient oxygen is what's required to prevent H2S danger; is that correct?

A. No. Previously, as I have stated, there is also the requirement to remove any hydrogen sulfide from the fluids coming into the pond through chemical addition.

Q. You're talking about when the fluids are brought in from the field in a truck?

A. That is correct. They have to be tested in that

truck to determine if there is any H2S present, and if there is, they have to be chemically treated to eliminate the H2S.

Q. Is there any limit set on the H2S content that is brought into the facility?

A. Brought into the facility, no.

Q. I mean in the truck itself.

A. No. There is no limit on that. The limit is what can be in the fluid when it goes into the oil water separator and that's zero H2S.

Q. At the examiner hearing, if I remember, there was a suggestion that it should not even permit trucks in with H2S level -- should they have it above some number. I don't remember what the number was.

A. It was determined that even above the number -- I can't remember the number either, but even above that number, it can be chemically treated to eliminate the H2S and still be disposed of safely.

Q. In fact, if you -- the higher the H2S content of the water the more dangerous the water is; is that correct?

A. That's correct.

Q. If you reject it above a certain number, if they're not allowed to treat and dispose of it, what's the potential result?

A. Well, it would be disposed in any number of

manners, most of which are illegal, and very dangerous to the environment.

Q. In other words, the more dangerous the water the more you want it under control and being treated?

A. To where we can control and eliminate the hazards in that water.

Q. Now, back to the facility itself, the pond, the disposal pits, in addition to the specific sampling, testing requirements for the water and oxygenation, pH content, are there additional testing requirements that further seek to eliminate completely H2S?

A. They are required to have weekly water tests of the dissolved sulfides in the water, and this will determine if there is, in fact, hydrogen sulfide dissolved in the water. If there is, then they have to treat the water to remove that. Dissolved oxygen levels, as we said before, have to be tested at the one foot level from the bottom of the pond.

Q. How do you determine if there is -- I mean you have gone through all this, the water is clear, how do you determine if there is any H2S in the air at all?

A. That is under Item B, and they have to -- they are required to take certain periodic readings with a hand-held H2S meter around the berm of their facility. If they discover H2S at a tenth of a part per million, then

they have certain other conditions that they have to fulfill, such as increased measurements and notification to us and things such as that.

Q. And additional oxygenation and treatment measures?

A. Yes. If they discover hydrogen sulfide in the atmosphere, then they have to go ahead and increase oxygenation, check the oxygenation level of the pond. If need be, increase it and possibly treat the pond with chemicals through the circulation system.

Q. Was the .1 parts per million -- is there a reason for that number?

A. It was a number -- we used the NIOSH and OSHA working numbers and decreased those somewhat for a safety factor, and then -- went back to a number that seemed to be a convenient indication low enough that we could determine if there was a problem with the hydrogen sulfide, and yet without any health -- known health hazards.

And at these low .1 levels we determined that we had enough time to take action and eliminate the hydrogen sulfide problem in the pond. There is a level of 10 parts per million, which was half of the OSHA standard, that there are certain other requirements that are put on the facility, and those are in item 3, that they have to immediately notify the local authorities and assist them if

need be if evacuation becomes necessary from the facility.

We felt that between .1 part per million and 10 parts per million would give us enough working time to eliminate hydrogen sulfide.

Q. The .1 measurement is right at the edge of the pond; is that correct?

A. That's right. The .1 is at the edge of the pond.

Q. How far is the pond, say, from the edge of the property? Do you have an any idea?

A. I don't remember.

Q. But there is some distance?

A. There is some distance between the pond and the edge of the property, yes.

Q. If I remember correctly, there are some fencing requirements around the facility; is that correct?

A. That's correct.

Q. So if it were .1 at the pond, would it be less elsewhere, out away from the pond?

A. Theoretically through air modeling it would be much less through dispersion in the area, yes. It probably wouldn't even be measurable at the fence line.

Q. The standards that were adopted, do you have an opinion as to whether they were properly based upon the information which came out in this part of the record at

the examiner hearing?

A. Yes, it is.

Q. So these weren't just arbitrary standards that were taken out from nowhere? They were adopted as a result of the exchange of information, the testimony and cross-examination from the hearing; is that correct?

A. That is correct.

Q. I will -- again, I'm going to emphasize this. I think it's very important that the commission recognize that when we're talking about standards, the division is not advocating specifically the standard. As you have pointed out, the standards that are found in the order of the division, the examiner deemed to be appropriate standards based upon the record. Certainly the commission is free, based upon the record and any additional information, to adopt any such standards as it feels are appropriate to accomplish the results or determine whether the facility is permittable.

We kind of glossed over this, but Mr. Horner discussed the issue of water and leak detection and the time to remove water from the pond.

Let's go back and talk about the pond itself, the facility, in protecting ground and surface water. I think we addressed the fact that there are some specific designs which were submitted and were approved as part of

the permit subject to some modifications; is that correct?

A. That's correct.

Q. Those designs are set forth in the -- in the permit conditions under section 7 engineering design?

A. Yes, they are.

Q. I believe Mr. Horner stated for -- stated it for the wrong proposition, but I think he correctly stated that the initial requirement that the environmental bureau staff recommended was that if a leak is detected -- let me back up. First ask you, how are you going to determine if there is a leak in the primary liner in this system?

A. The design of the pond followed our -- the OCD guidelines for the construction of evaporation ponds. It is a double-lined pond and does have leak detection between the two liners. If there is a leak in the primary liner, that -- the fluid will go to laterals, will flow to laterals, between the two liners and consequently to a leak detection sump, which is outside the pond. If there are fluids detected in the sump, then there -- it's a good probability that there is a leak in the liner. There are other possibilities which are pretty remote, such as somebody left the cap off the leak detection and it rained in there.

But there is a good probability that there would be a leak in the liner, and it would be detected. They are

required to check the leak detection sump periodically to determine if there is any fluid. If they discover fluid in this, their first responsibility is to begin removing the fluid from the leak detection sump, which would remove the fluid between the two liners.

And we -- the division had -- or the bureau decided to -- that it would probably be a good idea to lower the level of the pond in -- the water level of the pond to below the leak within a seven-day period. It was further brought out -- it was brought out at the hearing and prior to the hearing that there is not the capacity in the San Juan Basin to be able to lower -- either the trucking capacity or the disposal capacity to hold the fluid removed from that pond, to lower this pond within a seven-day period. It didn't take long for us to figure that out, that was true, that the number of trucks up there -- there are not enough trucks to move that fluid.

Q. And not any place to take it?

A. And not anyplace to take it that fast.

Q. Let me ask you then. If that's the case, based upon the evidence submitted at the examiner hearing -- I assume that there was a reason for the seven-day requirement initially?

A. It's -- the reason was we wanted it emptied as quickly as possible so we could get the leak fixed as

quickly as possible. It was -- the seven-day period was an arbitrary number.

Q. If I hear what you're saying correctly, you're saying you want to keep that -- all that produced water in a contained permitted facility rather than having it to just taken off and dumped somewhere?

A. That's correct.

Q. What are the consequences of not removing the water within seven days? Does that present any hazard?

A. It doesn't present any hazards as long as the leak detection sump is -- well, even if the leak detection sump isn't emptied continuously, it doesn't present a hazard. It shouldn't present a hazard because the secondary liner is there to contain the fluid.

Q. Let me ask you about this liner. How is that going to contain the fluid?

A. These are synthetic liners with zero permeability. They -- it is a complete secondary liner underneath the primary liner, the same size. I think the only difference in criteria is what it is not ultraviolet-light resistant because it's completely covered by the primary liner. It is a 20 -- a minimum 20 mil liner. I believe they proposed a 30 mil liner. And it is totally impermeable.

This will contain the fluids that are in the

leak detection sump while we determine -- while they determine where the leak is and repair the leak. If there happened to be a possible leak in the secondary liner, the continuous emptying or pumping dry of the leak detection sump would remove the hydrostatic head from the pond, from the secondary liner, consequently no fluids could leak through the secondary liner.

The permeability in the leak detection area between the two ponds, it's either sand or a geotextile liner, and permeability of either the sand or the geotextile liner is many times greater than the permeability of compacted clay below the liner. Consequently, the flow of the fluid will go to the leak detection sump primarily.

Q. Mr. Horner said just let the pond evaporate. Is that an entirely accurate statement?

A. No, sir, that is not entirely accurate. The requirement is to begin moving fluids from the facility by truck to other disposal facilities, and keep the leak detection sump empty, keep it pumping. they can pump that back into the pond while they're also moving fluids. They will enhance evaporation through their spray system, and they will be removing fluids at the same time.

Q. In other words, what you do, you simply recirculate it from between the two liners back into the

pond. Until you get down to below the leak the water will go into the secondary liner and it will get pumped back into the pond and evaporated?

A. That is correct, as long as they keep the head off the formation below the secondary liner, if there is a leak in the secondary liner, the fluids will preferentially go to the leak detection sump, as long as they keep the pump dry, they will be all right. At the same time they will be continually removing fluids. It's just not a seven-day period, necessarily. If they can do it, that's all the better. If it takes two weeks; you know, as long as the head is taken off the secondary liner, it should be safe.

Q. In other words, if I hear what you're saying correctly, your bureau went into the hearing or went into the initial of the application process with a recommendation that it be a seven-day -- a seven-day emptying below the leak. But based upon the record and the information presented, you determined that the practical ability to do that was very restricted simply because of the ability to get the water out and places to take it, and that the potential danger of not doing it in that time frame was not significant?

A. That's correct.

Q. And therefore your change from the original

proposal as proposed by the Environment Bureau was in fact based upon the information provided through the hearing process?

A. That's correct.

Q. So that standard was then adopted in the hearing order to contain the water, keep the sump out, keep it out of the secondary liner as much as possible, and evaporate it as quickly as possible, but keep it in a regulated, permitted facility at all times?

A. That is correct. I do want to emphasize that they are still also required to begin moving it by truck. It cannot just sit there in total evaporation.

Q. And they're not allowed to take any additional water?

A. That's correct.

Q. And based upon the record which you heard, is that going to provide an acceptable level of protection to ground water, fresh water?

A. In my opinion it will, yes.

Q. Is it acceptable just merely -- you know, good enough or is it a high -- how high is your standard of acceptability?

A. It's my opinion that it's pretty high. The standard is pretty high. We do not allow contamination of the ground water.

Q. Again, we're talking about the criteria for this thing and we talked about design criteria, how certain things are built, and then we're talking operational criteria. These integrate together; is that correct?

A. That's correct.

Q. In other words, they've got to build it in a certain way, and then operate it in a certain way to prevent the harms which we wish to prevent; is that correct?

A. That's correct.

Q. We haven't in your testimony here -- I will tell the commissioners that we have not addressed all the detailed criteria for this approval; that there are additional criteria. Is that not correct, Mr. Anderson?

A. Yes.

Q. There are some things, such as fences and operation of the spray system. There are some limitations on that.

A. That's correct.

Q. Unless there are specific questions, I don't think it's necessary to go into all those details because the primary concerns are the freshwater concern and the H2S problem.

Mr. Anderson, Mr. Horner again brought up the Basin case and relied heavily upon that at the examiner

hearing, and again the findings of fact and conclusions of law from the Basin Disposal case. I don't remember the full style of that case, but I think it's evident in the record what we're talking about. If there are any questions, we will be glad to clarify it.

Are you familiar with that case?

A. Yes, I am.

Q. What is the nature of your familiarity? How did you become familiar with it?

A. Through -- I was -- investigated the complaints. Some -- a lot of the complaints and investigated the situation. I took monitoring readings at the Basin facility and I testified at the trial.

Q. Was that an OCD permitted facility?

A. Yes, it was.

Q. Were the standards for the approval, the permitting of that facility the same as they are for this one?

A. No, they are not.

Q. How do they differ?

A. They differ dramatically. The Basin disposal pond was one of the first ponds that the OCD permitted; did not have any idea or -- that there was going to be any H2S generated. That was not an issue at the time. It was unknown. Although H2S was known, but the idea that it

would be generated in a disposal pond was not known.

It had no conditions -- terms or conditions for the elimination of that. It was a growing process from that facility. The Sunco application is vastly different from the Basin Disposal. The only likeness between the two is that they both dispose of produced waters.

Q. So in other words, the requirement to maintain a certain oxygenation level was not part of the Basin operation; is that correct?

A. Not when they were permitted, no.

Q. And operations of the spray system and the lining system, were those --

A. There were no requirements of spray systems or aeration systems at the time they were permitted.

Q. Is it a fair characterization to say that Basin Disposal was indeed a major learning ground for your staff as far as --

A. Yes, it was.

Q. Have you reviewed the findings of fact and conclusions from the Basin case?

A. I've read them.

Q. In your opinion, as an engineer, are you able to satisfy yourself that the conditions which resulted in those findings of fact are eliminated under these permit conditions?

A. I believe -- in my opinion the permitting conditions that we have placed on this facility will eliminate the problems that were caused by Basin Disposal.

Q. One of the things just touched briefly on that Mr. Horner addressed in his opening statement and prehearing statement and at some length at the examiner hearing was the question of sludge.

Tell me, first, am I correct in characterizing in the Basin problem sludge was an accumulation of material on the bottom of the pond in an anaerobic state? What is sludge?

A. Thank you. Everybody has a different definition of sludge. I don't feel it's my proper responsibility to comment on a duly constituted court's verdict. So my definition of sludge is a sludge such as a tank bottom. It's my understanding that the sludge as defined in the Basin case was it -- how do you describe it? -- a very light, puffy substance floating at the bottom of the pond. I couldn't dispute that a judge says, but I don't consider that sludge.

Q. Would sludge be a viscous material? Kind of sits on the bottom?

A. That's my definition of a sludge, viscous material that sits on the bottom.

Q. Just looking at what -- not whether you disagree

or agree with the judge, but in terms of -- I won't ask you to do that, Mr. Anderson.

A. Thank you.

Q. Do you believe that the accumulation of whatever it is that the judge called "sludge" in that Basin pond is potentially a H2S problem in this pond?

A. I don't know that there is going to be that generation of that sludge in this pond. If it does generate that type of substance in the bottom of the pond, with the measurement of the .5 parts per million residual oxygen at one foot off the bottom and the aeration lines on the bottom, I don't believe it would generate anaerobic bacteria -- it would allow anaerobic bacteria to grow in the bottom of the pond in the first place.

The light sludge that they're talking about that -- it's my understanding that was determined to be in the bottom of the Basin pond, the aeration system that it's in the bottom of the pond should be enough to disturb and keep that stirred up. So that it would not settle out and, say, plug the aeration system or something like that.

Q. Speaking of the aeration -- I withdraw that because there was something else I was thinking of.

In other words, the so-called sludge problem from Basin, you do not see as a problem in this?

A. I don't see it as a problem. But it's something

that will be checked to make sure that it is not a problem.

Q. If you should determine that there is in fact an accumulation -- I assume a sludge as you think of it is a more viscous material which would settle rather than --

A. Something that you can correct. I have not seen -- I did not see any sludges collected from the Basin pond. In fact, we put a jar down there to try to collect some and couldn't get any.

Q. So in other words, whatever it was in the Basin you couldn't identify, but again the oxygenation requirements will eliminate the conditions; is that correct?

A. I believe they will. I'm not disputing that there wasn't a sludge down in Basin's pond.

Q. I understand.

A. The judge says there was.

Q. We're not arguing with the findings in Basin. The significance, at least in terms of the examiner hearing, would be the applicability of those, of the court's findings to this case, is an evidentiary matter in determining standards?

A. That's correct.

Q. In summation it would be your testimony then that the division has revised its standards and requirements and recommendations for approval based on its

experience at Basin?

A. That's part of the revisions that we went through, yes.

Q. One other thing that Mr. Horner has raised, and I think it's again a valid concern. In talking about engineering design, we talked about the pit design, the pit construction, and there is a specific approval of designs which are submitted, and he had the opportunity to review; is that correct?

A. Yes.

Q. The order itself, if you will look at some of the ordering paragraphs, requires some additional design submissions. For example, paragraph 3 requires design system -- the aeration system to be submitted for approval prior to construction; is that correct?

A. That's correct.

Q. In other words, they can't put that system in until you've looked at it and made yourself comfortable that it will in fact do what their engineer says it will do; is that correct?

A. Yes.

Q. Would you have any objection to giving the protestants the opportunity to review those drawings at the time they are submitted?

A. Not at all.

Q. Likewise with the spray system, paragraph 4?

A. That's right.

Q. Now, paragraph 6, I think it raises some question of concern. It requires that after the facility is constructed the as-built drawings certified by a registered engineer be submitted to the OCD prior to initiating operations.

A. Yes, that's correct. I believe that should also have -- that should be changed to say submitted -- and shall be submitted to OCD and approved by the division prior to initiating any operations.

Q. Did your intent and your understanding of what was intended by this order from your standpoint as the person responsible for administering these, that in fact they should not operate the facility until everything as built is approved and they get a -- some form of go ahead, written go ahead, from the division?

A. That is correct. That would be the intent of that. However, it doesn't specifically state that and maybe it should.

Q. The division will recommend at this time that should this permit be approved, should the commission find that this can be approved, that this order be revised to more clearly reflect that intent?

I think that's another -- again, a good point

that was raised, and if the commission has no objections whatsoever to revising -- to replacing that requirement if this facility is approved.

Just take a moment to make sure we covered everything.

Q. Mr. Anderson, as far as the operation and oversight or regulatory oversight of this facility, would you request, if the commission approves the facility and authorizes its operation, that it give -- provide a mechanism to allow modification of the standards, particularly to make them more stringent in the event it is determined that modifications are necessary to comply with the statutory requirements and the requirements of Rule 711?

A. To allow the administrative approval of those, yes, I would recommend that because of the time frame involved in coming to hearing and changing an order. If we determine that there is a need for a more stringent requirement and emergency need, I believe that we need to be able to do that within that day's time period rather than have -- the time lag of setting something, advertising the hearing and having to come to hearing to change a requirement. I believe administrative approval of that would be necessary.

Q. Some of the requirements contained in here and

within the OCD rules do require reporting of the various testing and monitoring and ongoing --

A. Yes.

Q. Now, based upon all this -- I think you referred early on to guidelines which were used for administrative process. Were those guidelines submitted as a part of the record of the examiner hearing?

A. The guidelines that we have now were not. Guidelines that were in place at that time I believe were an exhibit to the . . .

Q. There was a set of guidelines which the division's environmental bureau used for applications that were submitted prior to this hearing and were, in fact, used by the bureau in evaluating this application; is that correct?

A. That's correct.

Q. You say they're not the same as the guidelines you have today?

A. No, sir, they're quite a bit different.

Q. I'm going to -- I now hand out -- perhaps we've got some -- make sure we identify this clearly. This is identified as Oil Conservation Division Exhibit A in Case 9955, which is to distinguish it from Exhibit A to order R-9485.

Mr. Anderson, would you please identify this

document and tell the commissioners what it is?

A. These are OCD's "Guidelines for Permit Application, Design, and Construction of Waste Storage/Disposal Facilities." This is distinguished between the other guidelines that we submitted earlier in that these have the revised 11/90 pond. They were revised in November of 1990.

These are the guidelines that we go by when we are evaluating our -- when an applicant makes out application and submits one to the division for an evaluation and review they follow these guidelines. We follow these guidelines and we review the evaluation of their application.

Q. In fact, were not these guidelines developed from some of the things you learned as a result of this case before the examiner?

A. These revisions were -- the revisions that we put in this -- in these guidelines in November were a combination of things that were learned from the Basin Disposal case and items brought out by the protestants in the Sunco case.

Q. In fact the format for the initial conditions, Exhibit A to the order, is very similar to these guidelines, Exhibit A to the hearing; is that correct?

A. Yes, sir. Generally follows the same outline,

although some of the numbers may be a little bit different. Some items in the guidelines were not included in the order.

Q. In evaluating this permit would you recommend that the commission utilize these guidelines as a major tool in helping them to determine whether or not this facility is permittable and for establishing operating conditions?

A. Yes, sir, I would. It's what we use to evaluate the application also.

Q. Are these guidelines adopted by any sort of rule, or are they an order or under an order of the division?

A. They are not an order of the division, and they are not a rule. I don't remember if they're mentioned in Rule 711 or not.

Q. But in fact these specific guidelines are not adopted by any order, and they do not themselves constitute a rule; is that correct?

A. No, they do not.

Q. As such, can they be changed at any time you determine some change needed to be made?

A. That is correct. They are just what they say they are, guidelines. They are not specific hard-and-fast requirements.

Q. Mr. Horner suggested again in his opening statement that in fact the division does not have specific rules for the approval, which establish specific detailed conditions for the approval of a permit of this nature; is that correct?

A. That is correct.

Q. Do you believe such rules -- do you believe such rules should be adopted?

A. I don't believe statewide rules should be adopted for specific conditions based on facility such as this, because of the wide varying disposal -- terrain of New Mexico. New Mexico is unique in the United States in that everything -- most things need to be site specifically evaluated.

Q. Very early on in your testimony I asked you whether or not the location and the nature of the surrounding properties was used to determine whether or not a facility could be approved in a land use approach to approval. You stated no, we do not get involved in land use questions.

A. Yes, sir.

Q. Is it fair to say, however, that in determining specific standards for a specific facility surrounding uses are a consideration?

A. By "site specific," I'm referring to the

potential threat to the things that we are charged to consider, such as ground water, surface water, environment. As far as what a -- the next door neighbor is using, we don't -- we can't -- we have no statutory authority to consider that.

