IN THE MATTER OF AN ARBITRATION BEFORE A TRIBUNAL CONSTITUTED IN ACCORDANCE WITH THE TRADE PROMOTION AGREEMENT BETWEEN THE REPUBLIC OF PERÚ AND THE UNITED STATES OF AMERICA AND THE UNCITRAL RBITRATION RULES 2013

PCA Case No. 2019-46

In the Matter of Arbitration Between:	
THE RENCO GROUP, INC.,	
Claimants,	
and	
THE REPUBLIC OF PERÚ,	
Respondent.	
	Vol. 5

- AND -

IN THE MATTER OF AN ARBITRATION BEFORE A TRIBUNAL CONSTITUTED IN ACCORDANCE WITH THE CONTRACT OF STOCK TRANSFER BETWEEN EMPRESA MINERA DEL CENTRO DEL PERU S.A. AND DOE RUN PERU S.R. LTDA, DOE RUN RESOURCES, AND RENCO, DATED 23 OCTOBER 1997, AND THE GUARANTY AGREEMENT BETWEEN PERU AND DOE RUN PERU S.R. LTDA, DATED 21 NOVEMBER 1997 AND THE UNCITRAL ARBITRATION RULES 2013

PCA Case No. 2019-47

In the Matter of Arbitration Between:	
THE RENCO GROUP, INC, AND DOE RUN RESOURCES CORP.,	
Claimants,	
and	
THE REPUBLIC OF PERÚ AND ACTIVOS MINEROS S.A.C.,	
Respondents.	
	Vol. 5

(Continued)

HEARING ON JURISDICTION AND LIABILITY

Monday, March 11, 2024

The World Bank Group
1225 Connecticut Avenue, N.W.
C Building
Conference Room C1 450
Washington, D.C. 20036

The hearing in the above-entitled matter came on at 9:30 a.m. before:

JUDGE BRUNO SIMMA, President of the Tribunal

DR. HORACIO GRIGERA NAÓN, Co Arbitrator

MR. J. CHRISTOPHER THOMAS KC, Co Arbitrator

ALSO PRESENT:

Registry, Permanent Court of Arbitration:

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Deputy Secretary General and Principal Legal Counsel

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Assistant Legal Counsel

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Case Manager (remotely)

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C O N T E N T S

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P R O C E E D I N G S

PRESIDENT SIMMA: According to my watch, is about -- we are one minute early, which is a good sign on a Monday morning.

I think everybody is ready.

So before we call on Ms. Alegre, let me just remind you that you got an email from Mr. Doe on Saturday probably, in which, he asked that, first of all, there is a new formulation of the question that we would like the Parties to answer by 14 March, at the latest; and, secondly, the -- indicating the possibly of the readiness of the Tribunal since we are a bit behind the schedule to work for 30 minutes more on one of the remaining -- not all of them, remaining nights, like tomorrow -- today, tomorrow, Wednesday, and then I think from then on we need -- we're going to have longer nights ourselves, and you were asked to indicate to Mr. Doe whether, according to your calculations, you probably need to do that or not.

That is, how you can manage the remaining time. You have the remainder of the 22.5 hours that you are allocated. So that was -- did I do that correctly?

SECRETARY DOE: Yeah.

PRESIDENT SIMMA: I didn't forget anything? Okay. Fine.

So that is -- and with that, I would like to call

Ms. Alegre, Ada Alegre, to the witness stand. I see a couple of new faces. And then -- oh, that's you.

MR. SCHIFFER: While Ms. Alegre is approaching --

PRESIDENT SIMMA: Yes?

MR. SCHIFFER: -- do you want our responses this letter form? Is that the preferred response, or should -- at some point should we discuss this?

PRESIDENT SIMMA: I think, probably, I would personally think that we are going to be short on time anyway; so I think the best thing would get it in written form. And whether that is in the form of a letter or in some other form I leave to you. It's probably --

(Overlapping speakers.)

MR. SCHIFFER: Okay. Thank you.

PRESIDENT SIMMA: Okay. Okay.

(Comments off microphone.)

PRESIDENT SIMMA: Yes. And I have been asked to indicate that tonight we need to stop about 10 to 15 minutes earlier, so that is -- takes a way a bit of what I said before for some -- an urgent reason. So -- and let's keep that in mind. Okay.

ADA CARMEN ALEGRE CHANG, RESPONDENT'S WITNESS, CALLED

PRESIDENT SIMMA: Good morning, Ms. Alegre.

THE WITNESS: Buenos días.

PRESIDENT SIMMA: Thank you. Would you be so

kind and read out the Statement that is in front of you, either on the screen or on paper?

THE WITNESS: Good morning.

I solemnly declare, upon my honor and conscience, that I shall speak the truth, the whole truth, and nothing but the truth, and that my statement will be in accordance with my sincere belief.

PRESIDENT SIMMA: Thank you very much.

I give the floor to Ms. -- just give me your name.

MS. ÁLVAREZ OLAIZOLA: Álvarez Olaizola, Augustina.

MR. RODRÍGUEZ: Can you speak -- pronounce your name a little slower, then I --

MS. ÁLVAREZ OLAIZOLA: Yes. Álvarez.

(Discussion off the record.)

PRESIDENT SIMMA: Okay. All right. Then you have the floor, Ms. Álvarez.

MS. ÁLVAREZ OLAIZOLA: Thank you very much.

Next, I will be introducing Ms. Ada Alegre Chang to begin with her direct examination. Ms. Alegre is a well-known Peruvian counsel who specializes in Environmental Law, and who has developed two Reports for Renco at the request of Perú. Ms. Alegre has over 30 years of experience in law and environmental management, and she

has been a general manager as of 2006 for Ada Alegre and Consultants, a Company that offers consultancy services to private and public entities in Lima.

Ms. Alegre was also the General Adjunct Director for Environmental Issues with the Peruvian Ministry of Energy and Mines, and, as such, she participated in the work between 2005 and 2006 that had to do with extension for the first Project under the PAMA in 2005.

Likewise, Ms. Alegre worked for over a decade starting in 1991 and up to 2004 with the Environmental Society in Perú, and now, after introducing Ms. Alegre, I give her the floor to start with the presentation that we think will take about 30 minutes.

Thank you.

DIRECT PRESENTATION

THE WITNESS: If you allow me, I will be using my cell phone to check the time, and I thank you all for the opportunity to present an analysis about a case that has been a flagship case in Perú, thinking of its economic repercussion for the central area of Perú and mining area, and also, given its social repercussions, political, environmental repercussions, which are quite complex. This case has been assessed by multiple Experts from various viewpoints.

An important aspect to consider is that this

smelter was in operation starting in 1922, and during the time that it was operated by Centromín, a State-run Company, there was no environmental legislation because the environmental legislation in Perú started to be developed in 1990.

The Environmental Code -- the Environmental and Natural Resources Code was the first regulation that regulated environmental liabilities that the Companies had. Based on this law, in 1993, the first Mining Regulations were approved, and in 1996, the first parameters to control mining pollution were passed. That's all that was in force when in 1997 the PAMA was approved. That was it.

So PAMA was approved on January 13, 1997, and it was a very specific juncture for -- in Perú. There was a political crisis as well as an economic crisis. We also have had terrorism; so that's the reason why in the early '90s, the Government established a very strong regime to promote private investment, and as part of these policies, the State developed environmental legislation, and offered guarantees to investors, for example, so as how to freeze the legislation that was in force at the time of the PAMAs.

The PAMA was approved on January 13, 1997, and Doe Run started to operate the metallurgical complex at La Oroya in October 1997 -- that is to say, nine months after the approval of PAMA.

As part of the management of Doe Run, several general environmental and specific laws and regulations were approved in Perú, and also laws to try to salvage La Oroya, bearing in mind the breaches and also the delays, as I will mention.

Throughout my career, I have had the opportunity to work with technical staff. More than half of the time, I interact with technical people and the rest with Counsel. I audit companies. I had the opportunity to see several mines in Perú, even the La Oroya and Galeno smelters, the main ones, and I understand the importance of understanding the mining process, and also engineering to properly apply legislation.

And a very relevant aspect of the Peruvian legislation has to do with the environmental management instruments. The environmental management instruments are tools, tools that are legally determined, but tools to manage operations.

For example, all of the environmental management tools have three important elements: First, the description of the place where an operation will take place. Secondly, to explaining and analyzing the scope of the project. For example, whether it has stacks, whether it has effluent discharge, the type of production, the characteristics of the pieces of equipment. What for, so

that, third, we can assess each impact that could be generated by each aspect of the operation in the place where it will take place.

For example, if we are talking about a health project, it is not the same to build a landfill with the underground water at 10 meters of depth when we are building, for example, a landfill, when the water is at 100 meters in depth. So the impact is completely different. So that's the reason why I could also state that the smelter is the final stage in the mining process. The mining process starts with extracting the mineral from the ground, which comes with stone, big rock, small rocks, and sand, and after that there is a transformation.

The rock is ground; so that by means of chemical processes we separate valuable from nonvaluable metal. Valuable metal is concentrated, and it's sent to the smelters with at least 90 percent of purity. The amount of nonvaluable minerals, the ones that the sediments that contribute nothing to the mineral that will be sold will be transformed by means of metallurgical processes, and that means that the pollutants or the chemical substances of a different nature are usually released to the environment by means of emissions or dust.

These are minor particles, and that is the importance of control, environmental control in a smelter

operation because these create particulates and also material that needs to be controlled.

Now, if we look at the environmental management instrument, we see here on the slide that in 1993 the first Decree, Supreme Decree, approved the mining environmental legislation. The first one was PAMA, and the second one was the Environmental Impact Assessment. The PAMA was seen as an instrument for environmental management that had a corrective purpose. It was a remedy, and it was for those companies that were already operating in 1993. Why? Because there was no regulation in the past.

So if there was a company that had high emissions, in La Oroya, for example, we introduced PAMA with different electrostatic precipitator; so as to control the matter that was being released. If the Company was releasing, for example, water to the rivers, another project under the PAMA was to control some sort of a system to prevent any impact on the environment, and this also included filters and different protections to control discharges to the environment based on the indicators.

The second instrument that was regulated in 1993 was the environmental impact analysis, or assessment. This is something that is used in most countries of the world. It is a preventive tool that is established to assess the impact that a future operation would have, an operation

that is inexistent right now, and also to determine the impact that it could have to approve an environmental management strategy to avoid those impacts.

But the EIAs not only approved for a new investment. It is also approved for the enhancement of operations because it is not the same for me to be operating a facility, and to -- and producing, for example, something very simple, producing dyed pants, and 50 pants a day, for example. It is not the same to produce 50 pants a day and to -- or to produce 100. More dyes, more fabric, more colors, and this happens in any industrial process, and that's why EIA is a tool to assess modification to the Projects.