Q. But, in fact, by having guidelines which are not strictly encoded in rules, you are able to impose requirements which would be designed to meet the specific next door neighbor --

A. Certainly.

Q. -- situation?

A. Yes.

Q. Would you recommend that the guidelines be adopted as a rule?

A. The guidelines because -- it would be hard to put the guidelines as a rule, because they change -- we need the ability to change them based on the circumstances. You know, if something wants to be placed in the badlands around Star Lake where there are no residents, the hydrogen sulfide -- say the hydrogen sulfide generation where there are no residents within 50 miles would still be a requirement that there -- they monitor for it but they may not be as stringent a requirement.

Q. I will just point out, for the record, that in Rule 711 paragraph A 3, there is a reference to guidelines

for permit application, design and construction; but again it does not specifically adopt those regulations.

Would you say that these guidelines -- we talked about performance and design standard. Do the guidelines orient more towards the performance operation?

A. The guidelines themselves, they are a mix of both. They orient more towards the construction standards of the facilities. The whole -- most of the -- the majority of the guideline is the engineering design, and it takes up five or six, seven pages. It goes into in-line pump also. In the back of the guidelines are also the construction diagrams that must be followed unless there is a compelling reason and good explanation of why those designs should not be followed.

Q. In fact, there are some alternative standards in here for various aspects of a facility, are there not?

A. Yes.

Q. Is there anything further you would like to add to your testimony, Mr. Anderson?

A. No.

MR. STOVALL: At this time, Commissioners, I would offer Mr. Anderson for cross-examination. Again, pointing out not that it's specifically advocating a position, approval of the permit, but rather explaining to you what happened and how the examiner process worked. And

certainly he would be more than happy to answer any questions you might have or Mr. Horner which could lead to different approval conditions if that were appropriate. If that what the commission determined.

I have no further questions.

COMMISSIONER LEMAY: Mr. Stovall, do you want to offer Exhibit A?

MR. STOVALL: Thank you, Mr. Chairman. I do move the admission of Exhibit A.

(Division Exhibit 1 was admitted in evidence.)

COMMISSIONER LEMAY: Without objection, Exhibit A will be admitted into the record.

Mr. Dean, do you have any questions of the witness?

MR. DEAN: Yes, just a couple, Mr. Chairman.

CROSS-EXAMINATION

BY MR. DEAN:

Q. Mr. Anderson, you were present during, as I recall, substantially all of the testimony at the hearing except for perhaps the first day, --

A. That is correct.

Q. -- which was Mr. Frank, the geologist?

A. That's correct.

Q. You were present at the time when this system's

-- for lack of a better word, give-and-take on the systems that were going to be placed in the pond for aeration and evaporation were discussed; right?

A. Yes.

Q. You were part of that give-and-take on what might be acceptable in that case?

A. You're talking about construction details?

Q. Yes, the details.

A. Yes, I was.

Q. You were also present at the time that the in-truck treatment process was discussed?

A. Yes, I was.

Q. And reviewed those exhibits that pertained to that?

A. Yes.

Q. There are other systems that might meet the standards that are in this order, aren't there?

A. Certainly.

Q. There might be many combinations of systems that might work?

A. That's correct.

Q. And in your opinion, I heard you testify -- I know you testified in the record that you referred to the systems, because of the many redundant systems, even not linked together, that they would accomplish the standard

set out in the order; is that correct?

A. The aeration system would accomplish it. The spray system itself is not required to accomplish the oxygen levels requirement.

Q. When you referred to systems in that statement, you were referring to the systems that were discussed at the time of the hearing; right?

A. Yes, sir.

Q. Those are the systems that were proposed by Sunco?

A. That's correct.

Q. And the testimony at the hearing was that Sunco would comply with those systems; is that correct?

A. That's correct.

Q. Was your opinion that those systems not only would meet the standards that came out in the order, there weren't any standards at the time of the hearing, were there?

A. No, there were not.

Q. And there aren't any standards that are contained in the guidelines that are part of Rule 711, are there?

A. For --

Q. O2, residual O2 content?

A. No, sir, there isn't.

Q. Or pH?

A. No.

Q. So these standards just came to light when this order was entered?

A. That's correct.

Q. They were discussed at the hearing but they weren't part of the application process?

A. That's correct.

Q. They weren't part of the administrative review process either, were they?

A. No, they were developed after the examiner hearing.

Q. It's the intent of the order that -- that if I propose a system that I stick a garden hose down in the bottom of this pond and pump oxygen in it with a bicycle pump, you're not going to approve that; right?

A. Yes.

Q. Even if I get my friendly engineer, Mr. Cheney, to certify that would work, you don't have any intentions of approving that?

A. Not a garden hose.

Q. It's also my understanding and my familiarity with the Basin Disposal case that the minute that the OCD and your bureau in particular became aware of the problem, you took some action?

A. Yes, we were out there I believe next morning.

Q. And did you make a demand upon Basin to undertake certain treatment procedures?

A. Yes.

Q. Did you shut them down?

A. Yes, we did.

Q. This would lead me to believe that it's the intention of your bureau and of the OCD to enforce the standards that are set out in the Sunco proposed permit?

A. It's fully our intentions to enforce those standards, yes.

Q. And this order, even though we've only kind of discussed the pH content and the O2 content that are required, and the fact that the designs to meet those standards have to be certified by an engineer, there is a lot of other specific things in that permit about testing procedure?

A. Yes, sir.

Q. What to do if the tests are positive, so to speak, for H2S?

A. That's correct.

Q. Those are all things you will also enforce?

A. That's correct.

Q. You consider that part of your enforcement responsibility?

A. Yes. Permit conditions are part of the enforcement responsibility.

Q. The only other question I have is with regard to the liner, that there was some testimony about pumping the sump, I guess it's called. It's your intention you pump the fluid in there back into the pond --

A. It can be.

Q. -- or into a truck, either way?

A. Yes, it can be.

Q. As long as that fluid is being removed from that liner you don't foresee any problems with the ground water?

A. None. In my opinion it would not be.

Q. Even if there was some concern that there is a leak in the secondary liner, we get through the first liner and the second liner, is there any protection built into the design of the pond after the secondary liner?

A. It's a compacted clay liner below the secondary pond. Basically it's a triple-lined pond, although only two of the liners are synthetic liners, the third, the lowest most liner, would be compacted clay liner.

Q. That was in the design criteria?

A. Right.

Q. Those are also conditions of construction of the pond?

A. Yes.

Q. In fact there is a pond for produced water that is permitted without a liner, isn't that correct, in San Juan County?

A. That is correct.

MR. DEAN: I don't have any other questions at this time. Thank you.

COMMISSIONER LEMAY: Thank you, Mr. Dean.

Mr. Horner, you may proceed.

CROSS-EXAMINATION

BY MR. HORNER:

Q. There was quite a bit of discussion at the examiner hearings last June about the problems with the aerobic status of the pond and the different aeration systems. But for the benefit of the commissioners, could you go into a little bit what is being discussed. We talked about aerobic conditions; the need for an aerobic condition. Why so we need an aerobic condition, and how that's to be accomplished?

MR. STOVALL: I'm going to set a trend here by making an objection, Mr. Chairman. I will concur that there is extensive detail in the record about the need for aerobic conditions. Mr. Cheney testified about that. Mr. Anderson testified about that, and Mr. Anderson has already testified about that in this hearing in addition to the record. I'm going to make -- my objection is based upon

redundancy to try to make this as efficient as possible. I don't think that you need to hear this five or six times as opposed to two or three.

MR. HORNER: Are the commissioners familiar with the entire record?

COMMISSIONER LEMAY: I can say that we will be familiar with the entire record before we issue an order. By saying we are familiar at this point, I'd say we're not. But we will become familiar. I think in terms of -- for our edification if Mr. Anderson can summarize some of the statements without going through them one by one, I will overrule Mr. Stovall's objection.

MR. HORNER: That was my point, just to give the commission a feel for what's being discussed here. To me it went by awful quick, if they're not familiar with the need for aerobic conditions.

COMMISSIONER LEMAY: I think I will allow that question to stand in a summary form.

A. Certainly. Aerobic condition means that there is a residual oxygen content in the fluid. Anaerobic means there is zero oxygen content in the fluids.

An aerobic state can breed anaerobic bacteria which are sulfate reducing bacteria which create hydrogen sulfide gas. Once a fluid is turned from anaerobic to aerobic the anaerobic bacteria are destroyed and thereby

can't produce any hydrogen sulfide gas.

Q. (By Mr. Horner) Generally, how is -- what is the plan to achieve this aerobic condition?

A. Through aeration.

Q. And aeration being what type of a system? How does that work?

A. It's a -- you mean the system that Sunco's proposing?

Q. For instance, yes.

A. It's a blower system to impart air into the bottom of the pond.

Q. There will be a system of pipes in the bottom of the pond --

A. Yes.

Q. -- with holes that the air blows out of?

A. That's correct.

Q. In fact at the examiner hearings there was considerable discussion about two aeration systems, were there not?

A. I don't recall.

MR. STOVALL: Mr. Chairman, I think I understand Mr. Horner's question. I will stipulate that there was a discussion about a -- I think it was called a coarse system. I'm sure Mr. Cheney will be able to testify in more detail, since he was the witness. There was a coarse

system and a small bubbler system as I remember.

Q. (By Mr. Horner) Coarse, bubbler and fine?

A. Coarse, bubbler and fine, that's correct.

Q. So two separate systems and at the June hearing it was talked about each one would require a 96-horsepower pump probably?

A. Our requirements that we placed on the pond is to maintain a .5 parts per million residual oxygen one foot off the bottom of the pond. If they need a 96-horsepower power pump to do that, then they need install a 96-horsepower pump. If the engineering calculations determine they need a thousand horsepower pump, then they need to put a thousand horsepower pump in it. What they need is what they have to install to accomplish our requirements.

Q. Now, then, as you review whatever it is that is going to be submitted somewhere between a half horsepower and a thousand horsepower pump for each of these systems, what criteria are you going to use to determine that those systems are adequate?

A. That the -- I don't understand your question.

Q. You testified that a garden hose and a bicycle pump you wouldn't accept. What will you accept?

A. Logically that's not enough.

Q. What will you accept. How do you make the

determination what is sufficient?

A. Through the engineering calculations as to whether there is going to be enough residual oxygen. This is also going to vary based on the oxygen requirement of the incoming loads. That is why we put on -- in the requirements that it be allowed -- that it be constructed to allow for expansion. We are taking a certain number of -- not givens, but taking certain assumptions, certain number of assumptions, of the oxygen requirement of the fluids coming into the pond. Those are also going to be treated.

Q. So your testimony is that you will accept whatever is certified by an engineer?

A. I didn't say that, no.

Q. But then you must be using in your own mind some method of determining what's --

A. I will probably go through about the same calculations that the engineer is going to go through to check his calculations.

Q. Now, then, we've talked about the requirement of .5 parts per million residual oxygen. Now, then, and somehow we're going to have to figure out to determine what is necessary to achieve a .5 parts per million residual oxygen level.

Now, then, if we're going to be continuously

putting in oxygen into the pond, is there some continuing need for oxygen? Is oxygen being used in the pond during this period of time?

A. Yes. It could be used up. It's also going to be vaporizing from the surface of the pond. There is a certain amount of equilibrium at the surface of the pond from the water and the atmosphere, where there is a constant oxygen transfer.

I guess the best way to answer is that it will be -- the dissolved oxygen will be checked. It's not a fine art because we don't know the exact conditions of the incoming fluids all the time. That's why we have to check the dissolved oxygen one foot off the bottom. If it is not at .5, then they have to increase oxygenation. If they cannot increase oxygenation anymore, then they need -- then there will be -- a higher horsepower compressor needs to be put on that, and that's why it's designed to have expansion capabilities.

Q. Now, in fact at the June hearings wasn't there considerable discussion about oxygen demand in the ponds?

A. Yes, there was.

Q. The oxygen demand being the actual nature of the pond to utilize oxygen or to eliminate oxygen itself?

A. That's correct. And there is oxygen demand in the fluid coming in. I believe that's where most of the

discussion centered.

Q. That oxygen will combine with other materials in the pond and disappear?

A. Certainly.

Q. So there is an additional need to keep putting oxygen in the level to supply that demand?

A. Certainly.

Q. And there is an additional need to maintain a residual level of oxygen over and above that estimated demand use; is that correct?

A. Certainly, yes.

Q. Have you got any sort of feel for what sort of criteria should be used to estimate the level of oxygen demand in these ponds?

A. Right now I don't know. I don't remember what the assumption was what the oxygen demand on the incoming fluid would be. I have no way to dispute that assumption until we actually get -- start getting loads to determine.

Q. Have you got any reasonable means at all for evaluating a design that's submitted by an engineer? If you don't have a feel for what oxygen demand is going to be required, what's going on in the pond, how the system is going to work?

A. We take certain assumptions.

Q. What are those assumptions going to be?

A. Well, right now, since I don't have the design in front of me, I can't specifically state what those assumptions are going to be.

Q. Now, then, you say the don't have the design in front of you?

A. No.

Q. So, in fact, at the June hearings what was submitted was a system that had a one-third horsepower pump on it; isn't that correct?

A. I don't remember that. I don't remember what -- what actually finally ended up with. What the horsepower of the pump was going to be.

Q. In fact, this was part of the information supplied prior to the hearing in the administrative approval process, was it not?

A. Yes.

Q. One-third horsepower pump?

A. I believe it was.

Q. Which is not much bigger than a bicycle pump?

MR. DEAN: I'm going to object at this point, Mr. Chairman. The record at this point is submitted. It's just like in the case if we had -- we objected to it because it was asked and answered. It speaks for itself. Mr. Horner, in my opinion, is trying to cloud the issue with this one-third issue.

This hearing was held. We discussed a lot of horsepowers as we felt our way through it. I think we ended up at 96 horsepower. Regardless of any of that, Mr. Anderson's testimony is that whatever is submitted, he will evaluate at that time.

Sure, it was a one-third horsepower when we submitted it. It was in the application. By the time we got through it was a 96-horsepower. That's the point, I agree. But I'm not going to sit here and go through this another two days about this horsepower thing as we did in the hearing. I just think it's irrelevant. It's already in the record. It's a matter of evidence. The commission can take that under consideration.

COMMISSIONER LEMAY: Mr. Horner, where are you going with the horsepower issue?

MR. HORNER: I'm just trying to demonstrate that the OCD has no reasonable means of evaluating the engineering drawings that have not yet been submitted. We're talking about a permit and order here that permits this facility based on engineering drawings that may be submitted in the future.

MR. STOVALL: I object to that characterization. I'm sorry, I don't want to make this into a -- I'd like to define this procedure, Mr. Chairman, make sure that Mr. Horner understands what the division would like to do.

We discussed the standards and that's -- I think that's fairly clearly in the record, and he can ask questions if he would like. One thing I did bring out with Mr. Anderson is when it comes to the design of the aeration system, the division would be more than happy when those specific designs are submitted and calculations to back them up are submitted, we will make them available to Mr. Horner and his clients. They can perform any engineering calculations that they wish on those; and if they have objections, then we will review their examination of those criteria. But to go into -- Mr. Anderson specifically testified that there was no criteria -- no specific design set forth in the permit because it's that .5 residual oxygen level that's important.

And so I would answer his concern by saying we will involve him in the process of evaluating the engineering designs and talk about specifics when specifics are available, and I will also point out that Mr. Cheney who was the primary witness talking about the engineering calculations, and I believe, if I'm not mistaken, that the applicant intends to make Mr. Cheney available.

COMMISSIONER LEMAY: Is that acceptable to question Mr. Cheney about the design characteristics?

MR. HORNER: That would be fine. But I still believe that it's necessary before this permit be issued that the

design be submitted and reviewed and approved by the department before permit is issued. To me that's the point of the permit process.

COMMISSIONER LEMAY: We will consider your argument. In think, Mr. Horner, by submitting the criteria, as I understand it, to an operational standard, they have to meet that standard. That gives the protestants more security than okaying a permit, as I see it, just based on a particular design. If they meet the standard -- is there a problem -- I'm trying to see, is there a problem with the design if you hold it to another standard?

MR. HORNER: Well, I can't say if there is a problem with the design because I haven't seen the design.

COMMISSIONER LEMAY: I'm afraid we're kind of arguing in a circle here.

MR. HORNER: I think so. If I may go on for just a minute, it appears that everybody is willing to stipulate that such designs have not been submitted at this point; is that correct?

MR. STOVALL: I concur with that.

MR. DEAN: I'm not going to concur completely, Mr. Chairman. There's all kinds of things in the record. But my understanding is that order doesn't require a design but certainly we have submitted things that we have proposed that will meet these standards.

COMMISSIONER LEMAY: I think the commission understands the fact that order does not contain design -- it is not design specific. It's operational specific but that also the record numerous -- and we shall certainly -- it's part of this -- record reflect on that record to see how those operational standards will be accomplished.

MR. HORNER: The order that we have here before us today does, in fact, permit the facility subject only to Sunco accepting the conditions.

MR. STOVALL: Let me point out, I think we're in a semantic argument, and I will state for the record for the division that I have stated, it was the division's intent that the order -- the facility not operate until all the engineering plans have been approved, and the as-built plans showing the facility was in fact constructed in accordance with those plans approved.

I believe that Mr. Horner has made a valid point that perhaps -- that that should be more clearly stated in the order, and call it a permit, call it how you will, it is the division's opinion that this facility doesn't accept a single bucket of water until every aspect of it is approved in accordance with whatever the commission orders; if, in fact, the commission approves the facility at all.

COMMISSIONER LEMAY: So we don't get into a circular argument here, was that your concern, that we not approve

the facility until we look at the design?

MR. HORNER: That's correct. That's one of my primary concerns, that a permit should not be issued until all the designs are evaluated and approved. And then the next problem is what criteria do you use to evaluate the designs. It seems to be a problem here.

COMMISSIONER LEMAY: I understand there is numerous testimony in the record concerning the possibilities to meet that criteria, and we're certainly going to look at those. I'm not understanding where you want to go if Mr. Stovall has stipulated that -- to what he's stipulated.

MR. HORNER: That's starting to take care of one of my problems. If the OCD does not intend to issue a permit until designs are submitted and approved. And I would like to be able to see them and in case the OCD isn't using a sufficient criteria to evaluate those, then I could be able to come back and make an issue of it at some point.

COMMISSIONER LEMAY: We certainly take note of that as well as the offer to submit those to you. I think that was made.

MR. HORNER: I think that was made, right.

COMMISSIONER LEMAY: You may continue.

Q. (By Mr. Horner) Now, then, there has been some discussion, also, about the problems at the Basin facility. Those problems were encountered -- in fact, they were --

the Basin facility was in compliance with all applicable OCD regulations, were they not?

A. At the time they were, yes.

Q. And the hydrogen sulfide emissions at the Basin facility exceeded 300 parts per million, did they not?

A. That's what you say. I never saw that.

Q. That was one of the findings from the Basin case.

MR. DEAN: I'm going to object. The findings speak for themselves. They're in the record. The commission can read them.

MR. HORNER: We can at least make reference to them to establish what the problems were in the Basin case to establish what potential problems are.

MR. DEAN: I would also object to -- I object to the findings being part of the record, and I should like to have a continuing objection to the findings for the record in this case.

COMMISSIONER LEMAY: Your objection is noted. Mr. Horner, we're not trying the Basin case again, nor are we looking at the facts in that case. We have a case here under consideration. What was applicable on Basin was part of that testimony, whether 300 parts per million was recorded or not is a debatable point and has no application here as I see it.

MR. HORNER: Mr. Chairman, the point being that these facilities if not properly taken care of are very dangerous facilities. And so what we're talking about in this particular instance is they are trying theoretically to come up with a system or design that will eliminate problems encountered in the Basin facility.

One of the protesters' arguments here is that no such designs have been submitted at this point. And that there has been no showing that this facility in reality is going to be operated differently than the Basin facility.

Now, there are criteria established, and assuming that those criteria are met, the problems should be different from the problems at the Basin facility. But to establish the potential for problems here, we need to look at the Basin facility where these types of facilities were not used. That gives us the baseline.

MR. STOVALL: Mr. Chairman, I would only state that Mr. Anderson testified that, in fact, that was the case; that the OCD learned a great deal from Basin. And Mr. Horner's objections -- I mean his concerns are valid, but believe me they were here long before this application was ever submitted, and the testimony indicates that.

COMMISSIONER LEMAY: Is that in the form of an objection to going into the potential for harming --

MR. STOVALL: You may take it that way, and I think

Mr. Dean is --

MR. DEAN: H2S -- I think the record says what I have to say. H2S is dangerous. We don't dispute that. That's the point of the Basin case, H2S is dangerous.

COMMISSIONER LEMAY: I think both counsel have stipulated the potential for danger with high levels of H2S. To go into that issue more, how would that serve us to render a decision?

MR. HORNER: I would also now like to inquire about what levels of H2S are dangerous with regard to specific criteria that's being set forth here.

COMMISSIONER LEMAY: Mr. Stovall.

MR. STOVALL: We have -- the division has testified that as far as the permit conditions that were issued is that no H2S is allowed, and should any be detected, it will eliminated. That's the operating condition under which this permit -- this facility will be operated. So the -- essentially the position of the division is that any is no good. So get rid of it.

COMMISSIONER LEMAY: Mr. Dean, comments on that?

MR. DEAN: I have an objection to this area because -- I mean that H2S is one of the standards that's in the order, and it's one of the ones we discussed, I might add, in the record at huge length. We also adopted the position of Mr. Stovall, the criteria -- there is not going to be

any H2S in the pond we're trying to design.