PRESIDENT SIMMA: Would you please slow down so that we can follow you with interpretation?

THE WITNESS: Yes.

So to sum up, PAMA was an instrument to remedy the impact of previous operation, and the EIA was an instrument to anticipate any future impact or changes to the operations, and also to assess them ahead of time with the goal of defining a strategy for environmental management; so as to prevent any impact of the new operations and also to establish environmental management tools to correct the impact in the future.

Unfortunately, after the PAMA for La Oroya was

implemented the 10 years that the Government granted were not used to solve the issues, and that's why in 2014 the second Mining Regulation was approved, and there was a need to regulate a new instrument, a corrective instrument, that was called an environmental management corrective instrument; so as to give a new opportunity to correct the health issues in La Oroya.

I refer to the EIAs and the PAMAs and the Regulations, and now I am going to refer to the parameters to control environmental pollution.

As I mentioned, in 1993 -- it was not until 1993 when Perú approved parameters to control environmental contamination, or pollution in the area of mining.

These parameters were the maximum permissible limits, and as you can see here in this slide, the maximum permissible limits are measured at the point of exit of those ducts that issue the discharges to an environment.

For example, when we have a stack or several stacks, also the -- any drainage system and also, for example, if you think of the exhaust pipe in an automobile. And later on, there were -- we also had the ECAs -- that is to say, the environmental quality standards that allow us to control the environmental quality of the air, water, and soil outside industrial facilities.

If we go outside this building and we measure the

air quality, we would have to compare the quality of the air given these ECAs because this is what the person that is exposed is breathing. And these parameters were regulated, and they became mandatory for all of the Companies in Perú, not only Doe Run, and not only La Oroya. So La Oroya, in 2001, when the first ECA was approved, it was declared as a priority area because of the contamination in the area.

In 2005, when Doe Run presented a request for extension before the Ministry of Energy and Mines, they indicated that they had a main stack, 59 secondary stacks, as we can see here in the slide, and 36 sources of fugitive emissions. What are fugitive emissions?

All of the discharges to the environment that avoid a stack, that go through cracks in the equipment, or because chemicals are stored in the open, and then the wind picks up those chemicals. So -- but I should also say that, in this case, there are many figures.

For example, in 2003, and the metallurgical complex was audited, and they realized that they didn't have 59 but 95 secondary stacks, but only 59 were reported, and the gases and all the fumes that were released into the air were not reported. And we go back to the PAMA. This was the Scenario for the approval of the PAMA in La Oroya on January 13, 1997. PAMA had a 10-year period to be

complied with, and that was the maximum legal period allowed under the 1993 legislation.

It was given the longest deadline for 16 corrective measures for adapting the Projects to the environment, and also an updating program where a modernization program because this was an outdated smelter. So the idea was to regulate -- that was the idea behind the PAMA and behind the environmental legislation in Perú.

Out of all of the Projects under the PAMA, the Project 1 was the only one that was aimed at reducing gas emissions, which were the main source of pollution at La Oroya. There are several documents that underscore that the control of the emissions at La Oroya was key to be able to control the situation, the environmental situation in La Oroya.

PAMA proposed the construction of two Sulfur Acid Facilities, and also a modernization plan to take place over four years.

In parallel, I mentioned that the Peruvian Government offered many facilities to investors in the early '90s. For example, the Government of Perú, in the legislation, provided for the fact that they were not going to amend PAMA out of their own will after the first 12 months -- that is to say, everything that had to do with the legislation in connection with PAMA.

And also the Peruvian Government in their environmental legislation regulated the Contract for environmental stability; so as to freeze the parameters for the control of pollution and other standards.

Therefore, the Investor that took capitals to Perú had also a legislation that provided for a contract that was signed by the Government, indicating that the maximum permissible limits, as approved, and also the standards for environmental quality were not going to be modified over 10 years.

However, Doe Run started to operate in late 1997, and in 1998 they increased production at the metallurgy facility, and I have reviewed several documents, for example, the Report by the Expert of Perú, Mr. Wim Dobbelaere, and I also saw the file presented in 2005 for the request of PAMA, and I had the opportunity to assess it as legal Counsel.

And I also cite that in 2003 the Environmental Oversight Office with the Peruvian Government commissioned a specialized study to an environmental consultancy, and also to Golder Associates. That was an international company. And during that study, it was seen that the highest emissions were related to the increase in the lead circuit, and that this also led to an increase of emissions for other secondary metals, and also increased fugitive

emissions as well as emissions from secondary and main stack.

As part of this Report, we also see here, as we see at the bottom of the screen that Project 1 was the main Project, and that there was no sufficient information provided in connection with Project 1. Here, they are referring to 85 stacks as opposed to 59 stacks, and that is what had already been said in 2005. Based on this study, the Environmental Authority determined what we see here in this slide.

For example, they indicated that, based on the environmental assessment carried out between 1995 and 2002, also including only the Doe Run period, and also finding limitations such as the documentation for the PAMA Project, Sulfuric Acid Plant, they also indicated that there were no detailed schedules for implementation at the Sulfuric Acid Plant, Project 1, and also it says that from the information provided by Doe Run, it follows that the Company is complying with the investments required by the PAMA.

This is what Doe Run said, and we are talking about 2002, and I am going to explain to you why 2002 is very important. And they also indicated that it was not possible to verify the accounting information that was part of the Project. They said that the quality of the air in

La Oroya was worsened because of the content of lead, cadmium, sulfur, and this also led to problems for the environment and health.

And it was also indicated that the increase in the sulfur dioxide in the atmosphere had to do with fixed and fugitive emissions due to an increase of production, and based on this the Ministry also presented various requirements. And I think it was at this time when we started to see great concern among the Authorities because of the situation in La Oroya.

The Company was asked to provide a detail of the amounts that were invested, and also what had already been carried out, what was going to be carried out, and there were some obligations that were laid out for the Company.

In May 2006, bearing in mind all of this background information, an extraordinary extension was granted, and this led to an important -- another important milestone as part of the facility. With this modification, it was possible to close the PAMA history, knowing that the file was presented on November 20, 1995, and the PAMA was going to come to an end in 1997; so almost a year after.

That was January 3. And this file was concluded, was decided in May 2006 -- and this also was a very extraordinary effort for the Ministry of Energy and Mines, because, for example, between November 2005 and May 2006 at

the very least, 60 or 70 percent of my time was devoted to assessing this. We had about 20 individuals with the support of three Experts from the World Bank, and also the participation of various authorities. We received 14,000 letters asking not to approve this extension and many other things.

The Ministry was not compelled to approve this extension, but we did so, and they did so because they knew that this was going to lead to questions at the level of the community. And from the legal standpoint, why? And because this was a very important project for the central area of Perú. The processing of this deadline recognized that Doe Run had not complied with Project 1, and that this extension was final.

And Doe Run did not comply with the deadline. They were given three years to comply with the three steps, the three parts of this Project. The Phase 1, and Doe Run ceased operation, and the Government had needed to work so that the -- for Congress to assess this situation and also issue a special law. A special law that allowed a new extension of the PAMA, and Doe Run received a new extension up to March 27, 2012.

Now, I am going to slow down a little bit because I think that we have a lot of information but it is very important.

In 1998, as I mentioned before -- this is the second-to-last slide. In 1998, a few months after the smelter was under Doe Run's supervision, there was an increase in lead production and also the use of secondary metals and also the emissions of dioxide. And in 1999, Doe Run presented the First Amendment to the PAMA to request an extension. In this case, they maintained both Sulfuric Acid Plants and they asked for five years, five years from 2002 to 2005 for the development of both facilities. I think I made a mistake. Four years, it should be. I have some doubt, but I think that that is what it is. In 2002, there was a second request for an extension. We see that in the previous slide. In the previous case, the implementation of the PAMA should have started in 2002.

Before the PAMA implementation, Doe Run said, "okay, we're not going to build two plants, just one." And they said, "now, during 2002, I will conclude the engineering for the Plant."

It also stated that the construction timeline was going to be two years, so between 2004 and 2005, if I don't find financing between '05 and '06.

In 2003, there was an important event, a special audit by the Ministry that confirmed that Doe Run was increasing production and generating more emissions. In 2004, when the Plants started to perform, Doe Run issued,

on 17 February, a letter to the Government where it recognized that, although it committed to finishing the engineering of the Sulfuric Acid Plant in 2002, by 2004, it only had conceptual engineering. It asked for four more years only to conduct the engineering studies. Before, it had said that it was going to do it in 2002, and it asked an extension for 2011 to build a single plant, and it knew that Peruvian legislation said that it wouldn't be able to go beyond 2007 because that was the maximum amount of time.

On 20 November, it asked for an extension, and half of the Project should have been executed by then. The Ministry approved a three-year extension, and, with Congress, it also approved another extension until 2012. 15 years La Oroya Doe Run had to do this and, of course, the execution of the Project was pushed forth and this was there in order to deal with contamination issues.

Here, I think this is very important. This slide is very important. And it has to do with the different regulations current in Perú at the time.

In 1997, when the PAMA was approved, the PAMA was approved for 10 years, and the idea was to achieve 572 micrograms/square meter for 24 hours. It's a very flexible objective for a 10-year period.

In 2006, when the extraordinary extension was

granted, the Company was given three years to reach 365 micrograms/square meter, and then five more years were given to the Company to reach these numbers. It had 10 years to reach 572 micrograms and then five more years to achieve 365 micrograms. It was a more extant objective, but this was applied to all of the companies in Perú since 2001. So those operating since 2001, they had to meet this 365-microgram level and all of the companies had to do it starting in 2001, and Doe Run had until 2012 to meet this objective. They didn't do it because they didn't finish the Project for the copper circuit.

And then in 2011, when it was in liquidations, when Doe Run was in liquidation, Doe Run in liquidation was given 14 years, but not to get 572 micrograms or 365 micrograms, but to reach 80 micrograms. This is a much more exactant objective, and it meant that it needed more investment and more technology because it's not the same thing to control fumes for 572 than 80 because we didn't want more than 80 to go out into the environment.

In 2017, I just want to say that, in Perú, all of the air quality parameters were reviewed. The ECA standards for air, water, and soil were updated, and so too a standard of 250 micrograms was set.

On the basis of the analysis that I have conducted, these are my conclusions: I can say that the

documents of the case that are well known by many, many of them are, show that Doe Run increased the production of the CMLO and it increased production, and it used practices that were less protective. It increased production without changing its environmental study. I was saying that describing the Project is very important because it allows us to define the scope of the impact. When production is increased, those characteristics of the Project changed and the adaptation measures and measures for the production levels were no longer valid because we had more than 30 percent of discharges that had not been assessed within the PAMA. So Doe Run asked for the modification of the terms of the PAMA, but it never asked for the modification of the PAMA to assess that 30 percent increase in production and the impact it had on the environment. This increase in production is not related to the implementation of PAMA. The PAMA did not provide for an increase in production, and if the Company, according to the decisions it made, if it decided to increase production, what the Company should have done prior was to modify the PAMA so that the contents of the PAMA would adjust to a different production level.

Unfortunately, this did not happen.

So the Company breached the commitments under the STA because it committed to comply with the PAMA as

approved, and here what they did is they increased production without modifying the PAMA. So I think that Doe Run breached the PAMA because it never completed Project 1 and because it increased production without adopting the protection and prevention Measures for the environment to avoid air pollution, and this goes against the STA.

Thank you very much for your attention. If you have questions, I'll be happy to answer them.

PRESIDENT SIMMA: Thank you. I think I'm sure there will be questions, but those questions will be after the completion of the examination program.

And, Mr. Fogler, you have the floor now for the examination.

CROSS-EXAMINATION

BY MR. FOGLER:

Q. Good morning, Ms. Alegre. My name is Murray Fogler. I'm a lawyer representing Renco and Doe Run Resources Corporation. You understand that?

A. Yes, it's a pleasure.

(Comments off microphone.)

BY MR. FOGLER:

Q. My colleagues who know you have been very complementary of you, so I'm looking forward to talking to you about some of the statements that you've given today. All right.

I would like to begin by showing you a question and answer from the Bidding Process during the privatization process to ultimately lead to the sale of Metaloroya, and I'm sure you're aware because you have looked at the Contract; right? You are aware that these questions and answers can be used to help interpret the provisions of the Contract.

You're aware of that?

A. I have reviewed the Contract from the viewpoint of trying to understand the commitments that Doe Run undertook. I have not looked at the prior process. I understand that, for purposes of my analysis, the relevant issue is to understand what was the commitment that was included in the Contract. I have not actually looked at the prior steps before the Contract.

Q. Let's look, though -- this is R-201, which is the second round of the Bidding Process, and I'm going to show you Question Number 41.

And just to help you, Ms. Alegre, we're going to put those English and Spanish and, perhaps, we can blow this up a little bit so that you can read it as well. Just to explain, the Committee that was in charge of the privatization process permitted potential bidders to ask questions about the proposed Agreement and how the ultimate sale would work. And this is one of those questions.

Do you understand so far what this is?

A. Yes, I understand.

Q. All right. So the question here -- and I'm going to read it in English, but you can follow along in Spanish, it says: "Taking into account that Centromín will assume responsibility for the existing contamination at La Oroya's smelter and the new Operator will be obligated later on to continue with the same contamination practices for a period of time, as authorized by PAMA's terms and that the old (pre-transfer) contamination and the new (post-transfer) contamination" -- and then there's three dots.

But the question is: "Would Centromín accept responsibility for all the contaminated land, water, and air until the end of the period covered by the PAMA, or how can it determine which part corresponds to whom?"

And, of course, that's a big question that we're interested here in this Arbitration.

You understand that the Contract itself speaks of an allocation of responsibility for environmental matters, don't you?

A. Yes. I think it's important to take into account the answer that the Ministry provided for this question. Here, it says that the answer is yes, provided that Metaloroya -- or Doe Run, because Doe Run absorbed Metaloroya, has to fulfill the PAMA's obligations which are

their responsibility. When Doe Run increased production, it breached the PAMA. That's my understanding.

So this clause would not be applicable -- or, rather, this question would not be applicable.

Q. Well, I'm focused really more on the last part of the answer that you did not read, and it says: "Otherwise Metaloroya will be responsible from the date of noncompliance of the obligation according to the Competent Authority's opinion."

And the reason why I want to focus on that -- and I'm going to tell you, Ms. Alegre, this is going to be the focus of a lot of my questions at the beginning of our examination -- the Contract itself, the STA, does not speak to who is to determine noncompliance or when noncompliance occurs, but, what we see here from this answer, we know that the "who" is the Competent Authority; right? That's who is going to determine noncompliance?

A. I'm an environmental lawyer. I'm not a contract lawyer. I'm not a specialist in contracts, and I have not sought to interpret the Contract comprehensively. I have not looked at these questions beforehand because my understanding was for me to look at the environmental obligation that Doe Run had within the PAMA. So this goes beyond my assessment of the case. I am not a specialist on contracts. I wouldn't be able to say what impact these

consultations had or these questions had on this specific Contract.

Q. I appreciate your answer, Ms. Alegre. So let's get into your area of expertise because you do know --

PRESIDENT SIMMA: Are you going to leave 41 now, the question? Because I wanted to clarify something which is -- strikes me as a little strange -- okay -- before you leave 41, because then we just save time, because, there, there is something. And I read the Spanish text because translations can sometimes be awful, but the Spanish text, in the second line in the first paragraph: "And the new Operator will be obligated to continue with the same pollution practices," because you cannot oblige a new operator to continue with the same contamination practices. I hope that they will -- there is something missing. I mean, the same -- to obey the same Measures against contamination, and not -- in English, the new Operator will obligate --

THE WITNESS: I can explain that, sir.

PRESIDENT SIMMA: Yes.

THE WITNESS: I can explain that, Mr. President. This is the 1997 text. The first authority that was created in Perú for environmental purposes was created in 1992. The first regulations were approved in 1993 and -- the first Environmental Regulations I'm talking

about -- and the first pollution or contamination regulations were approved in 1996.

The terminology and the regulations, well, they were not very precise at the time. I think what this question refers to is that there was a term of adaptation that was granted. The Company had to build the Plants and the Facilities during that period. Until those became operational, the Company could not have reached the environmental objectives. So the idea here was that the value was not going to be asked of the Company until the terms were complied with under the PAMA. I think that's what this means.

ARBITRATOR GRIGERA NAÓN: Also, there's a translation problem because it is not "will be" it is "could be," "could be obligated to continue," not "will be obligated to continue." That's the second line of the English and the second line of the Spanish. It's not "will be." It's "could be."

PRESIDENT SIMMA: All right. Excuse my interruptions, but I think there was somebody there to clarify, and what I understand is that by "prácticas de contaminación" was meant by the first Experts which were kind of a little under, let's say -- well, under. This means -- "contamination practices" means practices of avoiding contamination, lowering, limiting contamination,

et cetera. It's just a term that was a bit -- not very sophisticated. Thank you.

BY MR. FOGLER:

Q. All right. Ms. Alegre, the use of the term "competent authority" in this answer was not accidental because that is a term that was used in the 1993 Supreme Decree; correct?

A. I am not sure when these documents were created, but the concept of a Competent Authority has changed throughout time in the law in Perú. For example, the 1990 Environmental Code, and this was the main provision that started at the regulatory process for the environment of Perú, and no mention was made of what the Competent Authority was.

In 1993, the Competent Authority to assess environmental studies was the Ministry of Energy and Mines through the Directorate of Environmental Matters, but there was also the Directorate of Mining. And things were changed throughout time. We cannot talk about a single environmental Competent Authority throughout the legislation in Perú with time.

Q. This question and answer was written in 1997. All right. This happens to be March of 1997. So let's look at the Supreme Decree that you have referenced in your materials. It's R-25. This is the Supreme Decree 16-93

that you have told us sets out the requirements of a PAMA for mining and smelting operations. And we're going to put both the English and the Spanish on the screen here. You were extremely familiar with this pronouncement by the Government of Perú, weren't you?

A. I know the regulation quite well, yes.

Q. Yes. If you go to the second page, you'll see the -- there's Article 2 has the definitions for the regulation, and the very first definition is the definition of "Competent Authority," which is defined as The Ministry of Energy and Mines. It's further down, B.B., on the Spanish version. Right there. Article 2, definitions, and you can see it in the Spanish.

So this use of the term and the answer that was given by the Government in the privatization process was referring to the Competent Authority set out in the Supreme Decree of 1993, wasn't it?

A. I assume so. I am not an expert on contracts nor am I an expert on privatizations. So I'm looking at these Regulations from this perspective right this moment, but I wouldn't be able to look at the Contract comprehensively or the privatization process. That is -- that is not within my purview.

Q. If we continue on in this Supreme Decree to Article 4 on Page 4, the title of the article is "Competent

Authority," and it states, in more direct terms, that: "The Competent Authority in environmental issues within the mining and metallurgical sector is the Ministry of Energy and Mines, which is the sole Government agency responsible for," and then it lists a number of things, including the Environmental Impact Study and the PAMA that you have described for us in your Direct Presentation this morning; correct?

A. That is what the provision says, yes.

Q. And, of course, this 1993 Supreme Decree was a major change in Peruvian Environmental Law. It -- as you had described for us before, until 1990, there were no real Environmental Regulations in place. This follows the 1990 legislation and sets out some very direct procedures for the mining and smelting industries, doesn't it?

A. That's correct.

Q. And, of course, the Government has the right, as a sovereign nation, to change its laws from time to time, to improve them, to repeal them, to amend them. That's what a Government does; right?

A. That is correct.

Q. So in fact, and we know later on that this Supreme Decree itself was repealed and replaced by another Supreme Decree many years later; correct?

A. That is correct, in 2014.

Q. All right. So I want to talk to you about some of the other aspects of this Supreme Decree, and, in particular, I want to go to the penalties section, which is in Title Four. And you're familiar with Articles 47 and 48 which set out a procedure for how the Government, in this case the Competent Authority, the Ministry of Energy and Mines, is to determine noncompliance with this Regulation; right?

A. That is correct.

Q. So if we go to Article 48, it starts out: "When the Operators of mining activity, except as a result of unforeseeable circumstances or force majeure, incur in noncompliance with the approved PAMA, the Director General of Mining shall apply the following." And then there is a regulatory scheme in place for what is to happen if the Director finds noncompliance; correct?

A. That's correct.

Q. There is an initial notice from the Director that -- to the Operator that gives the Operator three months after there is some notice of noncompliance to give the Operator an opportunity to cure the problem; right?

A. That is what the provision says.

Q. And it seems only fair to the Operators that there be some due process so that there can be some give

and take about whether the notice of noncompliance is correct or not, to give the Operator an opportunity to fix whatever the problem is, to -- because the ultimate goal, as you've told us, is to reach the environmental standards that have been put in place; correct?

A. That is correct, yes. The legislation provided the opportunity for corrections to be made opportunely.

Q. Article 48 continues with a six-month notice, a nine-month notice, and then, ultimately, a 12-month notice, ultimately leading to the potential, with fines along the way, to ultimately close the Facility if the problem has not been cured; correct?