I think the dilemma that Mr. Horner finds himself in is that the record is before you. It's submitted into evidence. If you look through that record, Mr. Horner hasn't presented designs about anything. He hasn't presented any standards. The EID standards are the only ones that he can argue that he entered with his exhibits. No witnesses, no evidence, no facts, no alternatives, no nothing.

COMMISSIONER LEMAY: Mr. Horner, you may proceed -- Mr. Stovall.

MR. STOVALL: If I may, Mr. Horner. I'm going to ask this as an attorney. Maybe I can address this for you. If we get one standard in for dangerous levels with your permission -- and this is not in the way of an objection, but maybe can focus it.

MR. HORNER: That's what I'm trying to get to. If you would like to do it instead me, that's fine.

COMMISSIONER LEMAY: I think I will allow Mr. Horner to pursue the H2S danger level standard without getting into a lot of -- case you're trying to make, I assume.

MR. STOVALL: What I would like to do is just simply point out -- to ask Mr. Anderson if there is -- given the statement that there was no evidence submitted in the hearing about specific levels and the danger of those

levels other than the EID standards, I'd ask Mr. Anderson if there are any known established standards or levels of H2S.

COMMISSIONER LEMAY: I think that might come in terms of redirect, then, I think.

MR. STOVALL: I was just trying to assist in this.

COMMISSIONER LEMAY: Why don't we let Mr. Horner since it's his witness. He may pursue that point.

Q. (By Mr. Horner) Are you familiar with levels of hydrogen sulfide that are dangerous to --

A. I'm familiar with the OSHA standards that we used for establishing ours.

Q. With OSHA standards?

A. Yes.

Q. Are you familiar with studies that have been done that state exposure levels over a certain period of time causes headaches and exposure levels that exceed those --

A. I have read those.

Q. -- cause death?

A. I've read those.

Q. Could you inform the commission what those levels are?

A. If I remember correctly, 50 parts per million starts causing headaches, and the only other one I remember

is over 200 parts per million can cause death. I'm not a doctor, so I really don't know what -- everybody is different.

MR. HORNER: I'd like to come back to that. I have some better information I would like to present on cross-examination that probably would be more expedient.

COMMISSIONER LEMAY: You certainly can present it with your own witness.

MR. HORNER: I will go on and come back to that at a later time.

COMMISSIONER LEMAY: Fine.

Q. (By Mr. Horner) You have stated the OCD has no jurisdiction to consider the land uses around the site or the neighbors; is that correct?

A. That falls under the zoning and it's up to the local governments.

Q. But, in fact, the OCD is charged with the protection of public health, are they not?

MR. STOVALL: Mr. Chairman, I think there is some real statutory language. I'm not sure where Mr. Horner is going. I would object on the basis that Mr. Anderson is not a lawyer, and if he is trying to get real technical on legal language, that Mr. Anderson is not the person to answer that question.

COMMISSIONER LEMAY: Objection overruled, you may

continue but reserve that right to sustain the objection if you're going into areas he's not qualified to answer.

Q. (By Mr. Horner) In your understanding is the OCD charged with protecting the public health?

A. I think every state organization is charged with protecting public health.

Q. So then, in fact, you are responsible for considering what happens to neighbors around the facility?

A. As far as the -- such as H2S generation, yes. But as far as what the land is used for, no.

Q. Okay. But if there's residential areas around the facility, are you going to take that into consideration?

A. As I stated before, based on proximity, we will -- we may have different criteria. That's why I stated the site-specific conditions that we evaluate permits under.

Q. That seemed pretty vague to me. How do you distinguish and what kind of criteria are you using to look at a residential area versus a commercial area versus a vacant area, in looking at permitting one of these facilities?

a. The conditions, the requirements, that they must meet is -- say, take H2S. As far as H2S emissions, it may be different. But one like I say -- the three -- the two we have now will be required to follow the same conditions

that Sunco is, if they are permitted. Even if they aren't, we're going to go ahead and require them to do it. Basically most of it is based on common sense as to where the thing is and what can be emitted.

Q. So you are going to consider what's going on around the facility?

A. Certainly.

Q. Now, then, in fact, in this particular case there is a highway within a quarter of a mile of this facility, is there not?

A. That's correct.

Q. Have you considered the impact of travelers on that highway?

A. Impact of what?

Q. Of potential emissions from this site?

A. The design on the permit will require no emissions from the site.

Q. Now, then, you have stated that you would like the flexibility to be able to modify the criteria --

A. That's correct.

Q. -- as set forth here?

A. That's correct.

Q. And theoretically from the perspective of making that criteria more stringent?

A. Yes.

Q. How about making the criteria more lenient?

A. I don't think we've ever done that.

Q. Would it be acceptable for you to -- or to you in this particular order to set out that the criteria shall not be reduced in any way?

A. You mean made less stringent?

Q. Right. That this shall not be made less stringent.

MR. STOVALL: I would only state that -- object in the sense that Mr. Anderson can speak only from his standpoint. Of course, that's the commission's determination.

COMMISSIONER LEMAY: I would much -- you would make a stronger case, Mr. Horner -- I'm not trying to tell you how to present it, but if your witness could make strong arguments for not making it less stringent than trying to play too many what if games with the current one. This is getting maybe outside of this gentleman's expertise.

I don't know how you can make a stipulation that it would never be less stringent ever if you only had a foot of water or something, then you wouldn't have need for a lot of things. In other words, by saying less stringent, I don't know where you're going. I don't know what kind of -- what you're trying to make here.

MR. HORNER: Let me go a little farther then and make the point clear.

Q. (By Mr. Horner) There was some discussion about the need to remove fluids from the pond in the event of a leak in the pond; is that correct?

A. Yes.

Q. Now, then, I believe you stated here today that, in fact, you were going to require the applicant to truck water from the facility in order to reduce the level of the pond.

A. Begin trucking. That is in the order, I believe.

Q. And I believe that you stated that before there was a discussion about reduce the level of the water in the pond within one week. That was prior to the June hearings of last year; is that correct?

A. Yes, sir.

Q. And that the applicant said they couldn't comply with that, and that OCD backed off; is that correct?

A. I wouldn't say --

MR. STOVALL: I object to that characterization "backed off." Mr. Anderson has already testified that the evidence was -- the initial position of the environmental bureau -- that was an initial position. The resulting order is a result of the record and the specific conditions or results of the record. And to characterize it as the OCD backed off is, I think, totally inappropriate

COMMISSIONER LEMAY: I think the characterization is a poor one. You might rephrase the question.

Q. (By Mr. Horner) I believe you have stated here today that you already thought that two weeks would be acceptable for removing the fluids below the level of the pond?

A. I didn't say two weeks would be acceptable. I said it may take two weeks. It may take one week. However, as long as there were no fluids in the leak -- they kept removing the fluids in the leak detection sump, there should be no harm.

Q. In fact, at the June hearings there was a discussion that it's quite possible that it's going to take nine months to reduce the level of the pond below the level of the leak; isn't that correct?

A. That's in the transcript, yes.

Q. Wouldn't you consider that backing off from a one-week requirement?

A. I wouldn't say it's backing off, no. I would say that there is some information brought to us, to our attention, that there were not enough -- there is not enough mobile equipment nor enough storage capacity to put the fluids of this pond in a one-week period. We evaluated that information and reevaluated our position. I wouldn't say we backed off on anything.

Q. In fact, this facility -- the proposal here from the applicant envisions separate ponds, does it not?

A. Through expansion, yes. That is the ultimate.

Q. Three separate 20-million gallon each ponds?

A. Yes.

Q. And wasn't it discussed at the June hearings the possibility that they could build a second pond sooner so that they could hold water from the pond with the leak in it and put it in the empty pond?

A. I believe that was discussed but that's totally up to the applicant.

Q. And the applicant said at that point that, in fact, they didn't want to build the second pond until there was a market demand for the second pond; is that correct?

A. That's correct.

Q. So basically then they're not going to build a second pond until they have enough water to fill up more than one pond?

A. Until the market is there to economically build a second pond, is the way I understood it.

Q. So the OCD had the opportunity to go along with the applicant's plans by simply making them build one pond sooner to be able to provide for the contingency if they develop a leak, but the OCD didn't take that position?

A. I believe -- this is a personal opinion of my

own right now -- that it is our position -- it is our position to permit somebody to do something not make them do something if they don't want to do it.

Q. Okay. Now, then, with regard to the problems with the leak, we're talking about a primary and a secondary liner?

A. That's true.

Q. How is the primary liner to be tested?

A. The primary liner to be tested when it's put in by the manufacturer and the installation.

Q. You actually field test it by filling it up with water or eventually fill it with water?

A. No, they electrically test it. That is a function of the installer.

Q. And the electrical test can detect leaks in the liner?

A. The electrical detection -- the electrical test has a very good percentage success on detecting leaks, especially the seams where they put them together.

Q. In fact, isn't the best field test just filling it up with water and see if any water shows up in the leak detection system?

A. You could.

Q. Now, the secondary liner, though, that's down underneath all of this with the sand and with the leak

detection system, that in fact will never be tested, will it?

A. That is incorrect. That will be electrically tested on installation. The installer has methods for testing the seams that they put in these liners.

Q. Are you familiar with this electrical testing?

A. Yes, I am.

Q. Have you seen these electrical tests conducted?

A. I've seen -- I saw one conducted and I've seen the results of many of them.

Q. How does this electrical test work?

A. It works with conductivity with the natural moisture in the ground outside the liner itself. For the secondarily liner they use a conductivity probe inside -- they actually put water in the leak detention itself, and test the dry inside liner, then draw the fresh water out of the detection system. It will be required that they're tested prior to being put in service. I don't know if they've done that -- they have to get the contractor to do that.

Q. If a leak develops in the secondary liner, how is that repaired?

A. It won't be.

Q. It just exists?

A. If a leak develops in the secondary liner, it

will just exist. We will not know about it.

Q. If a leak develops in the primary liner, in fact the primary barrier between these fluids and the soil will be the secondary liner?

A. That is correct. And the tertiary liner, the compacted clay.

Q. And if, in fact, the OCD is not going to require that the level of the leak be reduced below -- or the level of the pond be reduced below the level of the leak for nine months, the primary barrier is --

MR. STOVALL: Objection. That's not what -- exactly characterize what the OCD is going to require. The OCD is not going to put any time limit on that. I will state that.

MR. HORNER: The June hearings, the transcript from the June hearings, clearly reflect that it could easily be nine months or more before the level of the pond is reduced below the level of the leak.

COMMISSIONER LEMAY: That's not, as I understand, a -- unless your witness can state that concern, there is no contamination of the ground water. I don't know where you're going with that. If it took three years to reduce the level, what's the danger? I don't understand where you're going with that? If there is a time limit consideration on when the pond should be lowered, where is

the value to that being part of the -- of our consideration?

MR. HORNER: There is a concern with this water being -- with these fluids, the dangerousness of these fluids being exposed to the ground and the potential for ground water contamination, the potential for the contamination of surrounding soils to --

COMMISSIONER LEMAY: Mr. Cheney -- I'm sorry -- will probably address some of the design considerations, but this is for the commission's edification. As I understood the witness's testimony that the water -- as long as you kept the head off of the sump, that the water being drained in there would protect contamination of anything else below that.

Q. (By Mr. Horner) Let's talk about the problem with the head on the sump. The leak detection system consists of what?

A. Series of laterals and main leak detection lines through the center of the pond to a sump. The area between the two liners can be either a geotextile liner or graded sand.

Q. How big is the pipe going into the sump itself?

A. That was stipulated in the order and -- because that was something that was -- the leak protection system, item number 10, between the primary and secondary liner

shall be constructed with two-inch laterals and four-inch collective piping. The four-inch collective pipe is what goes into the leak detection sump.

Q. Now, then, if, in fact, the hole in the primary liner that develops is bigger than four inches in diameter, you're not going to be able to remove the water from the leak detection system into the sump as fast as water is going into the area between the two liners?

A. That is conceivable. I find it hard to find a four-inch hole in the liner, though.

Q. Therefore, you will develop a head on the water in the area between the two liners?

A. You would develop a head if there was a four-inch hole in the primary line.

Q. And, in fact, if the hole is even bigger than that in the primary liner, you are going to be limited again by the size of the pump that you're using to pump water out of the sump?

A. Theoretically, yes.

Q. You have a significant possibility, depending on the size of the hole, of developing a head on the water between the two liners?

A. I would say no. The terms that you are putting the question, you do not have a significant possibility of having a head on the secondary liner because the

possibility of having a four-inch or larger hole is not significant. Therefore, the hole question is --

Q. If somebody should put a shovel through the thing, you would get a hole larger than four inches in diameter, wouldn't you?

A. If you had a shovel that was four inches in diameter that could go through there, cut a hole out, you could.

Q. So there is a significant possibility you could end up with a hole larger than four inches?

A. I wouldn't say that. I wouldn't say significant.

COMMISSIONER LEMAY: I think we can move on -- the fact of what's significant or not, I think he's answered the question on what his expert opinion was on it.

Q. (By Mr. Horner) Now, then, I think you testified that with regard to this particular application, that you notify people within a half mile of this facility; right?

A. The division did not. That was the requirement from the Rule 711 for the applicant to notify all landowners within a half mile of the facility of what their intentions are. The Oil Conservation Division published notice in the Farmington Times and the Albuquerque Journal that the application had been submitted.

Q. Are you familiar with the Basin court finding that they injured people up to a mile and a half away?

A. I'm not familiar with that finding, no.

MR. HORNER: The record will reflect it again.

Q. (By Mr. Horner) Are you familiar with the Basin court finding that, in fact, the facility was a potential danger to travelers on the highway that was within, I don't know, half a mile?

A. Yes. It's only about an eighth of a mile, quarter mile maybe.

Q. Now, then, I believe you testified before that the examiner hearing was the vehicle to be used by the OCD for the review and approval of this particular facility; right?

A. It was -- it was used as the vehicle, yes.

Q. But there were no engineering drawings submitted at that point with regard to this aeration system?

A. There were --

MR. STOVALL: I'm going to object because I'm not sure what the record reflects. If there were engineering drawings submitted, they're in the record. My recollection is that there was some engineering discussion with respect to the aeration system. Again, the division approved a standard, not drawings.

COMMISSIONER LEMAY: It's in the record. Whatever the

record says, but maybe Mr. Anderson's memory will be sufficient to address that. If not, it's in the record, we will find it.

A. I believe there were some drawings -- there were some engineering drawings submitted on the auxiliary system, such as aeration spray system. But I believe they were drastically modified during the examiner hearing. We have not received additional drawings to conform with that because they just -- this order was just given out.

Q. (By Mr. Horner) Well, the order was given out in April of this year; right?

A. Yes.

Q. But it was very apparent in June of last year that the designs that had been submitted were not going to be adequate and something additional needed to be submitted?

A. That's correct.

Q. Now, the initial application that the applicant submitted actually had envisioned that, as far as enclosure of this facility, at the end of the life of this facility, that solids remaining in the pond would just be covered over with plastic and left on site; is that correct?

A. That is correct.

Q. Is that acceptable to the OCD?

A. That was not acceptable, no. It can be

acceptable depending on the location. As long as it's covered with the actual primary liner and mounded to prevent run on or runoff of water, any standing water on top of it. That is a method for closing a pit that we use in some locations.

I believe it was determined that this one would not be allowed to do that. We would remove the solids. The fluids have to be removed prior to closure. The solids would be removed, and I don't remember if we required the folding over and allowing to dispose of the pond liner right there in place or not. I don't remember that.

MR. STOVALL: I will stipulate that the order specifies specifically there is no closure plan to be submitted at this time. So I don't think -- essentially what's been stated is correct, as far as what was submitted, but the order does not have specifics in it.

Q. (By Mr. Horner) But, in fact, isn't what happens with these solids a concern to the OCD?

A. Yes.

Q. And doesn't there need to be some sort of a plan for what is to be done with these solids?

A. Well, a very generalized plan, yes. And by that generalized plan, I mean they will be disposed of pursuant to the rules and regulations in effect at the time of closure. Those rules and regulations change on a yearly

basis now. I would not recommend that there be a specific disposal criteria placed on solids right now, and then have to worry about trying to find -- and through six months' worth of hearing to change them because the laws have changed 20 years from now when they close the facility. That generalized closure plan should be that the solids will be disposed of pursuant to the laws and the rules in effect at the time of closure.

Q. But the OCD does anticipate then that there will be some solids left there?

A. There could very well be, certainly. There is blown sand that gets into all those ponds.

Q. At the June hearings there was also considerable discussion about as the water evaporates even natural salts will be left behind.

A. That's correct.

Q. So in addition to dust that's blown in, there will be accumulation of materials that were introduced into the pond from the waters themselves; correct?

A. There could very well be, yes.

Q. Very well be. There definitely will be?

A. There will be certain amount of salts that are precipitated, yes, as the fluids reach saturation point.

Q. Now, then, does anybody know what the makeup of these solids will be? The types of materials we're talking

about?

A. We have analyses on produced water. We can get a generalized -- there are salts. There are sodium -- what is it? -- sodium carbonate, isn't it? We have a generalized analysis of the produced water there, generated up the in San Juan Basin.

Q. There is also sulfur, is there not?

A. Naturally occurring in -- it depends on the waters they get. There are some waters that have some sulfurs in them.

Q. We're concerned about hydrogen sulfide. Sulfur is a component in that?

A. Sulfates.

Q. Okay, sulfates, sulfur.

A. There is a difference between sulfates and sulfur.

Q. Are both likely to be there?

A. No, elemental sulfur will more than likely not be there in the waters being received.

Q. But sulfates will be?

A. Sulfates probably will be.

Q. And that can potentially cause hydrogen sulfide and other noxious materials?

A. Under certain conditions that's -- which we have -- which I explained earlier, the anaerobic conditions,

hydrogen sulfide gas could be created from sulfate.

Q. Now, hydrogen sulfide is generally in the form of a gas; right?

A. That's right.

Q. Now then when in the water what is it called?

A. It's hydrogen sulfide.

Q. Isn't it called sulfuric acid?

A. No.

Q. Can it be sulfuric acid?

A. Hydrogen sulfide?

Q. Hydrogen sulfide is H2S, is it not?

A. Sulfuric acid is H2S04.

Q. Hydrogen sulfide is H2S?

A. That's correct.

Q. Sulfuric acid is H2S04?

A. That's correct.

Q. H2S04 combining with oxygen in the water is sulfuric acid?

A. H2S04 is itself sulfuric acid without oxygen.

Q. Well, oxygen is a component of sulfuric acid?

A. Yes, okay.

Q. So we will probably have sulfuric acid in this pond, too?

A. Not necessarily, no. Why?

Q. If you've got sulfur or sulfates somehow in the

water that's going into this pond that you're treating to eliminate hydrogen sulfide, okay, how are you treating that and what happens to the sulfur?

A. They are -- I believe that they initially recommend the treating it with bleach, which is a sodium hydrochloride, which does not create sulfuric acid from sulfates or hydrogen sulfide.

Q. What happens to the sulfur?

A. The sulfur will drop out -- can drop out as elemental sulfur.

Q. So then you will have elemental sulfur --

A. Yes.

Q. -- in the pond?

A. Yes, but not from the fluids coming in. It will be generated from the treatment of it. It's not naturally occurring -- elemental sulfur is not naturally occurring in produced water.

Q. It's not naturally occurring in produced water?

A. Elemental sulfur is not.

Q. Okay. But the sulfates are?

A. Yes.

Q. And the potential for hydrogen sulfide?

A. In anaerobic condition.

Q. And the potential for sulfuric acid?

A. I believe -- I don't remember if that was

brought up. It's possible under certain conditions that sulfuric acid could be created, which would lower the pH, and is why we have the pH at 7 as a requirement.

Q. Now, then, you talked about the redundant nature of these systems. Could you be a little bit more specific? What is -- what are the systems that are redundant, and how are they redundant?

A. Redundant meaning there are a number of systems that will accomplish the same thing, although not -- although in varying degrees. You reminded me. They have two aeration systems. They have fine bubbler, coarse bubbler, those are two redundant systems. Both will impart oxygen into the pond. They do -- then they have circulation system that -- they can use either one of these as circulation systems. They have a spray system that they are proposing to put in. It will also -- although not its primary objective -- would impart oxygen into the pond by circulating the ponds in the air. It will also stir the pond up. The aeration system stirs the pond up. Both aeration systems stir the pond up. All can be used as circulation system to add chemicals.

That's what I mean by redundant. Each one of these systems can be used for another purpose other than what its primary design was.

Q. Now, then, just to make sure we're on the same

wavelength here, when I hear "redundant," I assume you to mean that any of these systems operating by themselves can provide the oxygen requirement to the pond that is required?

A. No. I didn't say that. They're redundant systems in that they can all perform their own task, although their primary task may not be to impart oxygen into it, but they can also aide in doing that. Such as the spray system, the spray system is not designed to impart enough oxygen to keep the oxygen levels where the requirements are. However, it can aide in that. But the aeration system is required to stand by itself and impart that much oxygen.

Q. So then when you review whatever is submitted by the applicant here, you will not be requiring them to submit designs for systems that standing alone the separate systems -- that these separate systems can provide adequate oxygen levels to the pond?

A. That's what I just said, yes.

Q. Then will you be requiring them then to have designs that the aeration system standing alone without the spray systems can provide appropriate --

A. That's correct. The aeration systems standing alone must keep the .5 parts per million residual oxygen in the pond.

Q. Now, then, if they should have some sort of a problem with one of their systems, you would anticipate that possibly things could get out of hand and hydrogen sulfide could be emitted into the atmosphere?

A. Not if the pond is at .5 parts per million.

Q. But if it takes two aeration systems to accomplish that and one system is down --

A. I didn't --

Q. -- and you can't --

A. I said "the" aeration system. I didn't say both aeration systems. The aeration systems will be required to impart half a part per million residual oxygen. The aeration system. If they want to, they can have two. But one of them alone has to impart half a part per million. We're not requiring two aeration systems.

Q. So you're not going to require that there is some sort of scheme for providing adequate oxygen levels to the pond in the event of a breakdown of one single primary aeration system?

A. No.

MR. STOVALL: I'm going to object to this. We're getting into semantics here. We're going to require, as Mr. Anderson testified, that the oxygen level be at .5 parts per million

COMMISSIONER LEMAY: I'm going to sustain that

objection only because I can see that if two systems broke down, you might want five. If all five -- you're not ensuring the integrity of it because you need six. I mean where are you going with this, counselor? They have a standard that they're going to enforce, and the amount of systems they have to enforce that standard will come in the design criteria.

MR. HORNER: Mr. Chairman, the standard engineering design is to design a system where you can lose any single component and still be able to maintain whatever it is you are trying to maintain.

COMMISSIONER LEMAY: Then your witness can come up with what a standard engineering system should be. I think we're getting away from the crux of this whole thing when you start talking about what you consider to be a standard engineering system to accomplish the purpose. You have a witness to testify.

MR. HORNER: Not at all. What we have here is testimony that they can put in one single system; if that breaks down, they're not going to be able to provide adequate oxygen levels to the pond, and you're going to get a situation that creates hydrogen sulfide and maybe they don't like it, but at that point there is nothing that can be done about it.

COMMISSIONER LEMAY: Counselor --

MR. STOVALL: I am just simply going to say that he's talking about hypothetical design. I will ask Mr. Dean. Is Mr. Cheney going to discuss the aeration system and the oxygen?

MR. DEAN: He did in the record and I assume that it will be gotten into, the aeration system.

MR. STOVALL: I will simply state that the requirement is, is if a system breaks down, as he testified, get the oxygen in the pond; and if you have to get in 25,000 bicycle pumps, that may be the way to do it.

COMMISSIONER LEMAY: I think you have a valid concern when you're talking about a backup for whatever system they have. What would happen in the event that the one system broke down. If it was a design failure, I think you have a valid concern, counselor.

I'm not sure that this witness would be the witness for you to pursue that point with.

MR. HORNER: The concept is if the plans to be submitted envision two systems, okay, a fine bubbler and a coarse bubbler, and if the designs of those systems are such that either one will provide adequate oxygen levels, that you can lose either system and still provide adequate oxygen levels to the pond; if the OCD is looking at it the same way, and saying that's what we're going to require. But the OCD is not looking at it that way. The OCD is not

going to require that. They're going to say you can put in one system knowing full well if it breaks down, you're going create hydrogen sulfide.

MR. STOVALL: Objection. I think we need a witness to testify.

COMMISSIONER LEMAY: I think that, too. You're being your own witness. I didn't hear this witness say that once a system broke down, you would create hydrogen sulfide. It was just the opposite; that .5 oxygen in their residual in the pond would prevent that from occurring.

Q. (By Mr. Horner) If the residual oxygen level drops below zero, below .5 down to zero, is there a potential for creating hydrogen sulfide?

A. There is a potential at that time for creating anaerobic bacteria which will create hydrogen sulfide gas, yes.

Q. And if the system breaks down that imparts oxygen into the pond, isn't it reasonable to expect that the residual oxygen levels will drop below zero parts per million? Down to.

A. Down to zero. Yes, they could. At the time I do not know how long that would take. It would take some time and that's where I recommended the administrative part of the permit be approved so that at that time we can require emergency action to prevent that from happening.

Such as the transportation in of chlorine dioxide to instantly impart oxygen to it, to the pond, plus kill bacteria.

Q. This chlorine dioxide, or whatever you're talking about, that's not a part of any order or anything else that we've seen?

A. No, that's what I said that the administrative changes and modifications to the permit need to be there so that can be done instantly. That kind of thing can be done instantly.

Q. Now, then, the time required to drop from .5 parts per million oxygen residual in the pond down to zero is actually a function of the oxygen demand in the pond; is that correct?

A. That's correct.

Q. Which at this point we don't have a good clear picture what the oxygen demand is; is that correct?

A. That's correct.

Q. All right. Now, then, I believe you stated that you can't enforce EIB regulations, specifically I believe it's AQCR 201?

A. As counselor knows, I'm not an attorney. I do not think that we can enforce it. I can't give you a legal opinion on whether we can or not.

Q. But, in fact, if you adopted a similar

regulation you could enforce it, could you not?

MR. STOVALL: I think that calls for speculation.

COMMISSIONER LEMAY: It is beyond the expertise of the witness. The jurisdiction of OCD and air quality is a whole separate issue from this case. What we could or could not possibly do in terms of duplicating EID regulations, I don't think this witness is qualified to answer.

MR. HORNER: Mr. Commissioner, the witness has already testified to certain hydrogen sulfide levels that they will accept, to certain criteria that is being set up by OCD, and I believe it's .1 parts per million in one case and 10 parts per million in another; and they could just as easily use the EIB numbers, .01 parts per million.

MR. DEAN: If that's the case, Mr. Commissioner, I would object because it's asked and answered. He discussed those standards, and he said we picked this one. Mr. Horner is stuck with that, like it or not. Mr. Anderson said that's the standard -- we looked at these standards. Here's the one we picked.

MR. STOVALL: I would suggest that if, in fact, that's the case, then I would ask he submit evidence to support that. The mere fact it's -- accepting the emission is a mischaracterization. Again, the division has said no H2S. I'm not sure what this means from an engineering --

COMMISSIONER LEMAY: You're introducing another standard. You're asking the witness here to comment on that particular standard, or are you inferring that he should adopt that standard?

MR. HORNER: I think he should. But let me ask a couple of questions and make it a little bit more clear.

Q. (By Mr. Horner) Are you familiar with the EIB standard of .01 parts per million?

A. I've heard of it. I don't know what its basis is.

Q. You are familiar that it exists?

A. Yes.

Q. Are you familiar with the Basin case where that court imposed on the Basin facility the EIB standard of .01 parts per million?

A. I don't know whether they did or not.

Q. The record will reflect.

COMMISSIONER LEMAY: It's in the record. That's fine.

Q. (By Mr. Horner) Now, if, in fact, some problem comes up and hydrogen sulfide is generated at the facility, for instance the aeration system breaks down or whatever, what does the OCD intend to do about it?

MR. STOVALL: Mr. Chairman, I think we can go on about scenarios. I think the standard -- Mr. Anderson has testified that if, in fact, the oxygen level goes below .5

they require the applicant to get the oxygen level up to .5. If, in fact, the pH goes below 7, they're going to require to get it up above 7. If, in fact, there is measurable H2S at the berm defined as .1 parts per million, they're going to require them to test the oxygen levels and eliminate the oxygen. I think --

COMMISSIONER LEMAY: I think we're getting repetitious here. I will allow a summary statement. I thought I heard just previously that there was some chemical that could be added; that there were other means. If you want to summarize that answer, if you are asking this question again in terms of the applicant summarizing the answer?

MR. HORNER: Mr. Chairman, my concern is the OCD has decided, well, it's okay if it takes nine months to reduce the level of the pond below the leak. Okay, you started generating hydrogen sulfide, we didn't want you to do that but you're doing it, well, get it straightened out within nine months.

MR. STOVALL: I would object.

COMMISSIONER LEMAY: That's not what I heard the witness say at all.

MR. HORNER: I would like him to testify how they intend then to make sure that the hydrogen sulfide that does accidentally get created gets eliminated within whatever period of time.

MR. STOVALL: Mr. Chairman, as just guidance, I would suggest there is a specific procedure outlined in our H2S contingency, prevention and contingency, in the permit. I think it's Section XII of the permit. I would -- as I stated at the beginning, if Mr. Horner does not believe that the specific standards there are adequate, I would ask him to submit evidence to that effect and help you make a decision as to a different standard; but simply to say how is the -- how is the OCD going to deal with it? The OCD is going to enforce whatever permit this commission issues.

MR. HORNER: How does the OCD enforce it?

MR. STOVALL: Required to maintain the standards.

COMMISSIONER LEMAY: I will let the witness answer your question as long as there is not the assumption that H2S will be generated because -- in case it is generated, what will OCD do under those circumstances? Is that your question? I don't want to phrase it.

MR. HORNER: Yes. What action are they going to take to enforce this.

COMMISSIONER LEMAY: I will allow the question.

A. In the event there is an unforeseen generation of some H2S gas, like OCD's counsel said, there are certain limitations here; there are certain numbers that target certain things that the facility has to do. And this is where the administrative approval of changes to permit come

into play, too. That if at the time they hit the .1 parts per million or greater as obtaining a one-time reading, then they will start doing -- taking the tests that they have to take, and they will take these before their second reading of H2S and get an analysis to find out what the problem is.

If the problem is lack of dissolved oxygen, they will be given -- they will be told, at that time to immediately start imparting oxygen, whether that be bringing in chlorine dioxide, bringing in sodium hydrochloride, and injecting this into the pond, but it will be immediately. It will not -- I think it's a very dangerous assumption and statement to say we're going to leave hydrogen sulfide gas emitting for nine months. It will be taken care of immediately. That is where the administrative functions come in.

Q. (By Mr. Horner) For instance, chlorine dioxide, I think -- is that what you're talking about?

A. That's one method.

Q. Are they going to be required to have chlorine dioxide on site?

A. They are required to have, and I believe we put it in here -- they said they are going to have bleach on location. We put it in here as a treatment chemical because to put it in an order just bleach or sodium

hydrochloride limits it to just bleach, when there are others that are just -- not as cheap but others just as good chemicals that can be used, and we didn't want to limit it to that, just bleach.

They will have a certain amount of storage. They have also committed to a contract with a storer of bleach that can bring 5,000 gallons within, I believe it was, a 24-hour period. They have -- I believe it was a thousand-gallon tank of bleach on location. And sodium hydrochloride, a gas -- I'm sorry -- chlorine dioxide is a gas so that will have to be brought in in a gas tube. But there are many, many chemicals that can be used.

Q. Is it reasonable to put some sort of time frame on these guidelines; that hydrogen sulfide will be eliminated in a certain period of time or else something?

MR. STOVALL: I object. It's in there. There are guidelines in there. Again, if Mr. Horner would like to suggest different guidelines, that's what the purpose of this hearing is, to give him that opportunity. But those guidelines are contained in this order. What happens at .1 measured at berm. What happens at 10 parts per million measured at the fence. There are specific steps.

MR. HORNER: The .1 it anticipates taking more readings.

MR. STOVALL: And impart oxygen.

MR. HORNER: You take more readings, do more testing. At 10 parts per million you start evacuating people. What I am trying to find -- what I would like to see is that the OCD intends to impose on the applicant a fine of so much as an incentive to make sure that this doesn't continue.

MR. STOVALL: Mr. Chairman, I will state as a matter of record the statute provides that in the event of failure to follow an order, there is a provision for a civil assessment, and in the event of a criminal violation, there are provisions for criminal penalties.

COMMISSIONER LEMAY: Mr. Horner, we have the discretion to fine an operator a thousand dollars a day up to a maximum of $50,000 for violation of any of our rules. We have that already in the statute in case you're not familiar with that.

MR. HORNER: I wasn't familiar with that.

MR. STOVALL: I would ask again that if Mr. Horner doesn't believe that these standards are appropriate, please submit some evidence, because that's how we got here, is what we have in the record. But I think -- I just object to continuing to go over what's in the order, in the record. Let's get some helpful information if we need to revise what's there.

Q. (By Mr. Horner) Now, I believe you testified that the spray system would probably add oxygen to the pond

and that the aeration system would be designed to add oxygen to the pond without the use of the spray systems?

A. That's correct.

Q. Now, then, in fact, that's because if the wind is blowing, and blowing the spray all over country, you've got to shut down the spray systems; right?

A. Before it sprays it all over the country.

Q. Right.

A. That's correct.

Q. And therefore, the spray system will not be available to add oxygen to the pond?

A. May not be available to add oxygen and should not be relied upon, that's correct.

Q. Now, I believe you stated earlier that the OCD wanted to allow the applicant here to accept loads of produced water containing unlimited amounts of hydrogen sulfide; correct?

A. We were -- did not in this order limit the amount of hydrogen sulfide contained in the water that they received.

Q. Now, then, I believe that your logic was that you wanted the hydrogen sulfide treated and eliminated before it was put into any open container; right?

A. That's correct.

Q. Now, then, in fact, is the OCD requiring the

same thing at other facilities?

A. Not yet.

Q. Or just simply bypass this facility and go someplace else and emit hydrogen sulfide?

A. I don't understand what your point is.

COMMISSIONER LEMAY: I'm confused by the question, too, counsel.

Q. (By Mr. Horner) I don't know the name of the facility, the one up there by Blanco.

A. Southwest Water Disposal.

Q. In fact, if it was determined that it was too expensive to treat this water at this facility, they could just simply take that truck up to Southwest Disposal?

A. They treat their water

MR. DEAN: I'm going to object that it's totally irrelevant.

COMMISSIONER LEMAY: I think it's totally irrelevant, too. We're not talking about hypothetical situations where a truck may take a load of water somewhere else. Objection sustained.

Q. (By Mr. Horner) Now, then, the standard in the order here that talks about 10 parts per million and starting to notify law enforcement agencies and OCD and this sort of thing, that's actually to be measured at the fence line; is it not?

A. Yes, it is.

Q. So that will be at the neighbor's property?

MR. DEAN: That's not a fact that's in evidence, Mr. Chairman.

COMMISSIONER LEMAY: Objection sustained.

Q. (By Mr. Horner) Now, then, this 10 parts per million, the way that works out, that's a thousand times higher than the EIB standard?

MR. STOVALL: Objection. We don't know what the EIB -- I mean we've heard a number of .01. But quite frankly, I don't know what that standard means, and I don't think the commission does. What is that a standard for? If it's for emissions, then it's plant emissions Mr. Anderson talked about.

MR. HORNER: I believe it's in the record.

COMMISSIONER LEMAY: I believe it's in the record that it's .01, and that the recommended standard here is .1. The relevant fact as to it being ten times, I think that can be stipulated. I've got my calculator. I think ten times .01 is .1.

MR. HORNER: 10 times .01 -- or 10 parts per million as compared to .01 is a thousand times higher.

MR. STOVALL: Mr. Chairman, the numbers --

COMMISSIONER LEMAY: The numbers speak for themselves, counselor. If you wish to address an issue this witness is

qualified to speak on, please do so.

MR. HORNER: I will go on.

Q. (By Mr. Horner) With regard to this exhibit here today, the guidelines that were come up with by OCD in November of '90, which was after the June hearings, with regard to the design and construction of these facilities, in those guidelines is there any oxygen level, residual oxygen level, defined?

A. No, there is not.

Q. Is there any standard for acceptable hydrogen sulfide emissions?

A. Not specifically stated in the guidelines, no.

Q. Do you think they would be appropriate?

A. Guidelines are guidelines. They are a guide for somebody to submit an application.

Q. That's what you intend --

A. It's just like the standards would be different in San Juan Basin than they would be in Artesia because the -- the ambient air quality standards are different down there also.

COMMISSIONER LEMAY: I remember the witness testifying to the fact that he thought they should be more site specific. That was mentioned more than once as far as acceptable.

MR. HORNER: Right. That's all I have at this time.

COMMISSIONER LEMAY: Thank you. Commissioner Bailey.

EXAMINATION

BY COMMISSIONER BAILEY:

Q. Mr. Anderson, have you been out at the site? Can you characterize -- I mean we're hearing .1 and .01. Is this pristine mesa area that we're talking about? Are there other facilities or other sources of H2S in the area that may have an effect or may compound any problem that could possibly arise?

A. The site is on the top of a mesa. There are other facilities around. I believe it's about a three-quarters of a mile away there is a -- the San Juan Basin landfill and a number of sewerage lagoons that are just off the northeast side of that mesa. There may be a number of oil wells around, but I did not look at those.

Q. Is there any other permit other than the state engineer's permit that's required for a facility of this type?

A. Not that I am aware of.

Q. That's by state laws and agency regulations?

A. It is -- as far as I know there are no other permits required.

Q. The thickness of this synthetic liner, are they both 20 mils or is one thicker than the other?

A. I believe they were -- I'd have to look back at

the record. I believe they're both 30 mil but I'm not positive.

MR. STOVALL: Commissioner Bailey, I think there is a specific liner which I think is approved in the permit. It doesn't mean much to me, but I suspect Mr. Anderson could -- HTSE or something of that nature. The answer to that question is there is a specific liner I think was approved, that was submitted, if that's helpful to you.

Q. (By Commissioner Bailey) And it is --

A. I believe they were both 30 mil HDPE liners, high density polyethylene.

Q. UV resistant and oil resistant?

A. The primary liner is required to be UV resistant, oil resistant, constituents of the fluids -- resistant to all constituents of fluid. The secondary liner, I believe, if I'm not mistaken, was the same as the primary line, although our requirements do not require UV resistance in the secondary liner.

Q. Because it's buried?

A. Yes, it never sees the sun.

Q. The testing that's being required for measurable oxygen and pH and all this, are these methods laboratory-type testing methods, or are they field methods that an average type person can be trained to be able to do with some confidence?

A. The majority of the testing required -- there is a pH, dissolved oxygen, hydrogen sulfide in the truck coming in are all field measurements with field instruments. The dissolved sulfides, dissolved sulfates, those are laboratory methods. They are pretty simple and there are laboratories up there that can do that.

Q. But the ones that would be testing on a very regular basis on a close schedule, the oxygen and the pH, can be performed right there in the field with results within minutes?

A. That's correct.

Q. Would you, in your opinion, say that the technology that's been submitted so far, could that probably be characterized as the best available technology for the prevention and suppression of H2S?

A. The principals are -- if the technology to accomplish the principals that we're setting up, such as the dissolved oxygen content, the engineering behind that we have not gotten the final drawings yet. It's -- I assume that those are waiting for -- until we know whether they're going to get permit or not before they spend capital on doing the design. And we have not gotten those yet.

However, what was presented at the examiner hearing, I would characterize as probably the best

available technology, best available affordable technology.

Q. The H2S testing there along the pit, what is the lowest parts per million that can be tested with any kind of confidence?

A. There are very elaborate instruments that can get down to .01 parts per million, which is primary laboratory instruments. The most readily available instruments, such as the ones we have, cost effective available instruments, get down to .1 part per million with an error of -- the scale is from zero to 199 with a 7 percent error rate full scale. That's what our instrument does.

Q. How far is the closest residence? I mean we've talked about the half mile permit area around the facility.

A. I believe it was in the testimony given. It was two or two and a half miles was the nearest resident. I can't be positive on that.

Q. But in that general neighborhood?

A. Yes. I believe the nearest one is at Flora Vista, if I'm not mistaken.

COMMISSIONER BAILEY: That's all I have.

COMMISSIONER LEMAY: Mr. Weiss.

EXAMINATION

BY COMMISSIONER WEISS:

Q. The half part per million oxygen, is this

something new that you guys just came up with, or has this been actually achieved somewhere?

A. You mean the actual having half a part per million in there?

Q. Yes.

A. There are standards for oxygen, dissolved oxygen, in sewerage treatment lagoons. I don't know if it's a half a part per million dissolved oxygen that's a requirement or not. But they do achieve dissolved oxygen requirements in sewerage treatment lagoons.

Q. And leaks, how many per year in your experience would you expect in a pit of this type, this type of a liner?

A. In this type of liner it would -- the number of expected leaks would obviously increase with the age of the liner and its weathering and stuff. We have had -- let's see, I've been permitting these for five years. We probably have maybe 15 or 16 lined pits in the state, and I think we've investigated maybe four in the -- four or five in the five years that I've been doing it.

Q. So it's much less than one per year per pit?

A. Oh, certainly. I wouldn't expect a leak in a pit unless it was constructed with one, and they should get that on the test. I wouldn't expect a leak in a new pit for maybe -- or even the possibility of a leak for four or

five years.

Q. The Basin Disposal system, when was it designed and installed?

A. That was -- I believe it was installed in '84 and started the end of '84. I believe. I was not here then.

Q. That's old technology, ancient technology?

A. Yes, sir.

Q. And the aeration system on the bottom of the pit that's in here, is discussed in here?

A. Yes, sir. What was decided -- the final drawings are not in that. It was discussed at length in there.

Q. And then apparently oxygen demand will be included in the design of any aeration system; is that right?

A. Yes, sir. It needs to be. It has to be.

COMMISSIONER WEISS: Those are all the questions I have. Thank you.

COMMISSIONER LEMAY: One quick question.

EXAMINATION

BY COMMISSIONER LEMAY:

Q. Mr. Anderson, how deep is ground water in the area?

A. I believe -- I may be wrong but I think it was

determined to be approximately 85 feet, 80 to 85 feet.

COMMISSIONER LEMAY: Is that in here?

MR. STOVALL: It's in the record, Mr. Chairman.

COMMISSIONER LEMAY: I'll find it. That's all I have. Additional questions of the witness?

MR. STOVALL: I have just a couple for clarification.

COMMISSIONER LEMAY: Mr. Dean?

MR. DEAN: I was just going to say no.

REDIRECT EXAMINATION

BY MR. STOVALL:

Q. Talking about the oxygen demand question, that was discussed considerably at the examiner hearing; is that not correct?

A. Yes, it was.

Q. And part of the discussion was the requirement of the closed treating system prior to the induction of water to reduce demand; is that correct?

A. Yes, sir.

Q. So if I understand you correctly -- part of the aeration includes reducing demand and ensuring that all demand is met plus a residual requirement?