A. That is what the provision says.

Q. There are a couple of other provisions I'd like to look at. If you go to Title Five, there's a title on -- this is on Page 16. "Additional measures regarding PAMA," and here there is a discussion of how the Director General can request that a plan of closure -- and here they call it a "plan for cessation of the process, due to noncompliance." This talks about how that particular plan is to be ordered and put in place; right?

A. That's correct. That's what the provision says.

Q. This is the ultimate Decision by the Ministry of Energy and Mines to declare noncompliance with the PAMA; right?

A. That's what the provision says. Unfortunately, in the case of CMLO, there were many other decisions that were made and that were taken into account at the time. There were a number of successive extensions. This was not a typical process. This was not something that was typical, administratively speaking, in Perú. There were many exceptional provisions that had to be issued for La Oroya. This is the only case that I know of in Perú where, to solve the environmental problem of an operation, provisions were issued, specific provisions were issued. A special provision was issued in 2004, a special provision by Congress was passed in 2009. In 2014, there was another special provision that was passed. So the events surrounding this case -- and I know this very well because I was also working -- I also worked at the MEM -- well, these things were not typical. The State was convinced that this was an exceptional situation. As Doe Run said in its February 2014 letter, there was a very strong economic dependence in central Perú on the smelter, so there were social problems as well.

When I worked at the MEM, I saw that this was the only case where we had a vigil outside the Ministry asking for an extension. The workers for the Company asked for an extension, and civil society also asked for the nonextension. So the Decision by the Government, at that

time and at different points in time during this environmental adaptation issue of CMLO -- well, the whole thing has been exceptional from many viewpoints. I don't know of any other case where there was a law passed by the Congress of the Republic to provide an extension for a facility. So this was very specific, a very specific situation that happened in this case.

Q. We're going to get to a lot of what you just said. Right now, I merely want to focus on the Supreme Decree that's in front of us, and there's one more part of it that I'd like to cover with you, and that's the additional provisions that are on Page 19. These additional provisions are the ones that give the Ministry the power to approve these maximum permissible levels that you have discussed with us this morning; correct?

A. Correct.

Q. And by the way, these additional provisions are just as much a part of the statute as the other provisions that we've looked at, aren't they?

I mean, this is not a separate statute. This is part of the statute that we've been -- not statute -- the Supreme Decree that we've been looking at, aren't they?

A. Correct.

Q. Just because they're called "additional provisions" doesn't mean they're a separate Supreme Decree,

does it?

A. Usually, these are additional provisions.

Q. These are the additional provisions of the Supreme Decree 13-93; right?

A. 016-93.

Q. You are correct. My fault. 16-93.

All right. For my next series of questions here, Ms. Alegre, I want us to keep in mind that original question and answer that I showed you at the very beginning, Question 41 that talks about the opinion of the Competent Authority. Okay?

A. Agreed.

Q. And let's talk first about the period of the original PAMA, that is from January 13, 1997, until January 13, 2007. That was the original period of the PAMA; correct?

A. That is the only PAMA Period. The PAMA only had 10 years to be complied with, and also under the Administrative Resolution.

Q. During that period, until January 13, 2007, there is no Opinion from the Ministry of Energy and Mines that provides notice to DRP that, unless they take some action, they're going to be fined in three months, is there?

THE INTERPRETER: Did you say, "fined" or "fired"? This is the Interpreter.

MR. FOGLER: "Fined," f-i-n-e-d.

THE WITNESS: I did not -- whether all the information there is specific. I do not know of any notification or of any notice, but when the 2006 Extension was analyzed, it was indicated as part of the case review. There were some breaches that had been registered -- recorded as of 2003. Those acts were identified, and the Authorities did not make all the decisions or the relevant resolutions to sanction the Company.

And if I had participated in the oversight, I would have made that decision. Unfortunately, the authorities did not impose the penalties that they had -- that they should have.

BY MR. FOGLER:

Q. Ms. Alegre, I want to be very precise with my question and your answer because I want to refer specifically to those provisions of Supreme Decree 016-93. That set out what the Ministry is to do to determine noncompliance.

It is true, is it not, Ms. Alegre, that there is no opinion, declaration, notice, whatever you want to call it, from the Ministry of Energy and Mines of a three-month notice, a six-month notice, a nine-month notice, or 12-month notice, to DRP that you, DRP, are in noncompliance

with the PAMA, is there?

A. Not that I know of.

Q. There is also no notice from the MEM during that period of the PAMA that calls for a plan of cessation, which is the ultimate conclusion of noncompliance under Supreme Decree 16-93, is there?

A. Not that I know of.

Q. But we can do a little bit more precisely than the absence of a particular opinion or notice or declaration from the Ministry because we know, don't we, that the Ministry had the right to and actually exercised the right to audit and inspect the Facility at La Oroya on a regular basis during the period of the PAMA; right?

A. They did have that power under the law.

Q. Okay. You know that they exercised that power by sending inspectors out at least every six months, don't you?

A. I don't know if they did it every six months, but they did do it. I do not know the frequency, but I know that there were some -- there was some supervision.

Q. Let's take a look at some of the Reports issued by the MEM as a result of the audit inspections that were done. And first I want to show you what's marked as C-110. And I apologize --

MS. ÁLVAREZ OLAIZOLA: Before zooming in, would

you please allow Ms. Alegre to see the full document for -- to see the date and other information, please?

BY MR. FOGLER:

Q. This is a report Number 732-2002 from the Ministry of Energy and Mines, and you will see in the reference the date of November 25, 2002, and there's a date stamped on the Spanish version of this document.

Do you see that, Ms. Alegre?

A. Yes, I do see that.

Q. From the first paragraph, it refers to an external auditor who presented an auditing report on the norms of environmental conservation responding -- corresponding to the second semester of the year 2002, for the La Oroya Facility?

A. Correct. I see that.

Q. All right. So let's look at the first two paragraphs there that are numbered and highlighted. The first one says: "With regard to the amounts committed to and programmed in their PAMA for the year 2002" -- and now, let me just step back a moment because I'm sure you have read the PAMA, haven't you?

A. Correct.

Q. You know the PAMA sets out a schedule, not only for the sequence of the Project, but the amounts that are estimated for the completion of the Projects, the amounts

to be invested; right?

A. Correct. The amounts -- the investment amounts are a condition to approve the PAMA.

Q. Okay. And one of the reasons why the PAMA was modified in the early years of the PAMA period was that Doe Run Perú determined that it was going to cost more had been originally estimated, and they asked for permission to increase the amount of the investments that would be required to complete the Projects; correct?

A. I have reviewed some resolutions that show that Doe Run increased, for example, the budget for the treatment of wastewaters. There was a significant increase in that area.

Q. Okay. Back to C-110, we see in the first paragraph that: "An investment of 134 percent has been carried out with regard to what was programmed."

Do you understand that to mean, Ms. Alegre, that, at least as of this date, for this audit and report, that Doe Run Perú had spent more than had been allocated in the Investment Program?

A. Yes. And if you allow me to offer an explanation, a brief explanation of this Resolution, what happened -- and as I explained in my presentation -- a year before, that is in 2002, Project 1 should have been implemented for the Sulfuric Acid Plant. But a year before

the Project Number 1 had to be implemented, Doe Run presented a modification of the deadline and requested a modification up to 2004, 2005, and, if they did not obtain financing, to 2005 and 2006. And now, by November 2002, this was already approved.

So the PAMA was already approved. And this was -- I think that this was a comment for 2004 and 2005. So this 134 should be reflecting other PAMA Projects, but not the first one, because that one was delayed.

Q. I don't think my question was very clear, so let me back up just a little bit. Because the initial PAMA that you have told us was approved on January 13 of 1997 was written by Centromín; correct?

A. I understand that that is the case.

Q. In other words, in January of 1997, Doe Run Perú was not even in existence and Renco and DRRC had not bid on the Project. The PAMA was designed by and approved at a time when Centromín was in charge of the Facility; right?

A. Correct.

Q. It was Centromín that proposed the schedule for the PAMA; right?

A. Should be the case, yes. Correct.

Q. It was Centromín who made the estimates for what the individual PAMA Projects would cost; true?

A. I assume that that is the case because that was

the main party, the holder of the operation.

Q. And it was Centromín who put the Project 1, the Sulfuric Acid Plants, at the end of the PAMA Period; right?

A. I don't think I understood your question.

Q. In the original PAMA, there is a schedule set out for the 16 Projects. You've seen that; right?

A. Correct.

Q. And even though the Sulfuric Acid Plants are designated as Project 1, Centromín understood that that was going to be the most expensive and extensive project and, therefore, they put it at the end of the PAMA Period in the original PAMA.

You know that, don't you?

A. Yes. There was a commitment that -- earlier commitment to modernize, which I understand was a necessary condition to implement Project 1.

Q. Okay. All right. Back to the Report we have on the screen, C-110, regardless of the prior modifications, that is, modifications of the PAMA prior to 2002. What this Report is telling us is, as far as the investment schedule is concerned, Doe Run is ahead of schedule.

That's what it is telling us; right?

A. Yes, but let me reiterate; it could not include Project 1. That is the one that controlled air emissions and that is what was assessed in that period.

Q. Right, because the Ministry had agreed, both with Centromín and Doe Run Perú, that that Project could be put at the end of the PAMA Period; right?

A. Based on what I was able to understand from the revision of the information and also the -- my own analysis, it was necessary to update several facilities as a precondition for the implementation of Project 1.

We are discussing a smelter that is quite complex. It is one of the few smelters in the world of this type, and it was -- it had specific infrastructure that was adapted and it also indicated that it had to be updated.

So there was a great deal of updating, and I understand that this sulfur plant was not provided for the first years, the early years of the PAMA, but, once again, Doe Run committed to doing this as of 2002, but a year before then it modified it in 2001.

The Ministry finally changed the implementation of both facilities, rather, in 2002, Doe Run requested only one plant, and they said in 2002 they could have the engineering ready and that that sole facility could be implemented in two years, it could be developed in two years.

And without analyzing all of the documents, except for having it here in front of me right now, I

understand that 134 percent was not including Project 1.

Q. I appreciate your explanation, but it didn't answer my question. So I'm going to try one more time.

The reason why this 134 percent did not include the Project 1 is because both Centromín and DRP had asked to put that project at the end and the Ministry had agreed to permit them to do that.

A. Once again, I have participated in the evaluation of many environmental management projects, and the deadlines for the Projects are not determined based on the will of the main party, rather, the technical and environmental and operational needs in each circumstances.

And I understand that, without having participated in the assessment of the PAMA for La Oroya, I understand that even if Project 1 -- that I understand was the most important one, the most significant one for La Oroya -- if there was a provision not to do it in the early stages because there was a prerequirement that was the updating of the several facilities before being able to adapt a Sulfuric Acid Plant within the Metallurgy complex.

So I cannot give you -- I cannot attest to the criteria that were taken into account to assess this situation, but that is what I understand from the analysis of the PAMA.

Q. Let me direct your attention to the second

paragraph of this Report. And by the way, I understand that there may be a separate Report from the auditor itself, but this Report is from an engineer at the Ministry summarizing what the auditor has prepared.

Have you seen any of the Auditor Reports?

A. Some.

Q. Okay. And you have seen these type of Reports from engineers with the Ministry, have you not?

A. They were third-party engineers. They had been hired. They were independent, and the Ministry hired specialized companies to draft an oversight report, and, based on that, the Ministry made some decisions.

Q. Okay. If we could go to the end -- I'll come back to Number 2, but I want to ask you about this beforehand. On Page 3 there's a certification from an engineer. I'm not sure why we're not seeing it in the Spanish version. At the very end -- there we go. All the way to the end. Yes. Third page. No. It is after that, Mr. Neely. There you go.

All right. Is there some requirement, by the way, Ms. Alegre, that in order for a report to be official that it has to be approved by an engineer working for the Ministry?

A. I have not reviewed on the legislation that applies to this type of Audit Reports, but I assume that

that was the case, because that was commissioned by the Ministry so there had to be some sort of resolution to explain the conformity with that Report. Otherwise, more work was requested. That is what was done.

Q. What we see here at the end is the request from the engineer working for the Ministry to approve the audit Report by the external auditor; correct?

A. Correct.

Q. Back up to the first page with the second paragraph, each of these audit reports not only provided information to the Ministry about the progress Doe Run was making on the PAMA projects, it also made recommendations about additional items that should be instituted by Doe Run Perú in order to comply with the Supreme Decree; correct?

A. That is correct.

Q. So we see in the -- on the first page, first page -- back up to Paragraph 2, it says: "With regarding to the fulfillment of the recommendations of the auditing corresponding to the first semester of the year 2002, the auditor mentions that they have been fulfilled 100 percent."

So this is a report that indicates that the prior audit had made certain recommendations and Doe Run had achieved or had fulfilled those recommendations; correct?

A. That's what the document says.

Q. I want to show you another of these reports. It is R-160. This is report number PI-2004-MEM with some other initials. And the subject is "environmental auditing, II-2003," which I take it to mean the second half or second semester of the year. And it refers to the inspector -- it's the same inspector that you mentioned in your direct testimony that had been commissioned by the Ministry to do an inspection, SVS Engineers; correct?

A. Yes. That is the Report of 2003 by SVS Engineers.

I don't know if it is the same one, but I did review a report by SVS of 2003. I don't think it's the same document because the one I reviewed referred to a May oversight, but here it refers to September 29, I imagine, 2003, 2004, rather. So it's not the same Report, but it is the same company.

Q. I believe you are correct. I think there was another report later on, but I'm showing you this one because I want to go chronologically through some of these Reports.

And you'll see as we scroll a little bit further down in the document that SVS is reporting on the progress of the PAMA Projects, and I want to go to Page 4. And I'm going to talk to you about three particular paragraphs mentioned in the Report.

Paragraph 2.6 says: "As part of the community relations, DRP has been developing training Projects in the technical management of sheep, cattle, pilot programs, in genetic improvement of sheep and industrial crossing, pasture research, and research in minor animals, research program in the rationale management of South American Camelids and participation in technical events and agricultural affairs."

Were you aware of some of the community programs that DRP was doing turning this time period?

A. Yes, I am aware that they did implement some Projects at the level of the local community, but I could be -- I do not recall the exact dates, but also the Ministry of Health as asked for some assistance work of Doe Run because of the contamination in the area.

I do not know whether these Projects have to do with the request by the Ministry or whether they were out of their own will. I do not know the origin, but I do know that Doe Run implemented this type of projects.

Q. You'll see further example of that in the next paragraph, 2.7: "The mining owner has been implementing environmental mitigation measures in addition to PAMA's commitments. It has been promoting a culture of hygiene and health in La Oroya and the communities of its surroundings, in order to reduce the levels of lead in

blood. In addition, the Project of forestation, Andean gardening, and tourist circuits is being carried out."

So those are additional examples of some of the community efforts being made by Doe Run Perú; correct?

A. That's what the document says.

Q. Finally, in Paragraph 2.8, it says: "Of the six recommendations formulated in auditing the first semester of 2003, three were met at 100 percent and three are within the established period."

So, once again, the additional items that the Ministry has asked Doe Run Perú to do, it has been doing and is doing, at least as of this time; correct?

A. That is what one can glean from the document.

Q. This Report, as well, approves of the Inspection Report from SVS, and I'm happy to have you take a look at the entire document, but there is no notice of noncompliance in this Report or the prior report that we've seen, is there?

A. I can only talk about the paragraphs that you have shown me. I wouldn't dare talk about the full document, but what you've shown here on these paragraphs, apparently, show that these are the observations and the compliances that were recorded.

Q. There happens to be a second report in this same Exhibit, R-160 starting at Page 7. This is the Report of

the first semester of 2004 conducted by yet another external inspector. And you will see the name of this inspector with the initials SEGECO.

A. Correct.

Q. Let me take you to Page 11 of this document. And we have a very similar set of conclusions, just like the one in the prior Report, that talks about community programs, additional mitigation Projects, and, finally, in Paragraph 2.7, it says: "DRP complied with implementing the recommendations by the FE in the third inspection of 2003."

So, again, you see that the inspector makes suggestions. DRP carries out those recommendations, and there is no finding of noncompliance by the Ministry; correct?

A. Yes. But let me clarify something. These inspectors were only looking at the commitments that were expressly included in the Resolutions approved by the Government. These consulting companies did not go beyond that. They didn't really verify whether Chapter 5 of the PAMA said, "Okay, a project needs to be executed on a certain date." Well, they didn't have the power to go beyond the specific language.

Let me clarify something, since you're showing me this paragraph. It says here that Doe Run was taking some

palliative measures because Project 1 was not being executed. And there was actually a shutdown of the plant when there were issues of thermal inversion. And this has to do with the levels of criticality for air contamination that were regulated in 2003.

In 2003, there were certain regulations that were approved in order to define states of alert. For example, if there were high levels of SO2 in the atmosphere, so there were contingency measures that were taken, so the shutdowns were done when the criticality level was quite high because it affected the quality of the air. So that's what this document shows.

Q. I have one more of these to show you. It is R-196.

PRESIDENT SIMMA: I was just going to ask Mr. Fogler when he considered to be a good place to stop. So you are going to bring the third example after the break.

MR. FOGLER: After the break. Yes.

PRESIDENT SIMMA: So we have a coffee break until 11:20. You are supposed to stay here and not discuss. Et cetera. You are experienced.

THE WITNESS: You want me to stay in the room, sir? Should I stay in the room?

PRESIDENT SIMMA: You don't have to stay in the

room, I think. Just don't talk about it. But somebody is going to bring you coffee and whatever.

(Brief recess.)

PRESIDENT SIMMA: We go on the record again.

And Mr. Fogler, you have the floor again.

BY MR. FOGLER:

Q. Before the break, I had referred us to another Report, another Exhibit, R-194. You will see that this is an environmental inspection for the first part of 2005 by yet another external inspector, a different one. And this is an Inspection Report on the verification of the environmental commitments and obligations for the protection and conservation of the environment. So that should help you understand what we're looking at. Okay? This is another Report like the ones that we've already looked at. Okay?

And there's a lot of information about specifics in the -- about the Projects, but I want to take you to Page 7 to the Conclusions Section.

Unlike the prior Reports, the conclusion here in Paragraph 3.1 is even more specific. It says: "It has been complying with the environmental commitments established in the CMLO Environmental Management and Suitability Program."

In the Spanish, that's the PAMA; correct?

A. Yes, but let's try to look at this in context. We need to put this in context. This is a 2006 document. It says so in the heading. So Project 1 could not be inspected because on the -- as to the date of the document, either it had been assessed already or it had been extended or pushed forward in time. This could never have reflected Project 1.

MS. ÁLVAREZ OLAIZOLA: Could we please show Ms. Alegre the date of this document again.

BY MR. FOGLER:

Q. Yes. Actually, let's go to the end. That has the date where it was approved by the Ministry, if we can go to the very last page. You see it's Resolution 199-2006. So this indicates that you were correct, it was 2006. And there's a date stamp. I can't read in the Spanish version, but it's -- I believe it's February 1 of 2006. In fact, I think if we go up just a little bit further in the document, we'll see that date. Okay.

A. That's correct.

Q. So this is an official Report, approved by an engineer for the Ministry of Energy and Mines, that certifies that, as of that date, DRP is in compliance with the PAMA; correct?

A. But, again, this is a document of February '06.

The Extension Request by Doe Run was submitted on 20 November 2005, if memory serves, and it was approved in May 26. So when this document was issued, the Extension Application was being assessed at the time. So Project 1 could not have been within the scope of this inspection.

Q. You'll remember at the beginning of my examination, I showed you Question and Answer 41, and I told you that the two aspects of that answer that I wanted to speak with you about concerned who was to determine noncompliance, and when noncompliance might occur. The "who" and the "when" were the important parts. So what we know is, as of this particular date, as of February 2006, there is a certification of compliance, and not a certification or notice of noncompliance; correct?

A. Once again, I would like to state that oversight only assesses everything that is part of a resolution that can be required. In February 2006, Project 1 did not have a deadline that could be demanded. So the Extension was being examined; so it was being examined by the Authority. Doe Run had requested it and, therefore, it was requested in 2005; and, as a result, it couldn't be part of this oversight, and then it was finally granted in May 2006, and the oversight was taking place in February 2006.

Q. One more time.

As of February 2006, there had been no opinion by

the Competent Authority that DRP was in noncompliance with the PAMA. That's true, isn't it?

A. I do not know of any other resolution that I can recall, but out of the Resolutions that you showed me, none may have been related to Project 1. I have not analyzed them in full, but because of their scope and date, it was impossible for those Resolutions to be an assessment of Project 1 under PAMA.

Q. When the initial PAMA Period ended in January of 2007, you're aware that the Supreme Decree calls upon the Ministry to do an audit on compliance; correct?

A. That is correct.

Q. Are you aware that the Ministry actually did send another set of external auditors to perform an audit of compliance with the PAMA at the end of January of 2007?

A. I am not sure. They may have done so, but I did not review that document, if any.

Q. All right. Well, we're going to do that, but before we do, I want to set the scene because, as you have described for us, there was a Stability Agreement in place during the period of the PAMA so that DRP was permitted to operate under the maximum limits that were in place in 1997, and not be subject to any new, stricter requirements that came into play after that date; correct?

A. The Contract allowed for a freeze on the -- up to

January 2007, correct, it was 572 micrograms per cubic meter.