A. That was part of the treatment process prior to discharging fluids into the pond, is to eliminate hydrogen sulfide and reduce oxygen.

Q. Real quick, on the nine-month leaking question,

if I remember that testimony, is your memory the same as mine, that what that was that if nothing else was done but evaporate a full pond that it could take as long as nine months for that pond to be emptied to the bottom?

A. I believe that was the ultimate worse-case scenario.

Q. Now, let me ask you -- talking about just the issue of change -- I think you have already addressed it, but real quickly, is it correct to characterize the fact that the initial recommendations of emptying the pond within a week was not included in the order because it did not provide significant additional protection?

A. That's correct.

Q. I think this is my last round of questions. With respect to the leak and the sump and the four-inch hole, first of all, you're not going to let someone out there with a shovel. I assume it's not common practice to poke around liners with a shovel, is it?

A. I believe at the cost of liners the owner of the liner would attempt to prevent all punctures of liner from outside sources.

Q. I understand real quick sort of engineering analysis that Mr. Horner did is if you've got four inches of water going in, and more than four inches of opening allowing water in, that you need more than four inches of

pipe coming out. Is that actually engineeringwise a correct statement?

A. Not completely correct, no, because there is a -- you have the distance between the primary and secondary liner, the permeability of the material that is separating those liners, which is the sand or the geotextile liner, which has a certain conductivity which will not allow the fluid to flow through that that fast. If you have a four-, five- or six-inch hole, you know, you're going to have the head right there. It's going to be flowing down toward the center of the leak detection sump at a certain rate, depending on what material is between the two liners.

Q. And is there a pump on the sump?

A. There is not one designed to be on the sump, but there has -- it has to be designed to either accept a pump or a suction hose from a vacuum truck.

Q. So if, in fact, the sump were not actively getting water out, they could install a pump to remove the water more quickly to prevent it from building up in the secondary liner?

A. It has to be designed for that contingency, yes.

Q. One last question. We heard all sorts of numbers batted around as far as H2S standards. How much H2S emission is going to be permitted? What is the number? Give us a number.

A. The permit conditions are zero.

Q. What's the significance of the other numbers?

A. In the event of an emergency where something unforeseen happens that we take action to reduce that to zero.

Q. In other words, all those numbers do, the .1 and the 10 parts per million, is that when you reach this level, that's a warning that something is wrong and you've got to go back and fix that something wrong, increase whatever measures it takes; is that correct?

A. That's correct. Those are not planning levels. Those are action levels in an emergency.

Q. So in other words, just not going to allow any H2S?

A. That's what the permit conditions are.

MR. STOVALL: No further questions.

MR. DEAN: I just have one.

RECROSS-EXAMINATION

Q. And really the standard that you have to report in case of an emergency is the only reasonable one because that's the equipment that's available -- that's the first register it has; right?

A. That's right.

Q. That's the first time it tells you there is H2S?

A. For the most readily available equipment.

Q. Unless you're willing to go out and spend a large amount of money on a more sophisticated system?

A. Yes.

Q. Really your standard for reporting it is the first time it shows up?

A. That's correct.

COMMISSIONER LEMAY: Additional questions of the witness?

MR. HORNER: I have one more.

RECROSS-EXAMINATION

BY MR. HORNER:

Q. And that is -- you just talked about four-inch hole is not going to develop a full head or whatnot. Actually if the sump is not being pumped, it could be a three-inch or four-inch or whatever size hole, and you will develop a full head on the secondary liner, will you not, if the water is not being pumped out?

A. If the water is not being pumped out of the sump, that is correct.

Q. If there is no provision necessary to have a pump on the sump, and you're waiting for a truck to come in, in the meantime you're going to be developing a full head of pressure on that secondary liner?

A. That's true, yes.

MR. HORNER: That's all I have

COMMISSIONER LEMAY: Additional questions? Witness may be excused. Break for lunch and reconvene at 1:30.

(From 12:00 to 1:30 p.m. a recess was taken.)

MR. STOVALL: We shall resume. I assume you have no more witnesses, Mr. Stovall.

MR. STOVALL: I have no more witnesses. I'm through with my part.

COMMISSIONER LEMAY: Mr. Dean, if you would like to present your case.

MR. DEAN: Yes, Mr. Chairman. We're going to call Richard Cheney at this time, and he was not sworn.

(Whereupon the witness was duly sworn.)

MR. DEAN: Briefly, Mr. Chairman and Commissioners, the purpose -- we're relying on the record today which has been admitted by stipulation of all parties.

There are a couple of things that came up with the order that were discussed at the hearing, but the fact that they became part of the order, are of concern and I wish to explain. We are going to try to do it in a summary fashion. But that's sort of the direction we're going to take with Mr. Cheney.

RICHARD CHENEY,

the Witness herein, having been first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. DEAN:

Q. Would you please state your name?

A. Richard Cheney.

Q. Where do you live?

A. Farmington.

Q. And what is your employment?

A. I work for Brewer Associates consulting engineering firm.

Q. What is your educational background?

A. Bachelor of science degree from New Mexico State University in civil engineering.

Q. Are you certified or registered in your profession?

A. Yes, sir, registered professional engineer in the state of New Mexico.

Q. And other states?

A. Texas, Arizona, Colorado, Utah.

Q. Have you practiced in your profession since your graduation?

A. Yes.

Q. You kept up in your continuing education requirements?

A. We don't have continuing education requirements but we try to stay abreast of things.

Q. I didn't mean to know the requirement. How long have you been so employed as an engineer?

A. Since 1961.

Q. Have you testified in front of the OCD before?

A. Yes, sir.

Q. Have your qualifications been accepted as an expert?

A. I believe they have.

MR. DEAN: I would offer him as an expert professional engineer.

COMMISSIONER LEMAY: His qualification are acceptable.

Q. (By Mr. Dean) Within your chosen profession, do you have any specialization?

A. Water and wastewater treatment facilities.

Q. Briefly describe for the commission your experience in those areas?

A. We have several wastewater treatment facilities that we've designed, and probably the largest one was 4 million gallons per day facility for the City of Clovis in water purification for drinking-water-type purposes; for Valley Water Users Association sewerage water treatment plant of about 2 million gallons per day and numerous facilities in between. Some of them for iron removal, some of them for hydrogen sulfide removal for drinking water purposes.

Q. The one in Clovis, did you win an award for that?

A. That facility was selected for Good Housekeeping award and also for the -- for power -- the design of power was the best -- selected as best engineering design for that particular year.

Q. And you were present at the examiner hearing, were you not?

A. Yes.

Q. I think you missed Mr. Bathgart's testimony?

A. Yes.

Q. Have you reviewed all the exhibits that were presented and entered at that hearing?

A. I don't know all of them. I have reviewed most of them I think.

Q. The letters that were exchanged --

A. Letters that were exchanged --

Q. -- saw the diagrams?

A. Saw the diagrams.

Q. Have you reviewed the order that was entered as a result of that hearing?

A. Yes, sir.

Q. Are you familiar with it?

A. Yes, sir.

Q. I call your attention particularly to the order

standards with regard to the pH content and the residual oxygen standard. Could you discuss each of those?

A. I believe the pH is a minimum of 7, as I recall. I didn't bring my copy up here with me. But I think -- I don't think that that is a problem at all. I think the pH of 7 is -- I think you'd have to work to get these particular waters to a level below a pH of 7.

Q. How did that effect -- for what purpose is that standard?

A. I think a portion of that, if pH is below 7, hydrogen sulfide is already stripped from the waters. I'm not sure that's why that standard was accepted, but I think that certainly would be one of the reasons that below -- if you're much below 7, then if there is hydrogen sulfide available, then it will readily stripped from the waters.

Q. That's just sort of a -- you maintain that standard you are not going to be as prone to strip hydrogen sulfide from the water?

A. I think that's correct.

Q. What about the residual oxygen?

A. Residual oxygen is .5 parts per million. I think that's a readily attainable figure as well.

Q. What's the significance of having that standard?

A. If you have residual oxygen in the pond, then you have an aerobic condition in the pond that should

prevent the formation of anaerobic bacteria growth that would form hydrogen sulfide and produce -- sulfate-producing bacteria would not be growing in the pond.

Q. Is this H2S problem a problem in the wastewater plants that you design?

A. No, because we do maintain those in aerobic conditions, and they are designed to stay in aerobic condition.

Q. Is that possible to do?

A. Yes, it's entirely possible.

Q. Is the problem of H2S more in the wastewater plant or less?

A. It's less. It would be less than this situation.

Q. But that experience is relevant to these ponds?

A. Certainly.

Q. So it is possible to -- H2S, the possibility I guess of H2S, is a manageable problem?

A. I think that it is, yes.

Q. The key to that is to maintain the fluids in an aerobic stage?

A. To maintain that pond in an aerobic condition; and if you have water with H2S coming in, I think it's important to treat them prior to injection into the pond.

Q. Did you design a system to do that?

A. We did a preliminary design I'd call it, a kind of one-line-flow diagram on how that could be done by treating the liquids within a truck.

Q. I think that's Applicant's Exhibit 11, is it not?

A. Yes, sir.

Q. A letter from you?

A. We did write a letter with regard to that.

Q. How is that system designed to help the management of the -- the possibility of H2S?

A. It was designed to keep fluid in the truck in sealed condition while it's treating with chlorine to reduce hydrogen sulfide.

Q. And by closed system, you mean it wouldn't be exposed to the environment or to the pond?

A. No possibility for it escape to the atmosphere.

Q. The driving chemical in that setup is chlorine?

A. Chlorine.

Q. What does chlorine do when mixed with --

A. It's a reducing agent very much like oxygen. If you put enough chlorine in, you drive that reaction to completion. I believe for every part provision of hydrogen sulfide that you'd have a -- requires about 8.4 parts per million of chlorine to drive it to completion, and then you create water and I believe hydrochloric acid.

Q. By "drive," you mean that it has to be a total mix?

A. It has to be mixed totally and drive the reaction to completion. If you don't put in enough chlorine -- 2.4 parts per million you can reduce the hydrogen sulfide, but you create flowers of free sulfur at that point. And then if you put the free sulfur into the pond, if there is an anaerobic condition, then you're going to generate hydrogen sulfide in the pond.

Q. So it's a combination of the right amount of the treating substance and to mix it properly?

A. That's correct.

Q. And your system as proposed in what I believe is Applicant's 11 would do that?

A. Yes.

Q. Would it take any special training by anyone to run that system?

A. Not to operate it. I think they -- they obviously are going to need a little bit of training on the -- to detect how much hydrogen sulfide is in there. There are kits available to do that.

Q. And the amount of bleach or the substance which could be a chart, I think you testified at the hearing?

A. This a chart that they could look at.

Q. That would be a pre-setup chart where you just

have to follow along?

A. You know, if they're 80-barrel trucks, and you make a chart that says if it's 10 parts per million, 80-barrel truck, it takes X number of pounds of chlorine.

Q. To the ponds themselves, what volume of fluid are the ponds designed to hold?

A. I believe that those ponds are approximately 6 million gallons.

Q. Each of the three ponds?

A. Each pond.

Q. Have you reviewed the design of the pond itself, that is the dam?

A. Yes.

Q. Does it look adequate to you as an engineer?

A. Certainly, it follows accepted engineering designs and standards.

Q. And that design wouldn't pose any significant threat to freshwater supplies?

A. I don't believe it would.

Q. Have you done any study with regard to the fresh water in that area, or heard any testimony about it?

A. I've heard some testimony, and we've done some drilling a little closer to the river in some areas looking for fresh water. It's difficult to find, but I've heard testimony it was 80 feet deep.

Q. 80 feet. Do you have an opinion if there was a leak in the pond, that nothing was done about it, the pond was just leaking, whether the fresh water would be a risk at that point?

A. I think it would be highly unlikely that fresh water in that area would be at risk, because of the nature of the soils in those areas. There is clay layers interspersed with some other rather impermeable layers of soil, and you have a secondary liner there, and the water is going to flow through the line of least resistance, and certainly the material between the two liners is the line of least resistance.

Q. Do you have any significant concerns about the leak detection system as was described in the hearing and today by Mr. Anderson?

A. I think that the leak detection system will detect a leaking pond.

Q. Suppose there was some leak, I don't know how big a leak it would be. I suppose a foot or two-foot. Just supposing that's a problem, would you still be able to get the water out of what's called "the sump"?

A. I believe so, yes.

Q. Just as long as you -- would it take a bigger pump?

A. Take a bigger pump if there's more water coming

through it, because that's the line of least resistance. That's where it's going to go first.

Q. At the hearing I think you testified about how long in your professional opinion it would take for water from the pond to reach freshwater supplies. Do you recall that?

A. I remember some discussion about that. I think that was -- I'm not sure what kind of permeability we based that on. I think we did some calculations, but I think the -- we did some calculations regarding how long it would take for it to penetrate a foot. If they have a permeability at 1 times 10 minus 7. That's several years just to go one foot.

Q. But your calculations were made and they're in the record at the hearing?

A. Yes.

Q. And have you had an opportunity to hear the testimony and look at the design that was discussed of the aeration system?

A. Yes.

Q. You were actually kind of part of that give-and-take about what sort of aeration system would work; is that correct?

A. That's correct.

Q. Now that we have an order that we're kind of

looking at that has these standards in it, do you think the aeration system as it was discussed during the hearing would be adequate to meet those standards?

A. Well, to some respect -- I think that now that we have an order we know what the design standards are, which makes it a lot easier for us to design a system. And I think that one of the things in the order it states that each system has to stand on its own. In other words, the aeration system has to be able to supply the oxygen without depending on the spray system or any other system. So I think that probably that's going to dictate the design of the type of aeration system that's going to go in.

Q. But you don't have a problem as an engineer in designing a system that would meet that standard?

A. No.

Q. That's not a problem, is it?

A. I don't believe that's a problem.

Q. There could be more than one choice?

A. It could be numerous systems that could do this.

Q. Do you agree with the -- the intent of the order talks about having some excess ability with that system in case you needed to raise the oxygen level. Do you agree with that?

A. I agree with that.

Q. Prudent thing to do?

A. I think it's a prudent thing to do. For one thing, we're still dealing with a little bit of unknown area in what the actual demand on the system might be, so I think it needs to be redundant.

Q. That actual demand is something that you're concerned about; right?

A. Sure.

Q. So that would make even more sense to have this system expandable?

A. That would stand alone and have some redundancy by itself.

Q. There has been discussion -- I just wanted to briefly clear up the question of the horsepower. The horsepower is just part of the formula that -- to get the end result of the residual oxygen, isn't it?

A. That's correct. Based on demand and what residual you want to maintain, then it's basically a straight line performance after you run the first calculation with corrections for temperature and pressure and everything. It's part of the formula.

Q. You're not going to be able to plug in one-third horsepower there? Given that you have this forced number of .5, you're going to have to put the right horsepower in, aren't you?

A. That's correct.

Q. You don't have any leeway about that?

A. That's correct.

Q. The aeration system that was talked about, it was -- at the hearing, it was designed so that you could tackle the problem of trying to raise the oxygen if that became a problem? It would have allowed you to do that?

A. Yes.

Q. In fact, the -- all of those systems, the spray system and the coarse diffusers and the other system, all had kind of dual roles. It's been referred to as redundancy, but it seems to me it's more dual roles.

A. That's what we talked about. I go back to -- the order now states that system has to stand alone.

Q. That's right. But they all would allow you several -- a lot of flexibility in attacking if a problem arises?

A. That's correct.

Q. By treating, by adding oxygen, by mixing?

A. Yes, and the diffuser system -- I think there was some discussion about chemical addition, using the diffuser system as well.

Q. We talked about mixing being important in the truck as the load of produced water comes in. Is mixing important in the pond?

A. I think it's extremely important in the pond.

Q. Would that be taken into consideration in any design that would meet these standards?

A. Yes.

Q. And mixing is important again because you want all the fluid to come into contact with the oxygen?

A. That's correct.

Q. Or as much as possible?

A. That's correct.

Q. Does a buildup of any -- there has been a lot of professional attempts at defining the word "sludge." When I read through the record, there were five different attempts. So I've decided to change the question to say, does the buildup of solid material in the pond become a factor?

A. I think there is going to be a certain amount of buildup of solids in the bottom of the pond, probably the bottom one foot of the pond. That's going to depend on a number of factors. Some of that solids buildup is going to be from dust blowing in.

Q. What Mr. Anderson referred to as blow dust?

A. Yes. Some of it may be, on these particular systems, of the coal seam wells. There may be some coal dust in it. If there are some hydrogen sulfide waters that are not completely reduced, there may be some salt-free sulfur in those solids. I don't think they're going to be

a problem, and I don't think they're going to be unmanageable as long as you maintain that dissolved oxygen residual in the pond.

Q. But now because you have a standard of the dissolved oxygen, it's going to make you think about that problem a little closer, is it not?

A. Yes.

Q. In your design of the aeration system?

A. Exactly right.

Q. Because the aeration system has to stand on its own to meet that?

A. Right.

Q. You don't want to -- as I take it, you don't want to take any chances that it wouldn't be able to do that. You want to consider some buildup down there?

A. I think you want to take into consideration that there may be some buildup and you want to have some redundancy in that system, so you know that you always have the capability of keeping .5 residual in the pond.

Q. And Mr. Anderson testified, but I would like to hear your answer to the question. If we maintain the pond in an aerobic state, does that prevent H2S from occurring?

A. It will prevent it from escaping to the surface of the pond. If the entire pond is in an aerobic -- in an aerobic state, then it's not going to generate --

Q. Any H2S?

A. -- any H2S.

Q. That would be the intent of your design?

A. That would be the intent of the design.

Q. That's a manageable function in the wastewater plants that you have designed?

A. Yes.

Q. Does the pond and the whole operation of the facility as discussed at the hearing, when you got all the way through that hearing and the changes had been made, would that design have been -- be a workable design to meet the standards of this order?

A. I'm not sure now exactly where we were on that. I think we were talking about 96-horsepower motor, and I think that would be sufficient.

Q. Your only concern after seeing the order is that the aeration system must meet the 02 design -- the 02 standard for itself?

A. By itself.

Q. And you would want to make sure that would happen over the life of the pond and would take into consideration some buildup of particles on the bottom?

A. Some buildup of particles and maybe partial equipment failures because those are going to occur as well.

Q. There has been some talk of failures of equipment; is that something that you would address?

A. I think that is part of the redundancy of the system.

Q. And you would have that redundancy as a circumstance in case there was a failure of one system or another?

A. That's exactly right.

Q. These motors and things, though, are they readily available --

A. Yes.

Q. -- kind of thing if they broke down?

A. Yes.

MR. DEAN: Those are all the questions I have. Pass the witness, Mr. Chairman.

COMMISSIONER LEMAY: Thank you, Mr. Dean.

Mr. Stovall, any questions?

MR. STOVALL: I've just got a couple for clarification.

CROSS-EXAMINATION

BY MR. STOVALL:

Q. Mr. Cheney, speaking about your calculation about if you have a permeability of 1 times 10 to the minus 7 -- which means nothing to me, but I'm sure it does to you and hopefully the commissioners -- it would take a year for

the water to go a foot. Does that assume any hydrostatic head, with or without a head or what does that mean?

A. That would assume a constant head on it -- on the driving force.

Q. Now, you stated that you believe that you agree with Mr. Anderson that provided that the liquid in the pond has a -- is in aerobic state, I assume that means a complete aerobic state, essentially throughout; is that correct?

A. If you have a thorough mix. We discussed the importance of mixing I believe.

Q. Then, in fact, as long as there is some residual dissolved oxygen in the pond, no H2S will form or escape from the pond?

A. That's correct.

Q. In the design standards it was proposed that measurements be taken at one foot from the bottom. I believe, if I remember correctly, Mr. Anderson's testimony was that gets you down to where the oxygen -- there is going to be essentially the least amount of oxygen, and as you come up higher in the pond, there is going to be greater oxygen. So in effect is that it's a true minimum and not some sort of nominal minimum?

A. I believe that's a pretty tough standard.

Q. You say "tough standard," what do you mean by --

A. Half part per million one foot from the bottom, you stated it accurately, one foot from the bottom is going to be the most difficult area to maintain the residuals, and that's the other reason it's important that you have adequate mixing in the pond, because that -- one foot from the top probably going to be pretty easy to maintain a half part per million. One foot from the bottom a going to be a little more difficult.

Q. Again, going back to Mr. Anderson's testimony and what's in the record, the .5 is not really a scientifically derived number, but it was a number -- I believe it came out of the examiner hearing. That provides an adequate buffer of oxygen to allow some room for fluctuation and still maintain aerobic conditions; is that correct?

A. I think that's correct. I think also keeping in mind that that .5 as we have just stated is one foot from the bottom of the pond. So that .5 one foot from the bottom of the pond, you're probably going to have a higher oxygen residual as you come up through the different layers of the pond.

Q. Given that fact, if there were a major failure of the aeration system within the pond, does that -- and assuming you have extraordinary demand, does provide some time to respond to that failure, address the pond from

becoming anaerobic quickly and generating H2S?

A. I guess if I had a major failure for me -- if you had a catastrophic total failure of the system --

Q. We're talking about the aeration system.

A. The aeration system.

Q. The ability to pump air into the pond.

A. If you had a power failure for an extended period of time, when I talk about redundancy, if you are going to have blowers, I would certainly think that you'd have two blowers the same size sitting there, so that you would have -- if one blower has equipment failure, all you've got to do is hook up the other one, which probably just a matter of flipping a switch, or you can even put it on automatic so that one blower fails, the other one will kick in automatically.