Q. I want to show you another document before we get to the audit that was done, and this is R-212. This is a Resolution of the Board of Directors for OSINERGMIN. I'm sure I'm not pronouncing that correctly.

A. OSINERGMIN (pronouncing).

Q. OSINERGMIN.

A. Correct. OSINERGMIN.

Q. I shall do the best I can. But it's dated October 28 of 2008; so that helps you place it into context.

Have you seen this before?

A. No.

Q. All right. So there had been -- actually, a fine imposed by OSINERGMIN on Doe Run Perú for exceeding certain environmental standards after the PAMA had expired in January of 2007.

Are you aware of that?

A. I do not recall in particular this topic, but it could be what -- this is the Resolution.

Q. And this Resolution deals with the appeal that had been made by Doe Run Perú, and I have specific reference to Page 6 of this document. And I want to talk to you about this Section 3.2, that's entitled

"inadmissibility of the inspection of compliance with the maximum permissible limits during the validity of the PAMA." And let me give you an opportunity to read this.

And I think, maybe, Mr. Neely, you need to give her a little bit more of the Spanish version because there's -- it goes on, I think, into the next page.

And if I could just summarize here for you, this particular section of the Resolution deals with the purported violations that arose before the end of the PAMA Period. And you will see at the end of the very first paragraph in Section 3.2, it states: "It could not be concluded that the maximum permissible limits were exceeded when the original PAMA execution period had not yet expired."

And that's just a reflection of the Stability Contract that was in place; correct?

A. Rather than the Stability Contract, it reflects the PAMA. PAMA is a program for environmental adaptation, and gives a deadline for process changes and adaptations engineering to obtain the -- to get to the goal, to the environmental goal. I am not familiar.

I'm not familiar with this record, with this file, but it reflects that PAMA indicated a goal with a specific date, January 13, 2007; so if there had been not enough time to implement a project, it was impossible to

demand the maximum admissible limits because the Company needed to have exactly -- it had been given the time to remedy their facilities.

And I don't know whether this refers to an extension, but this sort of challenge may be granted for different reasons. We need to analyze the whole case. But rather than the Stability Contract, it refers to the meaning itself behind the PAMA.

Q. It goes on in the second paragraph to say: "In this regard, keep in mind that, pursuant to Article 9 of the Regulation on environmental protection, the objective of the PAMA is to reduce environmental pollution until maximum permissible levels are reached, therefore, it can only be verified once the original PAMA execution period has expired. That is as of January 14, 2007, for this proceeding, except in the case of the execution of the Sulfuric Acid Plants Project, which, as indicated in the previous section, the scope of Article 11 of Supreme Decree 046-2004 applies."

And this is what you've been telling us, that the Supreme Decree, which allowed the extension -- sets a different set of procedures for the period of the extension for the Project 1; correct?

A. Correct. That was the new exception that was issued.

Q. But the point here of this Paragraph -- and it's hammered home in the last paragraph. It says: "The environmental pollution defined in Article 1 of Supreme Decree 016-93 is determined once the period granted to the PAMA has expired and not before." Do you see that?

A. Would you please show me when the inspection took place leading to this Resolution, because the Resolution is of 2008, but I do not know when the inspection on the field took place, when the documents were reviewed that led to this Resolution.

Q. Well, I can certainly show you some other parts of this. If we go to -- back to Page 1, just to help you put this in context, it refers to a Resolution in August of 2017. Excuse me, 2007.

This is the Resolution about the fine. That really wasn't my question. I really wanted to focus on the idea that's expressed in that paragraph we were looking at, that achieving the environmental objectives can be determined only at the end of the PAMA and not before.

You agree with that, don't you?

A. This is a little bit relative. And let me explain why. When PAMA was approved, established a schedule for the implementation of the Project within a maximum term of 10 years. And just to say something, if Project 3 was anticipated to be built during years three

and four, by the end of year four, the Company should have reached the objectives for that Project.

The 10-year Project is the maximum total deadline to attain all of the objectives, but it doesn't mean that we needed to get to 2010 to determine whether the objectives were being met or not.

The objectives depended on the moment when the implementation of each of the 16 Projects under PAMA was concluded. So 10 years was the maximum term, but it does not mean that all of the objectives were conditioned by those 10 years. They could be -- their fulfillment or compliance with could be demanded earlier.

Q. That's a good point that you're making, and that's why I have showed you the various Reports from 2002, 2003, 2005 that indicate interim progress that show that, at least in the opinion of the Auditor, and the approval of the Ministry engineer, that as of those dates, DRP was in compliance with those interim goals; correct?

A. Once again, I do not understand from any of the documents that you showed me that any of those was linked to attaining Project 1 under PAMA. That was the only one addressing air pollution.

All of the other Projects had to do with the management of solid waste, and also the management of wastewater effluence, and other specific objectives, but

the only Project that was geared to reduce the emissions within the Metallurgy complex was Project 1, and because of the dates and the scope of the Project that you have shown me, I cannot understand that these -- I cannot conclude that these were related to completion of Project 1.

Q. Let's go to the audit that I mentioned at the end of the PAMA Period. It's R-214. Do you see it? And if we could go a little bit further up in the -- the other way in the Spanish version. This is a document on the letterhead of OSINERGMIN, and it's got a date of July in 2010.

I can't read the exact date, but that will help put it into context. And you'll see in the initial paragraph of the background section, it refers to the Supreme Decree that granted the possibility of extensions, but I want to go to the third page of this document. And this is entitled "Supervisory Actions," and the Paragraph 1 is July 2007. To put this in time context, this is after the 10-year period is over; right?

A. Yes. I understand that that is what it says. Yes, I understand that that is within the scope of the document.

Q. And it says: "Regular supervision was carried out in 2007 through the supervising company, D&E, to verify the commitments of the PAMA and Environmental Impact Studies as well as environmental obligations."

And you understand that that is what was contemplated in the original Supreme Decree, 16-93, to have an audit at the end of the PAMA Period; right?

A. Correct.

Q. Paragraph 2, September 2007. The environmental audit of the PAMA was carried out, not extended through the supervising company, D&E, to verify the implementation of the eight PAMA Projects.

Now, this is all of the ones assigned to DRP except Project 1, because it had already been extended. But it says: "At the same time a financial audit was carried out to verify the PAMA's executed investments. Under the responsibility of the international consultancy, Deloitte, the results indicate that DRP has complied with its investments." All right?

A. Correct, with the exception of Project 1, again.

Q. So we know that, as of 2007, the period of the original PAMA, there not only has been no declaration, no opinion of the Competent Authority that DRP is not in compliance, we now see an affirmative Declaration that DRP is in compliance, as of that date, with its PAMA obligations; correct?

A. With the exception of Project 1.

Q. And the point here is that I've been trying to make throughout, and I understand you are what I would

consider to be a very Competent Authority on Environmental Laws, but when the Privatization Committee, in the very initial question and answer that I put up on the board is referring to opinion of the Competent Authority, they weren't referring to an after-the-fact opinion of an expert. They were referring to whether The Ministry of Energy and Mines had issued an official Declaration of noncompliance, weren't they?

A. It is likely. Once again, I have not analyzed the privatization process. I am not familiar with its Regulation. I am not familiar with its background, and from what I have analyzed, and from what I see, I see that every one of them related to the PAMA Projects except Number 1, and my analysis focuses on Project 1, mainly.

Q. All right. So let's go to what you want to talk about in Project 1. And I think you have stated in your Report that the PAMA could not be extended, but it was extended as a result of the Supreme Decree that was issued in 2004 that we just mentioned; correct?

A. No. The deadline for the implementation of Project 1 was the subject of that Extension. But in 2006, the Extension was approved but it indicated that the PAMA deadlines as an instrument were not extended, and the same applied to the deadlines that applied to the Metallurgy Complex.

Q. The entire purpose of the Supreme Decree that was issued in 2004, Supreme Decree 46-2004, was to permit an extension of certain Projects in the PAMA; correct?

A. Yes. Specific Projects under the PAMA, yes, correct.

Q. And as we discussed before, the Government of Perú as a sovereign nation certainly has the authority and power to change, to modify, to amend prior decrees that set forth the new rulings of the Government; correct?

A. Yes. But this is not simple, because, as a sovereign State, any country may change its regulations, but it doesn't mean that they are exempted from the scrutiny or the opinion, public opinion.

So that's a reason why these special rules passed for La Oroya were highly discussed processes within the Ministry of Energy and Mines, and even beyond the Ministry, and I did not live this, but I have heard from others who were working within the MEM that the General Director resigned precisely because of the issuance of Supreme Decree 046-2004.

So each of these Regulations have been extremely complex. They have not been easy processes, and that's the reason why all of these are exceptions. And Supreme Decree 046-04-EM is the first one, and I would say the only one, as I recall right now, the only Decree that established

many guarantees to safeguard that decision.

For example, before presenting the Application to have an Extension, they needed to hold public hearings to include also financial guaranty to support the development of the work. They also needed a bond for the payment of any penalties that may have been imposed. There was also a requirement for study on health and the environment to determine what the impact on the health of the population would be at the time of the decision-making.

And not only that, but also the assessment of these Extension Requests was the only effort that I know of by the Peruvian Government that had this scope that it did. First, all of the record for this Application was uploaded to the web; so that anyone could take a look at it.

Second, there was an invitation for the Ministry of Agriculture, all of the Ministries, not the environment, that was not created, but the Environmental Authority, CONAM. All of them were invited to sit at the table to analyze the Measures, and it was a completely open process. Once again, all of the processes that have included the Extensions to the PAMA have been very complex and difficult to manage by the Authorities, and as time went by, they became even more complex.

Because one thing was to extend the PAMA in 2002 when the legal deadline had not expired, and something

different was to extend the PAMA once, when Project 1, when PAMA already had expired compliance period.

And also, exceptionally, the Congress had to make a decision, which is a representative body within the Government, had to make a decision in connection with this Law of 2010. So all of this was extremely complex for all of the Peruvian officials.

Q. Everything that you mentioned in your lengthy response, public hearings, the requirement of a bond, the requirement of transparency, the requirement of studies, health assessments, all of that was done in connection with DRP's request for an Extension, ultimately leading to approval of the Extension with those terms that you have mentioned; correct?

A. That is correct.

Q. In fact, you participated in that process, and in the process of approving DRP's request, didn't you?

A. Yes. There were about 20 individuals who participated in that assessment.

Q. If we look, for example, at Exhibit C-61.

This is an Executive Order, but it attaches a lengthy Report that was prepared by the Ministry. And if we go to Page 33 of this document. Let's go to Page 34. Excuse me. I want to show her her signature. You're going the wrong direction. There you go.

Included among the signers of this Report is you; right?