Q. Either one being capable of generating --

A. Either one being capable of generating enough air. A major power failure where you've lost everything, maybe you lose your circulation pumps, everything, that's going to give you some period of time, depending upon several factors; the demand in the pond, whether or not you take in any incoming waters, whether or not you have any waters there that you have to dump at the time they're there, as to how long it's going to give you to correct it.

But I would say that the aeration system that's

to be designed would have sufficient redundancy so that it would have to be a catastrophic failure.

Q. Again, a lot of talk about maintaining the oxygen level in the pond, keeping it aerobic. If I remember at the examiner hearing a lot of discussion, which a lot your testimony focused on the fact that the size of the system is dependent upon the oxygen demand generated in the pond; is that correct?

A. The oxygen demand generated in the pond and the oxygen demand of the incoming waters as well.

Q. We have talked about treating all the incoming water before it goes out to make sure there is no H2S in that.

A. H2S, that's correct.

Q. What else creates an oxygen demand?

A. There could be biological materials in the water that could create what's called a biological oxygen demand, which could create more -- again, as you add the chlorine -- if you have hydrogen sulfide, you're adding chlorine coming in, probably you're killing the biological oxygen demand, too, depending upon how much you use. There are variables in there that you just -- that are difficult to identify.

Q. Where am I going is in thinking of terms of maintaining the standard of dissolved oxygen of .5 parts

per million. If I understand the whole testimony, there are two ways to do it. One, is to provide the oxygen to meet all the demand to maintain that standard, and the other side of that equation is to use chemical processes to reduce demand. Is that a correct statement?

A. That's correct. But the order states that you have to maintain. It doesn't particularly talk about the demand as I recall.

Q. Correct.

A. It states you have to maintain .5 residual. So whatever you have to do to maintain .5 residual, you have to supply all of the demand, whatever it is.

Q. I guess that's -- my question is, in order to do that there are a variety of ways to do it. One is to meet the demand --

A. That's correct.

Q. -- so the residual oxygen is not depleted?

A. That's right.

Q. And the other -- and if you've got a problem with the aeration system -- the other side you deal with is to reduce demand by doing some chemical processes to do that?

A. Or you can meet that demand with chemical process.

Q. Okay. We lawyers don't always have the right

terms to -- I'm known for my lack of engineering expertise.

You have indicated that the major failures like would be the motors on the aeration system?

A. I think that's correct, depending on the type of aeration. If you have a blower-type system or compressor, it could be the motor or the blower or the compressor.

Q. And did I hear you say, is it not correct, that in the event of that, that's a situation which could be rather quickly remedied?

A. Yes.

Q. I think in the course of Mr. Anderson's testimony it came out that the division's position -- we talked about all these wonderful H2S numbers, and, of course, the testimony is that the division says you're not permitted any H2S. And the significance of the other numbers was if you start crossing these numbers, these are thresholds which require additional action to remove the threat of H2S harm?

A. That's correct.

Q. Do you have an opinion, independent opinion, as an engineer as to whether those numbers are reasonable numbers as to whether -- for the specific actions that are required to reduce and eliminate the risk?

A. I believe they are reasonable numbers. Also in the order you require capability to store at least 1,000

gallons of chemical on-site that can be used to help reduce that.

Q. In a realistic scenario what would -- are there any events that could rapidly deplete the dissolved oxygen level and allow for the generation of H2S?

A. Failure of the aeration system, that possibly -- if you're -- depending on what type of aeration system you're using, the failure of the mixing system might do that.

Q. Would that be a rapid depletion? I mean one, say, in these hourly measurement periods or the measuring time set forth, would not be detected?

A. I don't think it would be a matter of minutes. It would be a matter of hours.

Q. Would the requirements as set forth -- in your opinion, would those requirements be sufficient to -- for example, testing for the oxygen level at least twice in a 24-hour period?

A. I think those are sufficient, because if there is a failure in any of those systems, you're going to be able to look at and see that there is a failure of that system and know you've got to do something. I think that the twice in a 24-hour period of checking the O level in the pond is sufficient.

Q. In other words, you would get a reading that

indicated a drop, but not all of a sudden a complete absence; is that correct?

A. That's correct. But you're -- if there is a failure of the mixing system, that's going to be obvious to you before -- you're not going to have go out in the pond and take an oxygen test to know that the mixing system has failed.

Q. Just reviewing the order and the conditions as a whole, do you have any recommendations as an engineer of any changes to this order, given a second look at it to say these standards are incorrect for whatever reason or believe it's --

A. No, I think they're reasonable. I think it's a reasonable finding. I think that you can design a system that will meet those standards.

MR. STOVALL: I have no further questions.

COMMISSIONER LEMAY: Thank you, Mr. Stovall.

Mr. Horner.

CROSS-EXAMINATION

BY MR. HORNER:

Q. Does the EID issue permits for wastewater facilities?

A. Yes.

Q. They do?

A. Certainly.

Q. Now, then, you talked about stripping. Could you explain what stripping is? I don't think anybody has really explained it for the benefit of the commissioners.

A. Stripping process, there are times when you have naturally occurring hydrogen sulfides in waters. If you're going to be using it for a drinking water source, you need to get it out of it. One of the accepted methods is to strip it using an aeration process. But that process generally requires, to be effective, pH of the water to be down around 4 or 5.

Q. Now, in fact, when this spray system blows the stuff up in the air, if there is hydrogen sulfide in the stripping that means that hydrogen sulfide blows away and blows over to the neighbor's property or whatever; right?

A. That's going to depend on the concentration. Certainly if there is hydrogen sulfide in it, and you're spraying it out there, it's going to have a tendency to strip. That tendency is going to be less if the pH in the water is high.

Q. You talked about problems relating to the pH of the water. If the pH of the water drops down to 4 or 5, what happens?

A. You're going to have more of a tendency at that level to strip hydrogen sulfide from the water if, in fact, there is hydrogen sulfide in it.

Q. In fact, if it drops down to 4 or 5 you're going to be having conditions that create hydrogen sulfide in the water, are you not?

A. Not necessarily. You can still maintain an aerobic condition in the water at that level.

Q. Reading from your letter to Mr. Cohen, which is marked as Applicant Exhibit No. 11, you stated, "By reducing the pH of the water with ionization constant should have more of the total sulfides converted to hydrogen sulfide"; correct?

A. I think that's what I just stated.

Q. So that more of the sulfide in the water will convert to hydrogen sulfide at the lower levels of pH?

A. If the conditions are correct, yes.

Q. Now, then, as your treating this incoming water with chlorine, if you put the 2.1 or whatever parts per million of chlorine in the water, what do you end up with?

A. 2.1? That would probably not be sufficient to drive the hydrogen sulfide reaction to completion, and you'd probably end up with flowers of free sulfur.

Q. And what else?

A. I don't know, maybe some sulfuric acid or hydrochloric acid in the water.

Q. If you drive it to completion, you end up with what?

A. With sulfuric acid and water, I believe.

Q. And hydrochloric acid, as a matter of fact?

A. Maybe some hydrochloric as well.

Q. Again referring to the same exhibit, the last page where you have your graph, shows what if you drive it to completion at 8.4 parts per million of chlorine, you end up with one part hydrogen -- or sulfuric acid and 8 parts hydrochloric acid; right?

A. Not parts, no. But that's the point. You end up with sulfuric acid and hydrochloric acid to drive it to completion.

Q. If you look at this in terms of moles, we will end up with one mole of hydrogen sulfide -- I mean sulfuric acid and 8 moles of hydrochloric acid?

A. That would have to be for each mole then for the hydrogen sulfide that you get.

Q. Right. Which means that in this brew in the pond you're going to have a lot of sulfuric acid and a lot of hydrochloric acid?

A. No.

Q. How to do you get around --

A. How do you quantify "a lot"? Are you going to change the pH of the pond? No, probably not.

Q. Where does the sulfuric acid and the hydrochloric acid go?

A. Right into that pond. When you're talking about the quantities of water in that pond, there are just not the quantities of hydrochloric acid and sulfuric acid that you generate here. There is not enough there to significantly drop the pH in the pond.

Q. So then is the potential for the pH of the pond going to 4 or 5 significant?

A. No. In fact, it's nearly impossible.

Q. Well, in fact, it's nearly impossible because of all the acid in the pond; isn't that correct?

A. No. If there was a lot of acid, it would go to 4 or 5 in a hurry. That's what acid is.

Q. Oh, acid is low, excuse me. Then what keeps the pH high?

A. These incoming waters have a lot of salts, and they essentially buffer that at a pH above 7. We found that in fact it's nearly impossible to drive that pH below 7, if you're taking purely produced waters.

Q. So then there are lot of salts and potential materials in this water that are going to precipitate out?

A. Well, aren't going to have a potential for precipitating.

Q. Well, in fact, as you put this water in the pond, when you evaporate the water off, the concentration of these salts is going to increase, is it not?

A. It could have a tendency to increase.

Q. And eventually they will precipitate out?

A. That's going to depend on a lot of factors, on the quality of the incoming waters. If you have some waters that come in that are relatively fresh waters, then they're going to go back into solution. It's going to depend on the temperature of the pond.

Q. Well, as the evaporation increases over time, and the salts don't leave the pond, the concentration of the salts is only going to increase over time?

A. If it's purely an evaporation pond, yes, that's what going to occur, you're going to increase the salt content of the water.

Q. Now, you said that assuming whatever you assume as far as permeability rates of the soil, it's going to take several years for this water to move a foot; is that correct?

A. That's correct. You have a clay soil out there -- again, that's assuming permeability rate for clays and some of that area. I don't think that assumption of 1 times 10 to the minus 7 is an unreasonable assumption.

Q. But doesn't that run counter to common knowledge that if you pore a pot of water out on the ground, it's going to disappear in a whole lot less than several years?

A. A lot of different factors there, too. If you

pore that pot of water out on the ground -- if you pore it on the pile of clay, it may stand there quite a while before it evaporates. If you pour it into sand, it's going to disappear in a hurry.

Q. Are you saying that whole mesa is clay?

A. No, I didn't say that at all. But I would suggest that there is probably some clay there.

Q. Some clay?

A. Probably before you get down eight feet. That's from experience from a road across there that we built. We were the engineers on the cross mesa road and we'd run into clay layers there, and the construction of that road was relatively shallow.

Q. Where did you take your sand and gravel for that road?

A. Off of some of the upper layers of those hills.

Q. So the upper layers of that hill is sand and gravel?

A. That's right. Then it's clay layers.

Q. How far down do you have to go to get the clay?

A. It depends on the location.

Q. As a matter of fact, there may be clay constituents in there, but it isn't very often you find a solid impermeable layer of clay?

A. We found some rather -- I wouldn't say

impermeable but did have very low permeability rate.

Q. Well, assuming the soil here that it's not solid impermeable clay, how long is it going to take the water to go through that soil?

A. That, again, you assume a different permeability rate and make that calculation. It's all relative to the permeability of the soil.

Q. Well, then to move a foot, it may be a matter of minutes rather than matter of years; correct?

A. If soil is highly permeable and certainly it could be matter of minutes.

Q. Now, then, again, we've got a discussion of redundancy and things got confused.

MR. DEAN: I'm going to objection, Mr. Chairman. If Mr. Horner wants to testify, he should be sworn.

MR. HORNER: Who is testifying? I'm about to ask questions.

COMMISSIONER LEMAY: I don't think his testimony is confusing. Is that what you're objecting to, the characterization of his previous testimony as being confused?

MR. HORNER: I'm not trying to cast any aspersions on his testimony, but I'm saying we do need to clarify it now because again it has come up, and what he is talking about as redundancy is something different than what Mr. Anderson

was talking about as redundancy, and we need to figure out what we're talking about here.

COMMISSIONER LEMAY: Under that type of question, I will allow it. I will not allow comments concerning the confused nature of his testimony.

MR. HORNER: No, I don't mean to say that Mr. Cheney is confused.

COMMISSIONER LEMAY: You may proceed.

Q. (By Mr. Horner) Before I go into that, there has been some -- also to me -- confusion with regard to the discussion of the systems involved. I think it's clear to me what's involved. But, again, I think it got confused. We've talked about circulating systems, mixing systems and aeration systems and spray systems. Okay.

Could you clarify for everybody precisely what systems are going to be installed and which of these functions they will provide?

A. I think it's the intent of my client to install a circulation system, an aeration and spray system.

Q. That would be three separate systems?

A. Three separate systems.

Q. Now, then, in the June hearings of last year there was talk about a coarse bubbler system and a fine bubbler system, aeration system. Now, are we still talking about a coarse bubbler system and fine bubbler system and

one circulation system and one aeration system, or what have we got here?

A. I think with the order that the aeration system has to stand alone. It's probably going to dictate the type of aeration system that's going to be designed. I'm not sure at this point that I'm going to recommend to my client a coarse bubbler system or fine bubbler. Maybe a floating aeration system.

Q. You're not sure what you're going to recommend?

A. Keep in mind we did not have any design criteria. At the point of issuance, at that time, we had specific design criteria based on recommendations to meet the .5 parts per million residual in the pond.

Q. So you intend to come up with the design that meets the .5 part per million residual. Now, then, we don't know that we have two aeration systems or whatever. Apparently that's up in the air at this point; correct?

A. I would say that's essentially correct.

Q. Now, then, if we go back to the problem of redundancy, if it's possible which -- basically we've got one aeration system and a spray system -- in your mind are redundant in order to meet whatever redundancy requirements -- which I don't believe are indicated as redundant. I think that presumed redundant systems; is that correct?

A. To my way of thinking when you say you have to

maintain a residual .5 parts per million, how are you going to do that? How are you going to do that if you have an equipment failure. The only way is to have a backup system.

Q. Okay. So then you would think it would be reasonable then that it would be required that there been a backup system in order to be able to maintain the .5 parts per million oxygen level in the pond?

A. Redundancy can be achieved in number of different ways. Floating aerators be probably -- if you went to a floating aerator, you probably still have enough capacity to meet .5 and so that's redundancy. If you go with a coarse bubbler and using a blower to mix the air, then have an additional blower there. So I'd say it would depend upon the type of design. I think that the order states that you maintain .5 parts per million residual dissolved oxygen independent of any other systems it says. I think it's pretty explicit.

Q. To your mind, in order to be able to have sufficient redundancy -- to your mind it is possible to lose any major component and maintain the residual oxygen; is that correct?

A. To lose a major component of air generation and still maintain the level of dissolved oxygen that's mandated in the order.

Q. Would you think it reasonable that that be placed in this order, that the systems be designed such that any major component can be lost but the systems will still be in existence that can maintain that .5 parts per million residual oxygen level?

A. I think that statement would be redundant.

Q. I don't believe that is a statement that is in the order now.

A. I think it's explicit. It says that the aeration system has to be a stand-alone-system capable of maintaining .5 parts per million dissolved oxygen residual.

Q. The aeration system. But a single system with a single component may lose one of the components and you're not going to maintain the residual?

A. You're not going to comply with the order then.

Q. Not necessarily. If, in fact, you have an aeration system that will give you .5 parts per million residual oxygen level, then you're complying with the order. If you have a system failure, then you've got a problem which you've got to --

A. I think you have to maintain .5 parts per million residual in the pond, period. It doesn't say that the system has to be applicable of anything. Obviously it leads to that, but it -- I don't have the order up here. Maybe I do. But I think it says --

MR. STOVALL: Page 10

COMMISSIONER WEISS: Page 6 number 10.

MR. STOVALL: I'm looking at Exhibit A, page 10.

A. Let's go back to the aeration system.

Q. (By Mr. Horner) Where are we? Which page is this again?

A. Page 3 of the order. Let me read what this says, "An aeration system shall be constructed to prevent anaerobic conditions from forming in a pond. Such system shall be able to provide sufficient oxygen in the pond to maintain a residual oxygen concentration of .5 parts per million without the use of any spray system."

I think that there are some other areas where it says that you must maintain .5 parts per million. It's mentioned in several areas.

Q. Now, it appears that in questioning Mr. Anderson he felt that a single system would be adequate with regard to that statement? But now you're taking the position that a single stand-alone system with one component down the line is not going to be sufficient to satisfy the language in this order that was promulgated by the OCD?

A. I think it's a matter of semantics. Mr. Anderson said that a single system -- that the system had to have redundancy capabilities of one part to maintain the oxygen residual. That's a single system. It's not a dual

system. But a dual system to me would mean two entirely different systems of supplying oxygen. A stand-alone system that has redundancy is one system.

Q. There was some discussion about if the aeration system should fail, that the pond can be treated chemically. But, in fact, isn't the aeration system, unless you come up with a separate system, in fact the system that delivers the chemicals to the pond?

A. I don't believe so. I think it was -- there was a particular design, and again keep in mind I think that the order has changed probably to suggest a total design of the system. But I think that the components of the aeration system, the piping itself, was capable of distributing the chemical through the aeration generators themselves.

Q. Well, what is the power source for pushing these chemicals in the system if not using the blowers of the system?

A. Pump.

Q. So there would be a separate pump on this scheme of things?

A. With injection.

Q. Now, in fact, the nature of your design has changed from what you were talking about at the June hearings based on the criteria set forth in this order?

A. I think that's true, the nature of the design has changed.

Q. So the criteria set forth in the order -- or for how to build this facility, that criteria is very critical to having a system come out that actually does what it's supposed to do?

A. Well, I think that the order has reasonable standards in it, and certainly the order is going to dictate the design.

Q. Now, as you go about designing this system then, that is to provide .5 parts per million residual oxygen in this pond, and you start designing your redundancy, whatever that is, second pump, a second blower, a second motor, second piping scheme, whatever it is that you're going to do to make sure that goal is achieved, you are going to have to assume that corrections -- that failures have to be corrected within a certain period of time in order to make sure that the residual oxygen level does not drop; is that correct?

A. No. I don't know that's correct at all.

Q. Well, you're saying that you're going to design a system that will have the level of residual oxygen not drop below .5 parts per million, you're going to have -- that has got to be changed out within 15 minutes or four hours or within whatever it takes for that oxygen level to

drop, are you not?

A. I don't think so. I think that I design a system there that you could go without for several weeks, for instance, and still maintain that residual.

Q. Okay. I'm assuming that you're talking about the second motor?

A. That's correct or a third or fourth, depending on the type of aeration system. We're getting into a situation now where we're speculating on a design. I'm not sure that since the order was issued that I've had an opportunity to sit down with my client and talk about what the design is going to be. We're going into speculations on what the design will be.

Q. I'm not trying to speculate on what the design will be. What I am trying to get at is, in order for you to come up with your design, you're going to have to make certain assumptions, and that being a demand level of oxygen in the pond of so much that you are going to have to make corrections to get the system operating again within a certain period of time in order to maintain your residual oxygen level, are you not?

A. But you've got to take -- again, it's dependent on the type of aeration system that you're going to put in there. If you're down to depending on two motors and one is gone, obviously you're going to get the motor repaired

as quickly as possible.

Q. But if, in fact, you need two motors to deliver the oxygen in the pond and you have -- one takes two weeks to repair, you have the second motor or get a replacement. And it only takes hours for the pond to become anaerobic then you've got a problem and this has to be considered?

A. If you have two motors and it takes two to maintain, you haven't built in a redundancy in the system.

Q. But still one of the factors you have to consider is the time it takes for residual oxygen to be used up in the pond; is that correct?

A. If you're going to assume that the entire system is going to fail, then you're correct.

Q. Even if you're not assuming that the entire system failing, if your -- if you're talking about a system that has two components that operate at all times, and you lose one of the two, and that is not -- and the single one is not enough to -- may be enough to retain the residual oxygen level for two days but not for two weeks, then you have to take that into consideration?

MR. DEAN: I'm going to object. I don't understand the question.

COMMISSIONER LEMAY: I think we're speculating way too much. You're beating the issue to death. I'm afraid you're losing me.

MR. HORNER: I'm losing everybody. That may be. The question is absolutely a critical one, and the witness is refusing to say what the demand is going to be, the oxygen demand, and refuses to say how long it's going to take for the pond to become anaerobic. He refuses to say how he would design a system that has enough characteristics that it's redundant so it will not become anaerobic.

I've got to consider other things, such as the pump and all this sort of thing, which might in fact result in the pond going anaerobic in a period of time without any criteria with regard to -- I'm concerned that that period of time might be an hour, might be a day, might be months.

MR. DEAN: May I respond?

COMMISSIONER LEMAY: Mr. Dean.

MR. DEAN: He's answered that question. Mr. Horner never asked what the oxygen demand is. In the hearing he assumed something. I think that Mr. Anderson also assumed something. He's answered every question that Mr. Horner has asked, and his characterization of what's been said and what hasn't been said isn't very accurate.

I think to ask Mr. Cheney if the system goes down, don't you have to take into consideration the time to get the system back up and have something in place, I think he's tried to say yes many times that the system is redundant, and if you need two motors or you need 10 motors

to have that redundancy -- you have 11. I just don't see the relevance.

COMMISSIONER LEMAY: I'm not sure I do either. I tend to agree with the counselor that he has answered every question you set before him.

MR. HORNER: Let me be more specific then.

Q. (By Mr. Horner) If you have a catastrophic failure in your system, how long will it take the pond to become anaerobic?

A. Matter of hours.

Q. So therefore, the system that you design, which has got to have a setup such that you can fix any failure in the components on this system within a matter of hours; correct?

A. No.

Q. Then you just lost me. You're going to have to explain that.

A. You're assuming that we haven't built in redundancy. You're saying that we just designed a system that was sufficient to supply the oxygen, period, with no redundancy. You design the system sufficient to supply the oxygen with one motor with another motor sitting beside it, so when this one motor goes out, automatically the other one comes on. That's one system.