A. That is correct.

Q. Okay. And if we want to see the conclusion that's on Page 33, the recommendations, the first recommendation is to require DRP to respond to all of the comments made on its request for extraordinary extension by the MEM, Ministry of Health, institutions in civil society. And they did that, didn't they? DRP responded?

A. Correct.

Q. The second recommendation was considering that the PAMA Projects and supplementary Projects are in the process of execution. Let me stop there, Ms. Alegre, because as part of the request for an Extension on Project 1, DRP proposed, voluntarily, to include several additional Projects. I think there were 12 of them, to deal with the problem of fugitive emissions that had not previously been in the PAMA.

You're aware of that, aren't you?

A. As a matter of fact, it was a legal requirement, Supreme Decree 046-94-EM, establishes that the Authority had the power to demand specific projects or measures to attain the environmental goals. And as stated by Doe Run, when presenting this application, there was an issue with fugitive emissions that had not been resolved over the

nine, almost 10 years that had gone by, and also the Ministry, in addition to this Executive Order, held several meetings with Doe Run representatives.

And as part of those meetings, Doe Run was requested to implement measures to solve the issue of fugitive emissions, and I was able to participate in several of those meetings. So there were several discussion points, and it was the increase in production, fugitive emissions, and also the concentrates or other load of secondary metals being used by Doe Run, and this is the reason why the three aspects were addressed as a condition to grant the Extension in 2006.

Q. So one of the requirements imposed by the MEM to grant the Extension was DRP must include and complete these additional Projects that had not been in the original PAMA; right?

A. That is correct, because the understanding was that at those production levels, and because of the types of concentrates that were being used, they wouldn't be able to reach the environmental quality standards. And that was the purpose at all times at La Oroya -- right? -- to reach the quality standards for the environment.

Q. And you are aware that those 12 additional Projects that were included in addition to Project 1, were actually completed by Doe Run before the operations were

shut down, aren't you?

A. I have not looked at that. Probably, yes. I haven't looked at that evidence. What I do know, because I've reviewed the documents, is that the copper circuit that -- the copper circuit, Sulfuric Acid Plant, that was the most contaminant, was not concluded up until 2012, and that was operated by Doe Run.

Q. I'm aware, Ms. Alegre, that you want to tell me in every answer that the copper circuit Sulfuric Acid Plant was not completed. That was not my question, but I'll move on.

Let's look at R-289. This is another report in connection with the Extension. It is to the Director General of Environmental Affairs, and, if we go just a little bit further below all of the documents that are listed, we'll see the date is May 25, 2006.

I want to go to Page 86 just to show you that, again, this is a report that you signed.

A. That is correct.

Q. And it's a very lengthy report that deals with whether or not to grant the Extension requested by DRP; correct?

A. That is correct.

Q. We can see, at Page 83 -- please blow up the Spanish version for Ms. Alegre. It's a little bit hard to

read, and I apologize for that, but, after you set out many of the same terms and conditions and probably more than what you have summarized for us here today, the first recommendation is to approve the request, and that was something that you signed off on personally as a Legal Advisor to the MEM; correct?

A. Yes. That's correct.

Q. I would like to talk to you now about some of the additional opinions that you have given in the Second Report that you gave and also gave to us this morning. And the first of these Opinions, you're very critical of Doe Run Perú for increasing production; is that correct?

A. I understand that this is a very significant aspect in this case. The production increase violated the PAMA. When an environmental management instrument is approved, certain commitments are established on the basis of the engineering design at the time the PAMA was assessed. The Project that was included in the PAMA did not exist. It was another project. It had other impacts, other considerations that were not included in the PAMA. Even though they had executed the PAMA as approved, they wouldn't have been able to reach the objectives because the production levels were different. That is why I have underscored that aspect in my Report.

Q. You gave an answer -- not an answer. I think it

was part of your presentation, but I just want to try to make sure I understood what you were saying.

You gave some number of 30 percent as if that was the percentage of increase of production.

Did you intend to say that?

A. That is included in the Resolution that provided an extension for Project 1 of the 2006 PAMA, and that information I got from a report from the technical team of the Ministry and also I have taken that information from the Report of Wim Dobbelaere that has issued a Report in this matter.

Q. And I want to be totally fair to you, Ms. Alegre, because you're a lawyer, not an environmental engineer. And so you are relying on others for your opinion about the increased production, aren't you?

A. As I indicated, I participated in the evaluation process. It was a multidisciplinary process. I was able to participate in all of the working meetings that we had at the Ministry with the International Experts. I went with the International Experts to La Oroya, and the meetings included lots of issues that were discussed. This is not only based on the Report and what Mr. Dobbelaere said, but, also, I got this from the information that we got from the Ministry in the Legal Affairs office during the evaluation of the Extension of the PAMA in 2006. There

were many specialists or experts that concluded that.

Q. Let's put this issue first in some legal framework, and I want to show you again the Supreme Decree 016-93. That's R-25.

A. Correct.

Q. And there's a provision in it, specifically in Article 20, it's at Page 9. Let's try to blow up the top. Yes. And I know you're very familiar with this Supreme Decree, but you'll note that there's a provision here that requires an Environmental Impact Study to be done if a company wants to expand production above 50 percent; correct?

A. Correct. That was a condition imposed by the law for that level of production increase. Now, the MEM managed this Regulation the following manner back then. If a company wanted to increase its production for over 50 percent, it didn't have to modify the EIA, but it had to produce a new EIA. The practice at the time was to apply the approved EIA. If the Company had any doubts about whether a change that it was going to implement complied with the law or not, it had to consult the authority, and the authority would provide a determination. So there were many modifications of the PAMA, many modifications of the EIA, that were approved in those years.

So the provision did not allow the Company to

modify the terms of the PAMA, and so any change in connection with whatever it was approved had to be assessed by the authorities.

Q. Here is what we know legally about the actions of the MEM about this issue of increased production. First, we know that the MEM did not require DRP to perform an EIA in order to increase production, did it?

A. I don't know of any document that indicated that.

Q. Second, we know that the MEM did not criticize the DRP in any of these Audit Reports, Inspection Reports, Engineer Reports that we've looked at. There's no criticism of DRP for increasing production, is there?

A. In the 2003 Report by SVS, that was stated. The breach of -- the breaching of a commitment or of a provision, strictly speaking from a legal viewpoint, materializes if a company ceases to do something they had to do or does something that it shouldn't do. There is no breach because of the declaration by an authority. As we are taught in law school in Perú, obligations are there to be fulfilled and not to be breached.

So nonperformance is materialized when the Company does not meet the obligation within the timeline established. And from my viewpoint, there were a number of noncompliances related to that.

Q. The third thing that we know is that, after all

of the study, the Hearings, the health assessments, the Engineering Reports in connection with the Extension, the Extension was granted without any requirement to DRP to decrease production; isn't that true?

A. A number of conditions were set. For example, the control of the quality of the concentrates that Doe Run could use. What the MEM did and what I was able to see while I was at the Ministry -- and I have only worked for the Government for a year and eight months during that period of time, and what I understood as part of the review of that process is that the metallurgical complex was very important for central Perú, that there was a local economy that -- depending on this Project, and what was done was the greatest effort possible to allow the Complex to continue operating and also to try and complete Project 1 of PAMA was -- which was indispensable for the improvement of the air quality in La Oroya. The Extension was granted, and I know this because I participated, together with the team, in this Decision. So, of course, environmental studies are approved by the Technical Director, and the other Resolutions are Executive Orders. But this was such an important thing, it went beyond technical issues. It was part of a decision that the Complex should continue operating that, in 2004 provision indicated that the Resolution had to be handed down by the Minister, and not

by the technical people.

That is why the Resolution approving the Extension in 2006 is a resolution by the Minister and not by the technical group. So that is why you can see that this was a very important issue for the Government of Perú and for the Ministry of Energy and Mines.

Q. Ms. Alegre, do you remember my question?

A. If I participated in the Extension, you asked me. Excuse me, in the Decision to grant the Extension.

Q. No. Let me try it again. Did the MEM require DRP to decrease production as part of the grant of the Extension?

A. No. Precisely because it imposed conditions so that it could continue to operate at the level the Company requested. This was not something that was done for free. So at that production level, Doe Run had to meet a number of Measures. That is why the Report is so long. It had to put concrete on the floors of the smelter because a higher level of production would imply more impact, and, in 2005, fugitive emissions were still there. The soil in the foundation was earth, so the precipitation of metals was still there. And they were kicked up when the vehicles went through.

So in 2006, when all of this came to the knowledge of the authorities, well, this was done and the

document is so long. So the approval was done, but it had lots of conditions. It's about 100 pages. It's a long document, if I remember correctly.

Q. To be clear, DRP, just as Centromín had done when it was operating the Plant, regularly reported to the MEM on the production of the various metals from the Plant; correct?

A. Surely. It was a legal obligation that they had.

Q. My point is, the MEM knew exactly what the production levels were and, yet, it did not take any action to tell DRP to reduce levels of production, did it?

A. I don't know. Again, the decision-making here involves a number of people. When I worked at the MEM, I worked for the General Director of Mining Matters, and it was a Directorate that assessed environmental instruments. There was another Director -- Directorate that never had any coordination meetings with the Directorate of Inspections, and the Directorate of Inspections didn't know exactly what happened with the Directorate of Environmental Matters. So many bodies that participated. Unfortunately, the Ministry, in my opinion, has not managed all the information in a simultaneous and integrated manner. So there were snippets of information that the authorities knew. There were many different authorities. When we assessed the Extension of the PAMA, there were a number of

Directorates that were involved in that exercise. The General Directorate of Mining and Environmental Matters, the General Directorate of Mining, which was the inspector agency, and also there was the Office of the Minister.

So we understood was that a different type of information was being provided to the different bodies of the MEM. So the Minister said, "okay, we have to hold meetings with all the Parties at the same time." And from that point on, the meetings were held with the Minister and the technical people. Perhaps, that was the level of factioning that existed at the time in connection with this process.

Q. Let me try a different approach, Ms. Alegre.

The PAMA itself discusses increased production of metals, doesn't it?

A. No, I have not seen anywhere in the PAMA a mention of that, and I have not assessed management Measures for production purposes. Environmental instruments are assessed at the highest capacity established or described in the PAMA, and there are no Measures of management in the PAMA related to an increase in production.

Q. I want to show you the PAMA. C-90. There's a table, 3.2, at Page 80. This is going to be very difficult to read, but I'm going to try to blow it up so that you can

see it.

Could you get to the Spanish version? All right. The title of the table is "potential increase potential in installed capacities during the short term via optimization and investments 1995-1996," I think it says. I can't read that far.

MS. ÁLVAREZ OLAIZOLA: Excuse me. Could we please show the Spanish page, if you were so kind.