How long it takes you to get this other one

fixed, I guess it depends on whether or not you want to assume the other one is going to fail in 30 minutes, one day, two days or three days. I'm assuming we've got built in redundancy in the system.

Q. Okay, let's go on. I think you testified at the June hearings that the solids in the water may eventually plug the piping in the system, plug the holes and that stuff, so that it may reduce the efficiency of the piping system?

A. This piping system it might do it or whatever system you've got in the piping system.

Q. So, in fact, you're looking at a piping system that you have to be careful about providing enough capacity in the system so that the solids won't cause problems?

A. If we use a piping system, that's correct.

Q. Now, these floating aeration systems that you've talked about, could you describe what they are like? How they would work. If you should decide to use such a scheme.

MR. STOVALL: Mr. Chairman, may I ask a -- I will do it in the form of an objection to keep it procedurally correct. But if Mr. Horner is trying to recommend a specific system, then let him focus in that direction. But you've got three volumes in front of you, and there are a number of systems described and the division at the time of

that hearing decided not to specifically require any one.

COMMISSIONER LEMAY: I will overrule the objection at this point just so that the witness can answer the question. I would be curious to know myself about floating aeration systems. I'm sure it's in here.

MR. HORNER: It's not in there. Floating aeration systems weren't discussed. We discussed fine bubbler and coarse bubbler systems.

COMMISSIONER LEMAY: I would be curious to know that myself.

A. A floating system is essentially a motor with a propeller on a shaft, and it has a fuser cone on it and it's essentially a propreller-driven pump, and it pulls water up through the fusion cone and throws it out over an area of maybe 8-, 10-foot diameter. And they're commonly used in industrial wastewater systems, domestic wastewater systems and municipal wastewater systems. It's a common design, numerous manufacturers make them. They can float with the level of the pond. They provide mixing as well as aeration. Pretty efficient means of aeration.

Q. (By Mr. Horner) Now, then, it sounds like they incorporate some elements of the spray system by spraying stuff up in the air?

A. I wouldn't characterize it as spraying because it -- I think you'd have to kind of see it operate. The

level of water that it throws up probably not much higher than that (indicating.)

Q. Then the -- with the shaft with the propeller on the bottom, I'm assuming that's a fixed distance, and will cause you a problem then as the water level rises, you're not going to get adequate mixing down at the lower levels where you may end up -- where we're concerned about sludge buildup, anaerobic conditions?

A. You size your aerators for mixing and aeration both.

Q. Which means then if the water level drops, the propeller is going to bump on the bottom of the pond?

A. You obviously don't let it drop that far.

Q. Well, water level is going to be a function of how much water comes into the facility, isn't it?

A. And how much they evaporate.

MR. HORNER: I have nothing further at this time.

COMMISSIONER LEMAY: Thank you, Mr. Horner.

Any questions from the audience? Commissioner Bailey.

EXAMINATION

BY COMMISSIONER BAILEY:

Q. We've heard various numbers of horsepowers for these compressors that will be injecting air into the system. Is it a vibration damping system going to be built

in so that there is not excessive wear and tear on the liners as lines go through the pond?

A. The way that that air has to -- is put it in there, I'd say that the blowers themselves are mounted -- would be mounted on a pad outside of the pond area, and the piping would transfer it. I don't think that there would be an excessive amount of wear. Certainly you've go to support those pipes some way.

Q. What is the manufacturer's expectancy of this liner?

A. That liner -- I haven't looked at it -- I believe they specified a CPE liner that's a three-layer liner and generally they are 20 years' specification, I believe.

Q. Since we're looking at site specific criteria here, are you aware of or were you involved in the design of the landfill and the sewerage lagoon ponds that Mr. Anderson said were in the general area?

A. No, ma'am.

Q. So you're not aware of whether or not this has more potential for generation of H2S than those facilities given these criteria?

A. No, I'm not aware of that. I'm not sure exactly what's been built over there for septic facilities, I believe is what it is.

Q. So much attention has been given to keeping the pond aerobic. We also have aerobic bacteria. What would be the other side of the coin in this situation in the detrimental affects or the by-products that may have an adverse affect on this pond from aerobic bacteria?

A. Detrimental affects from aerobic bacteria?

Q. Yes. Do they generate a slime in their life cycle, or is there a detrimental affect from the growth of those bacteria?

A. No. I can't say that there -- I can't see that there would be in the pond itself.

Q. Given the slope of the sides of the pit, the length of those sides, the analysis of the dissolved oxygen has to be taken -- a sample has to be taken one foot from the bottom of the pit. As that pit is filling up, then is there some sort of design where it is easy for somebody to get a sample without adversely pulling that across the liner?

A. I think that that sample and that testing is going to have to be done from a boat.

Q. Okay. So that would protect the liner during all sampling?

A. Generally on these -- this pond -- I did not design this pond and I don't recall. But generally on these ponds there is an area that is built for boat ramp or

a ramp so that you can walk down to the water level easily. Just about have to include those in there. I think those samples, dissolved oxygen sampling, is going to have to be done from a boat out in the pond somewhere in order to get one foot from the bottom. I think that one foot from the bottom, I means one foot from the flat bottom.

Q. So the boat ramp facility being built into the design?

A. Like I say, I did not design that particular portion of the pond. I don't have a set of drawings with me, but I'm sure it will be because that's typical standard design

COMMISSIONER BAILEY: That's all I have.

MR. STOVALL: Mr. Weiss

EXAMINATION

BY COMMISSIONER WEISS:

Q. How do you -- not specifically, but how generally is the oxygen demand estimated in the oil field conditions such as this?

A. That's something that we're kind of plowing new ground with as far as -- at least in my area. We're making some allowances for that oxygen demand. What we based it on here is some assumptions of what the hydrogen sulfide demand will be. We did that and Basin Disposal has been discussed some and might as well -- we put surface aerators

at Basin Disposal finally.

We feel like that there is sufficient oxygen in there. Generally you can -- with these surface aerators, you can generate about one and a half pounds of oxygen per hour for horsepower. They have 16-horsepower over there, so they can generate, say, 24 pounds per hour. I don't think that --- hydrogen sulfide demand itself was probably somewhere in the neighborhood of 50, 60 pounds of oxygen per day. So the rest of that is there available for various types of other oxygen demand that might occur.

Q. Which you haven't measured, haven't figured out?

A. We haven't measured yet. And some of it -- there's chemical oxygen demand and biological oxygen demands, and then the oxygen demands imposed by the various gases that might be in the water. So I think this is a little bit of a new area we're getting into.

I think that the requirement of maintaining at .5 residual is the key. In other words, I think that you are requiring that that pond be maintained in an aerobic condition, and so rather than saying you're going to put so many horsepower per million gallons, you said this is the level you have to maintain the pond. I think that's the critical key in this order.

Q. Has bottom aeration been used in the oil field, do you know?

A. Bottom aeration, there are some areas where bottom aeration has been used. Bottom aeration, and my concern in these particular ponds, is that there are so many solids in the water that anytime you have a pressure drop -- and you have with bottom aeration either coarse bubble or fine bubble diffuser, and it's fixed where you can't get to it out there in that pond, and as that air comes up out of that diffuser, then you're getting a pressure drop.

And wherever you get a pressure drop, you're going -- and there's materials in that water, you're going to get a precipitant point. I think there was some discussion about that earlier about concern of solids buildup in there. With those coarse bubble diffusers I think that that's a concern. I think it's been a problem in some of the areas that -- I know that's been a problem in wastewater treatment with fixed bottom diffusers.

Q. Are there references in the literature which address this type of thing in the oil field? I'm sure there are in sewage disposal.

A. There are some references and there are -- there are some references in some of the literature about aeration, and primarily the aeration has been surface aeration.

COMMISSIONER WEISS: Those are all the questions I

have.

EXAMINATION

BY COMMISSIONER LEMAY:

Q. Given the buildup of salts and above the liner in this pond, are there maintenance procedures that are in practice that clean out the pond basically?

A. There are some new technologies on the market since this is -- as some of these problems arise, there are entrepreneurs out there that are capitalists and there are some technologies available now for removing that type of solids.

The salts themselves are a difficult situation. If this is strictly an evaporation pond, as those salts build up during cold weather, they're going to precipitate. If you're bringing fresh waters back in, and as the temperature rises, we found they have a tendency to go back into the solution. I think that there might be a possibility sometime when they would have to come in and do some type of -- I think -- I used to refer to it as dissolved air flotation. There are some on the market now that are induced draft flotation units that help remove those solids. That would be suspended solids or the material that is put in suspension and not the dissolved solids.

If they stay in solution, I don't see that

they're a particular problem. If they precipitate and gather on the bottom of the pond, then there would be a time when they might have to clean those solids out. Whether they're solids or blow sand or coal dust fines, which is stated in some instances of these produced -- off these coal seam wells, there is a lot of coal dust fines in there.

Q. And the procedures, though, now would be -- you'd have to let the pond go dry and then just take them out that way as far as current technology goes?

A. No, I think there are some -- there are some pumps that are available now that you could drop down in there, and the type of -- dredging-type situation, pump those solids off and run them through either a dissolved air flotation or one of these induced draft flotation units and separate those solids that have collected on the bottom.

Q. Without hurting the liner?

A. Without hurting the liner, yes, sir.

COMMISSIONER LEMAY: Those are all the questions I have.

Any other questions of the witness? Mr. Stovall.

MR. STOVALL: I do have one question.

RECROSS-EXAMINATION

BY MR. STOVALL:

Q. Early in his testimony Mr. Anderson, we indicated that with respect to the aeration system that the design would have to be submitted and approved by the division, and the division certainly believes that the design ought to be submitted to Mr. Horner and his clients to evaluate.

But let me ask you, assuming you are the engineer who does the design work for the aeration system, as a non-engineer I would ask you, if I took your design and will it provide the assumptions, the evaluations, the formulas, all the information such that when Mr. Horner receives it or when Mr. Anderson receives it, another competent engineer can sit down, look at it and say yes, this makes sense; no, it doesn't, the assumptions are valid -- they're clearly stated and I can evaluate them and there is some meaning to it. If there is some criticism, I can come back and say, "This is wrong because," so that it becomes a meaningful and useful evaluation?

A. Certainly, I think that part of that would be that reporting including the assumptions and all the calculations that those -- that those assumptions generated, yes.

MR. STOVALL: I don't have anything further.

COMMISSIONER LEMAY: Additional questions of the

witness?

You may be excused. Let's take a 15-minute break.

MR. STOVALL: Mr. Chairman, before we take a break, while we're on the record, it's my understanding Mr. Dean is through with his case; is that correct?

MR. DEAN: That's correct.

MR. STOVALL: So I think we're through with Mr. Dean. I don't know if Mr. Horner has any witnesses or not.

COMMISSIONER LEMAY: I thought he had one witness. Do you have one witness.

MR. HORNER: Well, I had intended, Mr. Chairman, to call Mr. Anderson, and I think I would like to go back with Mr. Anderson with regard to hydrogen sulfide levels and dangers. That will probably just take a few minutes.

MR. STOVALL: I wasn't aware of that. That's fine.

COMMISSIONER LEMAY: Let's take a 15-minute break anyway just in case it takes longer than a few minutes.

(At 2:47 p.m. a recess was taken.)

COMMISSIONER LEMAY: I assume Mr. Dean that you have completed your presentation of your case?

MR. DEAN: Yes.

COMMISSIONER LEMAY: Mr. Horner, you wish to recall a witness?

MR. HORNER: Yes. We would recall Roger Anderson to

the stand, please.

ROGER ANDERSON,

the Witness herein, having been previously duly sworn, was examined and testified further as follows:

DIRECT EXAMINATION

BY MR. HORNER:

Q. I believe you previously testified with regard to the dangers associated with hydrogen sulfide, about some sort of NIOSH standard --

A. OSHA is the one that we used, yes.

Q. Are you familiar with the NIOSH standard?

A. I believe they were half of what the -- I've heard they're 10 parts per million, but I'm not sure what that came from. I know they came up with 10 parts per million hydrogen sulfide, but for what reason I don't know.

Q. Do you recall what time limit was associated with that exposure level of 10 parts per million?

A. For NIOSH, no, I don't.

Q. I'd like you to look at this document.

MR. STOVALL: Do you have copies for counsel, Mr. Horner?

MR. HORNER: I'm afraid I don't.

MR. STOVALL: Are you offering it as an exhibit?

MR. HORNER: I think if he will just refresh his memory from it, that may be sufficient. If we need to

offer it as an exhibit, I think we can.

MR. STOVALL: Let me raise -- I mean it's a procedural evidentiary thing. We're asking him to refresh his memory. I would like him to lay a foundation that he does, in fact, have a memory or knowledge of it, if you don't mind.

Q. (By Mr. Horner) Are you familiar with the NEOSH (phonetic) standard?

A. As a specific standard or -- NIOSH? It's NIOSH.

Q. NIOSH.

A. They have standards for -- safety standards, yes, I'm familiar with those.

Q. You have seen them before?

A. I have not looked at the NIOSH handbook. I don't remember if I saw a standard from NIOSH on hydrogen sulfide or not. I may have. I don't remember if I did or not. I know it was mentioned.

Q. Are they available in here within the OCD?

A. We do not have them.

Q. Do you know John Vance?

A. Who?

Q. John Vance?

A. No.

Q. That document is a FAX from John Vance of this office, of the OCD?

A. Air quality bureau.

Q. Air quality, okay.

A. This is what the FAX is.

COMMISSIONER LEMAY: Do you want to pass that around so we can see what that is, then we will give it right back?

THE WITNESS: The whole thing?

COMMISSIONER LEMAY: What you're referring to. Would that be acceptable, counsel?

MR. STOVALL: Mr. Chairman, maybe we can expedite this thing as Mr. Dean -- let me just look at it and see what we're talking about.

COMMISSIONER LEMAY: That's what I wanted to clarify, what we're talking about there.

MR. STOVALL: I would like to ask Mr. Horner to -- what is it he is trying to -- in effect, what we lawyers call an offer of proof. Why are we discussing this thing, and what's it being offered for? I don't particularly object having something -- a governmental standard or industry standard. I would like to know what we're doing here.

MR. HORNER: What I would like to show from this document here is that the NIOSH standard is 10 parts per million for a period of 10 minutes. Okay. That 10 parts per million of hydrogen sulfide should not be exceeded for a period of 10 minutes. This is with respect to the 10

parts per million that the OCD is trying to allow at the fence line.

COMMISSIONER LEMAY: That's not my understanding. I thought the OCD did not allow any hydrogen sulfide.

MR. HORNER: Per the order they intend to notify law enforcement authorities and OCD and EID and this sort of stuff when the level should hit 10 parts per million at the fence line. I just would like to point out to the commission that 10 parts per million is a dangerous level in and of itself, and to show to what extent it is dangerous.

MR. STOVALL: Mr. Chairman, if he wishes to do that, I -- provided Mr. Dean has no objection -- I would certainly stipulate do the submission of this, and we can make copies for the record. Mr. Anderson is not the witness to sponsor this exhibit, because he knows -- by his testimony he knows nothing about it. If Mr. Cheney or Mr. Dean want to question the information in this, that's fine. I don't see any reason to use Mr. Anderson to get in an exhibit that he knows nothing about. We will stipulate to NIOSH being a valid agency to set some -- I'd like to know what NIOSH is actually.

COMMISSIONER LEMAY: I'm not sure what it is either.

MR. STOVALL: I will even let Mr. Horner tell me what NIOSH is. Mr. Anderson knows it exists.

MR. HORNER: I think Mr. Anderson would be the best to tell us what NIOSH is.

MR. STOVALL: He can tell us what NIOSH is, and then I'd just like to offer the exhibit without his testimony.

Q. (By Mr. Horner) What is NIOSH?

A. I may be wrong, but I think it's the National Institute of Occupational Safety and Health. I don't know if it's institute or not, but it's national something occupational safety and health.

And those were not threshold levels that we used in our consideration. We used the OSHA, which is the Occupational Safety and Health Act or Administration, limits which says a worker can be exposed to no more than 20 parts per million for any eight-hour day of hydrogen sulfide. That is a worker in the workplace for a normal five-day work week.

Those are the ones that we used. We did call at one time the Center for Disease Control in Atlanta, and asked if they had any information on long-term low-level exposure to hydrogen sulfide, and they said there was none. So that's why we used the OSHA standards.

Q. They said they had no standards?

A. The Center for Disease Control said that they had no information on long-term exposure to hydrogen sulfide -- the low levels of hydrogen sulfide gas.

COMMISSIONER LEMAY: Any comments, Mr. Dean?

MR. DEAN: I won't stipulate that it goes in. There is no foundation at all laid for it. There is no foundation that it has any relevance to this case. There has been no tie up of any facts. This is a copy of a page out of a book, and a copy of the cover of the book. That doesn't indicate to me that it's a public record; it has any normal legal foundation to let it in.

It's just another attempt by Mr. Horner to get evidence in, you know, by not calling any witnesses. I think it is something else to throw in to cloud the issue. It doesn't help the issue. It doesn't do anything at all.

I object to that. Also I object to the article going in because it contains a lot of information other than the standard. In other words, there is a standard -- I'm not sure I can see the standard in there. There may be a -- it's not a standard. I think it talks about a comment and then a standard. I don't have anybody to cross-examine about where they came up with this information or anything else. Mr. Anderson, I mean he knows the name of the institution but I don't think --

COMMISSIONER LEMAY: I think Mr. Anderson can comment on his familiarity with it. Beyond that, might I suggest without your own witness, Mr. Horner, you might mention that in summation statement. But it's very difficult to

let something like that in the record without a foundation.

MR. HORNER: I understand I am at a disadvantage here trying to submit the actual proper foundation for this document, but I believe we could, like Mr. Stovall was ready to stipulate, that it is a nationally recognized organization, and, you know, it does go to show -- I mean relevancy, it goes to definitely show the hazards associated with hydrogen sulfide. I understand that I've got a problem laying the proper foundation for it.

COMMISSIONER LEMAY: To the extent that Mr. Anderson is familiar with that, certainly we can ask him questions concerning it.

MR. HORNER: I think we have already done that.

Q. (By Mr. Horner) Are you familiar with this, having read this?

A. I didn't get to read it. I'm not familiar with that specific page. No, I don't remember reading about 10 parts per million for a 10-minute period prior to this, prior to you even telling me about it. I didn't read that in there. I'm assuming it's in there.

MR. HORNER: Why don't I just go ahead and use it as summation at this point.

COMMISSIONER LEMAY: That's appropriate.

MR. HORNER: I have nothing further of this witness at this time.

COMMISSIONER LEMAY: Thank you. Any additional questions of Mr. Anderson? If not -- Commissioner Weiss.

COMMISSIONER WEISS: I have just one question.

EXAMINATION

BY COMMISSOINER WEISS:

Q. This business about -- maybe you're not the man to ask -- but this hydrogen sulfide and the threat of it in the air, when you go drive through Seminole on a still day, how much is in the air there?

A. I don't know about Seminole. I've never measured it. We have measured the Artesia area in southern New Mexico, and we have gotten readings of up to, you know, 1 to 2 parts per million in the atmosphere. That is a special area in the state of New Mexico for ambient air quality standards.

The .01 part per million is not -- .01 parts per million does not apply because it's in the air. I'm a smoker, and I did a test on smoke, and I can set off the alarm on our H2S meter with just the smoke coming from -- going out onto the meter, so which means it's over 50 parts per million coming off a cigarette.

Q. Hydrogen sulfide?

A. Hydrogen sulfide out of a cigarette. I can take your car when it's running and put it in the exhaust pipe and it's over 50 parts per million.

Q. That doesn't say much for your meter.

A. Oh, it's a pretty sensitive meter. There is that much hydrogen sulfide naturally in cigarettes, in automobile exhaust. There is that much in there.

Q. I didn't know that. Then if you can smell it around these towns -- Artesia is not the one, but Seminole is quite evident and another small town in Texas. That's in, what do you say, the 3 parts or something?

A. 1 to 3 maybe. We've gotten some up to about 2 or 3 driving around in the area down between Hobbs and Artesia.

Q. That gives me a good reference. Thank you.

COMMISSIONER LEMAY: Commissioner Bailey.

EXAMINATION

BY COMMISSIONER BAILEY:

Q. Following up Commissioner Weiss's questions, I will ask the same question I asked Mr. Cheney. You were out at the site and you saw the landfill and the sewage lagoons, are you aware of their design criteria, or did you see or smell those facilities?

A. I visited the landfill and the septic lagoons that are below the landfill. I do not know what they were approved for, for construction.

Q. They were not approved by OCD?

A. No, they were approved by the environment

department, at that time the Environmental Improvement Division. They are unlined -- a series of unlined septic lagoons, and that's all they are, just septic lagoons. There is no aeration, circulation, nothing.

Q. So in your professional opinion is there as much of a potential for H2S generation from the produced water pit or less than there is from these other facilities? What is your opinion?

A. I'd say theoretically there could be more potential for generation of H2S in the septic lagoons because there is no circulation. They're stagnant septic lagoons. There is no circulation. There is no aeration.

COMMISSIONER LEMAY: I've got a question, Mr. Anderson, maybe for clarification.

EXAMINATION

BY COMMISSIONER LEMAY:

Q. I understand in terms of the danger level for H2S, when it gets up to 50 parts per million, isn't it true that you can't smell it and that's when it's dangerous? When you can smell it, it's low enough so that generally you're okay? But when you can't smell it, that's when it's dangerous, isn't it, destroys nerve endings or something?

A. The threshold of smell is different for different people. I've heard that it's from 1 part per billion anywhere -- it could be you could smell it up to

maybe starting at 10 parts per billion, which is the ambient air quality standard. It depends on the person as to when they start smelling that.

It gets extremely -- I've heard that when you can't smell it anymore, you don't have much time to get out of the area. Most of those people that say they can't smell it anymore aren't around to talk about it anymore. But while you can smell it, you get sick. You can get sick. You can have a lot of medical problems. But I've heard, and I don't know if this is true, once you can't smell it, could be -- I don't know what the threshold is, maybe a hundred parts per million. But I've also heard that above 200 parts per million is lethal, and I have never been that high so I don't know if you can smell it then or not.

Q. You might not be around if you get that high.

A. I don't want to be around.

Q. This is just a clarification. I think the point has been made that it can be deadly at high levels, and I think -- for the record, I don't think there is any disagreement that high concentrations of H2S can be lethal and also that -- in fact, smelling criteria is not a valid criteria for the level of H2S in atmosphere.

COMMISSIONER WEISS: Well, it's my understanding -- I'm no expert -- but you're talking percentages before

people die, not parts per million. But a percentage is 10,000 parts per million. Somebody is way out of whack on what's dangerous and what's not.

COMMISSIONER LEMAY: There is a time factor there, too. I understand that most of the standards -- is it true, most of the standards that you have seen have a concentration over a period of time a danger level?

THE WITNESS: Yes, sir.

COMMISSIONER LEMAY: So there's the two components, one is a concentration and the other is time exposure to that concentration?

THE WITNESS: That's correct.

COMMISSIONER LEMAY: Any other questions.

MR. HORNER: One followup.

REDIRECT EXAMINATION

BY MR. HORNER:

Q. With regard to the location of this particular facility with regard to the septic disposal sites and that sort of stuff, you said you're familiar with the Basin facility. Do you know how far the Basin facility is from this proposed facility?

A. The Basin facility is from the Sunco proposed facility?

Q. Yes.

A. Boy, no.

Q. It's within five miles, isn't it?

A. As the crow flies I believe it probably is, yes. By road it's a lot longer than that.

Q. As the gas goes it's within five miles?

A. As what gas goes?

Q. The hydrogen sulfide gas.

MR. DEAN: I object.

COMMISSIONER LEMAY: Objection sustained. There has been no proof to show that hydrogen sulfide will be generated and therefore travel.

MR. HORNER: What's that?

COMMISSIONER LEMAY: I think the objection, counselor, was the fact that there is an assumption there that hydrogen sulfide gas would be generated and therefore traveling from one location to another.

Q. (By Mr. Horner) Then as the crow flies -- go back to as the crow flies -- five miles?

A. I haven't looked at the map to reference one facility from the other. But I believe you're correct it is --

MR. DEAN: It's in the record. It's within five miles two or three times.

A. I don't remember that being in the record. It may have been the day that I wasn't there.

MR. HORNER: Nothing further.

COMMISSIONER LEMAY: Are there any additional questions of the witness? If not, he may be excused.

Are there any additional witnesses to be presented in this case? Any statements to be received?

MR. STOVALL: I would like to make just kind of a summation-type of closing. I would suggest that perhaps to kind of take our normal order that Mr. Dean would like -- excuse me -- Mr. Horner would like to go first, then Mr. Dean and then I tie it together kind of going backwards.

MR. DEAN: I was just going to rely upon closing statement in the record. I'm just going to rely on that.

MR. STOVALL: I am not suggesting they have to, only if they want to.

COMMISSIONER LEMAY: That was my point in saying if you would like to sum up. You're certainly welcome to do it at this time.

MR. HORNER: I would like to if everybody else is passing. I think probably be appropriate for me to go last.

MR. STOVALL: I'm letting you go first, Mr. Horner.

MR. HORNER: I believe it would be more appropriate if I go last. We are the protester here and not carrying the burden. But I do want to make a statement.

COMMISSIONER LEMAY: Off the record for just a minute.

(Discussion off the record.)

COMMISSIONER LEMAY: Back on the record now.

Mr. Dean.

MR. DEAN: Mr. Chairman and Commissioners, I appreciate this opportunity and you taking the time to have this case. Sunco has a closing argument of record in this case, which I assume is part of the record, and we would rely on that. It goes into the detail what we're proposing, our ability to do it.

I would call your specific attention to the testimony of the witnesses in the record. As to the fresh water, Mr. Olsen testified that it would take some 21 years for the water with a head on it to move into the arroyo a thousand feet away. His testimony is uncontroverted in the record, and I think at one point testified that if all of this water was exposed to the surface, there would not be a threat to the fresh water. So I call your attention to the testimony.

I didn't have Mr. Bathgart testify today, but in the record he testified about the ability of Sunco trucking, their involvement in the oil and gas industry, their familiarity with dealing with regulations; their ability to comply with those regulations and their willingness to do so. He would be the person in charge. His testimony is also in the record.

The only other witness missing from our case

that you didn't hear is Mr. Frank, who was the geologist involved in this case, and there is about 300 pages of his testimony. He basically -- he operates a pond and sets out how this pond was designed. Talks about the geology of the area, the makeup of the dam and the aeration system as proposed. And one difference when I wrote the closing argument before is that the standards now are the .5 residual oxygen and 7 pH. And Mr. Cheney has testified that somewhat is going to change our proposed design.

I think the order entered by the OCD should be upheld, perhaps with the one change that Mr. Anderson proposed, that was the engineering designs should be submitted and approved by the OCD. We assumed that that was the case, but don't have any problem with that. We want this to be a facility that doesn't have the Basin Disposal problems.

I am familiar with the cost of that case to the owners of that pond, and you can rest assured that my clients do not want any part of that. They want to do everything possible to avoid that. They have Mr. Cheney involved. He wasn't so involved in the beginning. As the hearing progressed, he's become more and more involved. And I think you can see today that he's our key witness and the person we're going to rely on to build this upon.

We think the reasonableness of the order has

been testified to by Mr. Cheney and also by Mr. Anderson, and we would simply ask the commission do uphold that order, and make that order and Exhibit A attached to it the conditions upon which Sunco can build this pond. It is then up to them to meet those conditions, and the OCD is going to have a -- their regulatory hand on them at all times to make sure that they do that. We intend to cooperate with them and to comply that order. So I thank you.

COMMISSIONER LEMAY: Thank you, Mr. Dean.

Mr. Stovall.

MR. STOVALL: I'm not here to defend the division order. As I stated before, I'm here to tell you that what this commission is charged with doing at this point is reviewing that, and essentially taking a second look at the examiner record as supplemented today and determine under what standards this facility can be approved, if any, and impose those conditions -- if you determine there are standards under which it can be approved to impose those conditions.

And I would recommend that the format, not necessarily the detail content, but the format of the examiner order provides a good structure with which to do this. As I told you at the beginning, this is a new process.

I don't remember exactly when Sunco filed its application. But unlike most division proceedings, this one has taken well over a year. I think we're -- if I'm not mistaken 18 months or more from the time the original application was filed, and that's not our usual performance. I think we have gained something from it. I'm not saying that's necessarily bad. I think it's been a useful process.

What's going to happen here, of course, is the commission now has an opportunity to set a precedent in terms of the style of the order, the manner in which facilities are permitted, the factors to be considered.

Couple of points for clarification, I would point out Finding 17 actually contains an error of the examiner. It talks about 5 parts per million, which is inconsistent with all the testimony. It should be 0.5 parts per million. That's simply a typographical error, which was not picked up. It's not particularly significant because you now have the opportunity to rewrite the order, anyway.

Throughout this process, as I said, it's been a good process. It's been long. It's been time consuming. It's now into your hands. Mr. Horner representing his clients has raised some very important and very significant questions. I can assure you that some -- from the way the

application was originally submitted to the division to the time the examiner order was entered, there were some important changes made to the -- call it -- permit -- for lack of a better word -- based upon what was presented by the interveners.

I believe that adversarial process has some real advantages as long as it doesn't get bogged down in procedure. In this case it may have gotten a little bit bogged down. Unfortunately, both the division examiner and you as the commission are somewhat handicapped because Mr. Horner did not, in fact, present any technical evidence. Real meaty stuff that you as technical people can lay your hands on.

What you've got to do is say, well, the questions he asked of the division experts and the applicant's witnesses, where do we go -- what information do you have in the record from that to evaluate the criteria? Are the criteria set forth in the division order correct? Do they have need to be modified in any way?

Another point I would like to clarify. We talked about the thing about submitting designs and getting them approved, and certainly the division has no problem. It was the anticipation -- I believe the understanding of the division that before anything operates we have to look at it. You wish to clarify that in the order, that makes

sense. I don't have any objection to that. Or we have no objection to Mr. Horner having the opportunity to review engineering documents which are not yet in the record, specifically the aeration system.

I would ask that you do review this record and permit conditions. They go over a lot of things which are not -- were not discussed in any detail today. The operation of the sprayer system, for example, to prevent spray and precipitant from leaving the premises. The shutoff systems, the removal of oil from the skimmer tanks and a lot of details in there being, look at those and make sure that they -- you're satisfied that they do, in fact, protect fresh water and carry out the OCD's and OCC's mandates.

I'd also -- yes, Mr. Horner has kind of challenged the integrity of the Oil Conservation Division in his opening statements and his lines of questioning. I have entered my objections to those, and they are in the record. He certainly confused things when he's talking about the leaky liner and the drainage requirement, and the one week versus no time limit, we got into all sorts of numbers.

The point really there -- there was a lot of discussion, a lot of evidence and then a standard came out from this process. That's the standard you have to look

at. If you feel a time limit should be imposed by the evidence, then your order will be controlling. If you feel, as the division examiner did, a time limit is not necessary because it doesn't have any measurable significant amount of safety in the operation of this facility, then you can follow the examiner's recommendations.

Talked a lot about H2S, the dangers of H2S. The division acknowledges that H2S is dangerous. What level will kill you? It doesn't matter. The division doesn't want it to get to a life-threatening level. Don't want any H2S. And if any H2S is measured, immediate steps are going to be required to get rid of it. So your level of 500 or 5500 or 10,000, they're insignificant. The levels we're talking about are levels -- the .1 is a level that can be measured with available field equipment to determine that, in fact, H2S is present and there is a problem.

As Mr. Cheney says you're going to know if there is a system failure long before that, because you've got a chance to go see the system failure. We talked about redundancy of design and all that. The H2S can make people sick. We don't want H2S. We're not asking you to approve a .01 or .1 emission. We're asking you to require -- the division is -- this is one area I would say that I'd ask -- zero emissions is probably the best standard that you

possibly could achieve.

But that doesn't mean you don't build in a contingency to deal with accidental emissions. There is a difference between having a contingency based on measurable emissions and whether or not you allow those emissions. Recognize that difference. That those are contingencies for inadvertent events, not permissions to reach those levels.

Again, I kind of diverted myself. Talking about the division's enforcement capability, I think one point that I think is inherent in the OCD regulatory process is if an operator violates a permit or operation, we're going to require that operator to come into compliance. If an inadvertent event occurs, we're going to require that operator -- whatever type of facility it is -- to take remedial action as quickly as possible to correct that.

This order, as it stands, has some procedures built into it. Again, if you think they need to be strengthened, it's your option to strengthen them to require some additional ones.

Talked a little about modifying standards. I think, again, there is some confusion there. In the event of the rapid reduction of oxygen in the pond, that is it goes below that .5 parts per million, the division is simply going to go out there and say do whatever is

necessary to get it back up. If you would like to put something in the order that says the division shall have the authority to require immediate action to be taken to correct any problem, I believe it's redundant.

I believe the division has that authority, but I don't think it's a problem to say, go tell them to do what they have to do and to require them to do it. I think they have acknowledged that that's a requirement, that they have to comply with the division directives. But I don't think Mr. Horner has submitted anything that indicates the division is not willing to enforce it's rules, notwithstanding his allegations to that effect.

I'm not going to tell you that I believe this facility is permittable or not permittable. I'm not going to tell you that it should or should not be permitted by this commission. The examiner determined that it could be under specific conditions. You now must make that decision, and I would only ask when you do so that you take in mind all the various needs for the facility versus the ability to make such a facility safe, to eliminate the hazards, particularly to people in the area, people driving by on the highway, to workers out on location themselves

Based upon the record which you have, hopefully you can sort out some of the clouds that have managed to come over the technical information and make that decision

based upon the information available.

COMMISSIONER LEMAY: Thank you, Mr. Stovall.

Mr. Horner.

MR. HORNER: Well, as I said in my opening statement, protesters have grave concerns over what's going on here. At best the criteria that is set forth in this order is simply that, criteria. The concept of a permitting process is where you look at the drawings, and you're able to establish that the applicant is going to conform to the criteria.

The testimony here today shows a lot of confusion. Number one, it's obvious to all that one-third horsepower system for the aeration system is not going to be adequate. At the June hearings they were talking about a coarse bubbler system and a fine bubbler system each with a 96-horsepower motor on the bottom of the pond in order to satisfy the requirements.

We find today that the bottom dwelling systems are not going to be adequate. They've got problems.

MR. DEAN: I'm going to object. That's not the testimony today. Therefore, I object for that reason. You are to argue the evidence, but it has to be the evidence.

COMMISSIONER LEMAY: We will note your objection. It's summation.

MR. HORNER: The testimony was that the bottom systems

are going to form salt deposits on the holes in the pipes, and therefore the efficiency is going to be reduced, and therefore probably are not going to be suitable for this type of scheme.

And therefore what is currently being looked at is a surface aeration system with a propeller that is only going to give you the circulation if the water level is maintained at a designed level, which is not going to be the nature of the facility. The concept of the facility is you take in as much water as you can possibly hold. If you got more water coming in than that, then you build a second pond, then you get rid of it as fast as you can by evaporation, spray evaporation systems, making more space available for more water so you have more revenue.

So the level of the system is going to be fluctuating, which means that currently -- the system they're currently looking at is going to have problems. If the order itself states -- if I might read from page 5 under the order portion, states that it is therefore ordered that, number one, "The applicant, Sunco Trucking Water Disposal Company, is hereby authorized to construct and operate a commercial surface wastewater disposal facility" at such and such a site, "subject to the permit conditions."

All that's got to happen is Sunco sign this

order, and it's a done thing; the permit is approved. But yet at this point we don't have any engineering drawings, and whether or not the systems can actually be designed and constructed to achieve this criteria is up in the air. And you're definitely not going to be approving a permit until you see those drawings and designs and decide that actually it will work.

This concept of this criteria should be the stuff of which rules and regulations are made, that should be imposed across the board. Then you come up with the drawing and say, yes, we can satisfy those criteria. Here Mr. Anderson has testified that they do not intend to impose this type of criteria across the board. That, in fact, they want to look at site specific recommendations and criteria.

Apparently in this particular situation they feel that the concerns are so significant that there should be no hydrogen sulfide emissions from this facility. But apparently that isn't the department's position with regard to other facilities. They don't want to impose these criteria on other facilities, so it appears that the OCD is more than willing to allow certain levels of hydrogen sulfide to be emitted from other facilities.

MR. STOVALL: I'm afraid I've got to object to that. I understand it's summation and he's making argument. He's

not testifying as to anything that's in the record.

MR. HORNER: That's exactly what Mr. Anderson was talking about here today. I asked if they would impose these criteria across the board, and he said, no, they wanted to look at site specific situations.

MR. DEAN: I object to him ever saying that he would allow H2S at other facilities. That's the next step, but he didn't ask that question. He may think that he has that, but he doesn't. He never asked Mr. Anderson that. He simply asked are you going to impose this standard on other facilities, and Mr. Anderson said no. He never said, "Are you going to allow H2S at other facilities?"

MR. HORNER: This is what summations are all about.

MR. DEAN: You don't get to argue evidence in summation that's not in the record. That's the law.

COMMISSIONER LEMAY: Your objections are noted. Please proceed, Mr. Horner.

MR. HORNER: So from that perspective what we're going to end up with out there in the real world is; if, in fact, this criteria is imposed on the applicant here; and if, in fact, designs are submitted and approved; and if, in fact, the facility is so constructed such that it will not produce any hydrogen sulfide, but this is the only facility with these restrictions, you're going to find that the cost of operating this facility is far above the cost of

operating any other facility.

That puts Sunco in a situation where either they can charge more, in which event the people will just take their water to another facility and you don't get to utilize this facility. Or they're going to be coming back to you and saying, "Hey, level the playing field. This isn't fair. You're imposing restrictions on us but you're not imposing on other people. We can't operate in this environment, and please reduce the level of these restrictions." And OCD is going to be hard-pressed not to back off when they don't impose the same criteria on the other facilities.

MR. STOVALL: I am going to enter an objection for the record to that presumption on his part, with respect to OCD's policy.

COMMISSIONER LEMAY: Objection noted. Proceed, Mr. Horner.

MR. HORNER: So the result is that we're going to be back again arguing whether or not they should actually be having to construct certain facilities that still you haven't seen any design for. They know that it's going to cost a fortune to operate this facility, a whole lot more than similar facilities around.

There was, again, confusion with regard to the redundancy issue. I tend to like Mr. Cheney's perspective

on what the order means. That means that -- apparently to Mr. Cheney's mind that somehow the schemes are going to be designed such that you can have a failure of some component and still maintain this residual oxygen level. But I'm not sure that it's clear in Mr. Anderson's mind or the OCD's mind that that's what they had intended.

They seem to think that an aeration and a spray system gives you redundancy. Whereas the spray system can't be operated all the time, and the matter of hours you can end up with a pond that generates hydrogen sulfide if the aeration systems or whatever they are do provide oxygen to the pond when the spray systems are not operating, which means -- it looks like in the OCD's mind they may be willing to approve something that is going to end up creating hydrogen sulfide in the event of a major system failure.

And then it's not clear what the OCD intends to do about it. If you've got -- if you approve a design that a major component can fail and it takes two or three weeks to repair, and you end up generating hydrogen sulfide, even if the OCD is upset, how do you stop the hydrogen sulfide? In the meantime the surrounding neighbors are going do have to bear the burden of the hydrogen sulfide emissions.

Now, Mr. Stovall is upset when I talk about the OCD backing off the criteria or whatever. I point to the

fact with regard to the level of the pond that the OCD initially required that the level be reduced below the level of the leak within a week, and it backed off of that. Ample testimony of --

MR. STOVALL: I'm going to object again. This does not reflect the record. The OCD staff made a recommendation. The examiner didn't adopt it based upon evidence. There is a difference.

MR. HORNER: Still yet the result is that the -- this facility can end up with a pond that has a leak in it, and the level be not reduced below the level of the leak for a period of five months or more. That's backing off. That's when the applicant comes in and says I can't comply with that standard. It's unreasonable. They're going to be coming back in if this criteria isn't imposed on everybody else saying, "I can't comply with the standard. It's unreasonable that you ask us, the STWD, to build a system that meets the criteria and nobody else has to."

With a regard to the hydrogen sulfide levels that create dangers, the NIOSH standard does set forth 10 parts per million for a period of 10 minutes. In addition I have a table here that was given to me by -- I believe it was Frank Chavez of the OCD up in Aztec -- that says that with regard to time and levels that levels of between 100 and 150 parts per million can cause hemorrhage and death if

exposed for a period of 8 to 48 hours.

MR. STOVALL: I'd like to object to the use of the specific table. We will agree that 100 parts per million is a lot, can do some harm. But I don't even know what table he's talking about, and I don't know that it's in the record.

MR. HORNER: It's not in the record at this point.

MR. STOVALL: Then I would object to any reference to this table if it's not part of the evidence.

MR. HORNER: We were talking about using it in summation and I've used it as an example.

MR. DEAN: That was the NIOSH standard. I would ask it be stricken. Mr. Horner --

COMMISSIONER LEMAY: I think your objections have been noted. I don't think it's been an OCD policy to strike anything from the record, but we certainly note both objections to the summation as presented at this point.

MR. HORNER: I'm sure that the OCD's concern with regard to this location and site specifically requiring that there be no hydrogen sulfide emissions is because of its location. This particular site, within five miles is the city of Farmington, is the city of Aztec, is the city of Bloomfield, is all of Flora Vista, is the Lee Acres area, the Wild Horse Valley. There's a lot of people living within five miles of this facility.

And like I say, when you look at the map, within a half a mile there is nobody, but you get out there a ways and there is a problem. Basin facility found problems up to mile and a half away. The new highway that these people, that Sunco uses for their piping yards that are located on the same piece of property runs within a quarter of a mile of this proposed facility, and Basin facility found that people traveling Highway 44 were in danger from the emissions of hydrogen sulfide from the Basin facility. So even if there aren't residents, there are people traveling on the highway that can be expected to exposed to this potential problem.

And, again, getting back to when they start complaining and facilities don't get built because of this criteria, you will have a real problem. So protesters respectfully request that this permit be denied.

COMMISSIONER LEMAY: Thank you, Mr. Horner.

Is there anything additional in the case, anymore statements? If not, we will take the case under advisement.

Thank you gentlemen.

(Whereupon, the hearing was concluded at the approximate hour of 3:50 p.m.)

* * *

STATE OF NEW MEXICO)
) ss.
COUNTY OF SANTA FE)

REPORTER'S CERTIFICATE

I, Susan G. Ptacek, a Certified Court Reporter and Notary Public, do HEREBY CERTIFY that I stenographically reported the proceedings before the Oil Conservation Division, and that the foregoing is a true, complete and accurate transcript of the proceedings of said hearing as appears from my stenographic notes so taken and transcribed under my personal supervision.

I FURTHER CERTIFY that I am not related to nor employed by any of the parties hereto, and have no interest in the outcome thereof.

DATED at Santa Fe, New Mexico, this 19th day of July, 1991.

SUSAN G. PTACEK
Certified Court Reporter
Notary Public

My Commission Expires:
December 10, 1993