MR. FOGLER: We're going to work on that. Sorry, Ms. Álvarez.

Mr. Neely, can you try to find Page 80 in the Spanish version. Maybe the pagination is different. Is that the problem? Sorry about that. I tell you what, we'll come back to that. Let me move on. I don't want to waste everybody's time while we're hunting for this.

BY MR. FOGLER:

Q. Let me show you a chart that's from your Report.

MR. FOGLER: Let's go to AA-54. No, no, no. This is the Exhibit AA-54. And there's a chart at Page 81. There we go. Can we flip that? This is in Spanish, so hopefully this will be easier for you. We need to rotate it.

BY MR. FOGLER:

Q. All right. This is a graph that was included as an exhibit to your Report, and it shows production of three

different metals and total metals during Centromín's period and production during Doe Run's period, at least for the first few years.

Do you see what I'm referring to?

A. Yes. I do see the graph.

Q. Yes. And so what -- it shows that, from a low point, which appears to be somewhere in the late 1980s, Centromín began to increase production of lead and increase production of all metals virtually every year until the Plant was transferred to Doe Run Perú; correct?

A. Yes. And there is a graph that shows movement upwards.

Q. Yes. And that trend increased, at least for the first two or three years that Doe Run Perú operated, until it leveled off and slightly decreased.

According to this chart from your exhibit; correct?

A. That is what you can see on the graph, yes.

Q. Right. And so, as we were discussing before, you're not aware of any notice or declaration from the MEM to Centromín not to increase production in all of this decade before the turnover of the Plant, are you?

A. I don't know that, no. But, again, when the PAMA was approved, production should not have been increased vis-à-vis the production included in the PAMA. I do not

have the numbers of the levels at that time that -- once the PAMA was approved, production should not have been increased above the levels set forth in the PAMA.

Q. And you're not aware of any notice or declaration or opinion from the MEM issued to DRP that complained about increasing production of lead or any other metal for that matter, are you?

A. No, I'm not aware of any document.

Q. Let's talk now about your allegation in your Opinion about dirtier concentrates.

Do you know what that refers to?

A. Yes, of course.

Q. Okay.

A. Shall I explain?

Q. I'm sorry?

A. Shall I explain?

Q. Well, no. I'm going to ask you specifically if you know how much "dirtier" -- I'm going to use your words -- the concentrates were under Doe Run as opposed to Centromín.

Do you have any quantification of that amount?

A. I am not an expert on metallurgy. I cannot assess those estimates. I assessed official documents on the subject matter. I assessed the document of SVS that was presented with Golder Associates and also the document

presented by Wim Dobbelaere. And also, I participated in evaluations and the Report, the Extension Report of 2006, and what I understood from those evaluations is that the lead that entered La Oroya under Doe Run had a higher sulfur copper content, and sulfur is what becomes sulfur dioxide, going through the oxidation process, and that also the copper had a higher lead content. It was about 10 secondary metals, the ones that were associated to the main metals that Doe Run was working on. They worked with zinc, copper, lead, and, according to those -- in addition to those three, there were another 10 that entered the smeltering process. That's why it said that they were dirtier concentrates. They had a higher load of secondary metals, secondary material that was associated to the raw material that Doe Run used.

Q. I'm sorry, Ms. Alegre. That was not my question. My question was, do you know how much more of these substances was in the concentrate used by DRP than Centromín?

A. What I could mention right now is what I included in my presentation, and what we read there is that, based on a special study conducted in May 2003 by SVS Engineers, there was 59 percent higher sulfur content and also 33.3 higher of lead, 27 more of lead that entered the process -- that is to say, some of these percentages have

to do with incoming or outgoing process. 117 percent higher of dioxide that was generated, and also fugitive emissions cadmium. So what I have assessed is documents such as this one that refer to different percentages, and also what I based on the information that I reviewed, I saw different figures and information on this case is quite complex because it is not standard throughout time.

As I mentioned before, in 2003, there were 95 secondary stacks, and, in 2005, we heard of 59 secondary stacks. So those are the figures that I can refer to, but, beyond referring to what I saw, I cannot ratify anything.

Q. What we do know is that the MEM never issued any opinion, notice, declaration of any kind to DRP concerning use of any particular kind of concentrate. That's true, isn't it?

A. I recall, at this point, only the Resolution of 2006 that did reflect a commitment to limit the number of minerals, secondary minerals to the raw material entering the Metallurgy Complex. This is in the final Report recommending the Extension to the PAMA in 2006.

Q. Was there any notice, opinion, by the MEM that the use of any particular concentrates was a violation of the PAMA?

A. Not that I know of.

Q. I didn't see, in the materials that you appended

to your Report, any of the Pleadings from the Missouri Litigation.

Have you looked at any of those?

A. No.

Q. Now, you were not able to offer any opinions about whether the Claims of the Missouri Plaintiffs are related to the PAMA or not, are you?

A. No.

Q. You haven't read the deposition of the Plaintiffs' Expert or any of the allegations made by the Plaintiffs, so you don't know how those Claims fall within the provisions of the Contract, do you?

A. No.

Q. All right.

MR. FOGLER: I will conclude my examination.

PRESIDENT SIMMA: And by "will conclude," you say you have concluded? Is that -- no, because that can mean different things.

MR. FOGLER: I think, if Mr. Grigera will translate, I could conclude, I might conclude, but I think I will. I think I am concluded.

PRESIDENT SIMMA: You are concluding. So that means that it is at an end now. No, I mean, I'm learning from your examination.

ARBITRATOR GRIGERA NAÓN: So what you have said

is plain English. So what do you want me to translate?

PRESIDENT SIMMA: Okay. No. No. I get the point. Okay. So thank you very much.

So -- yeah. We have -- do you have an idea how long the redirect might take? Because it would be good to have it in one go.

MS. ÁLVAREZ OLAIZOLA: Possibly 30 minutes.

PRESIDENT SIMMA: Sorry?

MS. ÁLVAREZ OLAIZOLA: 30 minutes.

PRESIDENT SIMMA: 30 minutes. I think it would be better to have it right now.

Yes, please, so you have the floor, Ms. Olaizola. You have the floor.

REDIRECT EXAMINATION

BY MS. ÁLVAREZ OLAIZOLA:

Q. Ms. Alegre, you would recall that, at the beginning of the cross-examination by Mr. Fogler, he asked you a series of questions on a round of questions and answers that took place during the Bidding Process for La Oroya; correct?

A. Yes.

Q. I think he showed you Question Number 41 from that round?

A. Yes.

Q. And I think he also asked you about the Contract,

the Contract by means of which the Shares were transferred?

A. Correct.

Q. And if my memory serves me right, you said that you had not reviewed either document in detail or thoroughly, but I would like to show you Clause 18.1 of that Contract, which we will show on the screen. It is Number 18, 18.1(c).

I'd like for you to read Subparagraph (c) under 18.1, clause --

A. So the 18th clause under the Contract?

Q. Yes.

A. Subparagraph?

Q. Yes. Yes.

A. Subparagraph (c)?

Q. Yes.

A. If there is any discrepancy between the Bidding Conditions and the Contract, the latter shall prevail.

Q. Yes. Very well. Based on that very short subparagraph, could you please tell me what your understanding is?

A. That the terms and conditions may not change the terms agreed under the Contract.

Q. Thank you very much.

My second question has to do with the series of questions asked by Mr. Fogler as of 10:30 a.m. And they

were related to -- and I am not going to say word for word what the question was, but it had to do with whether DRP had received any notice by MEM as to the PAMA compliance. And I would like to show you Document R-314, Page 156 onwards, from the PDF, where we see MEM Report 501, that is about three pages long. And at the end of the Report, we see Resolution 043.

I would like for you, Ms. Alegre, to take as long as you need to read that Report for you to refresh your recollection and tell me, upon reading it, whether you would like to clarify anything.

A. I don't have it handy.

Q. Kelby will show it -- will show Pages 1, 2, 3, and please let us know when you finish reading it, as of Page 156.

A. I recall that Report. Not word for word.

Q. But do take the time to review it.

A. I should correct something because I included this in my presentation, but, because of the pace of the questions, I forgot to mention that these studies, a special study by the MEM -- and we can see that under "scope," as we see on the first page, that the request for the external consultant was to assess the evaluation and the increase of pollutants resulting from the metallurgy process, different from the ones indicated in the baseline

of the PAMA. That is, this Report was asking the consultant to assess whether there was an increase in the production rates vis-á-vis the PAMA and also the concentrates that had a higher content of pollutants, concluding as follows: That the environmental assessment was carried out based on the information provided between 1995 and 2002, finding limitations at the outset, such as the documentation corresponding to the Sulfuric Acid Plant and --"

Q. Could you just slow down.

A. And so, in this Report, a specialized consultant is being asked -- and even with the support of a transnational company, because this is not only asked of SVS Engineers, but also Golder Associates Brazil. It's not even Golder Associates Perú, rather, Brazil, for them to carry out this thorough evaluation or assessment. And what these consultancies reported is that they were not giving all of the information in connection with Project 1, that it was not feasible to review all of the accounting information from Project 1. In spite of that, and based on the production figures, it was concluded that there was about a 30 percent increase in production vis-à-vis the statement in the PAMA.

And if we scroll down, there it says: "Given the global information on investments, it was not possible to

differentiate between those that were to be used for smelter updating and those for the PAMA. There was an increase in 1995-2002 of the amount of raw material used for the lead circuit by about 11 percent increasing also the masses entered into the circuit."

It says lead 25 percent, arsenic 59 percent, and sulfur 7 percent, and there is also -- here it is also indicated here that the air quality worsened vis-à-vis lead, arsenic, and cadmium, and this was also resulting damage to the environment and the health of the workers in the area and this was in 2003, as seen in the levels reaching 2002.

The emission rate for SO2, sulfur dioxide, given the emissions increased between 1995 and 2002. The increases in SO2 concentration in the air would be related to the increase of fixed and fugitive emissions.

There is concern, 2.10 -- there is concern as to the environmental efficacy of the Measures adopted and also the feasibility to comply with the PAMA's schedule in connection with the Sulfuric Acid facility because in 2003 there was no identification for the area of the facility. They didn't even know where the Facility was going to be built. And also the acid distribution system, the placement of the acid, so in 2003 this was not established. Also, the management of fugitive emissions in the reception

and also the management of concentrates and also the management of the soil and underground waters in the area of the smelter, as well as the fugitive emission control, in the process represent potential risks for the environment, and they have not been considered in the PAMA. This was communicated to the company in 2003.

Requirements. And here I am going to quickly show you a series of requirements to Doe Run by the authority that reflected the concern that the Ministry had. It says, to present the early schedule for the PAMA Projects of the La Oroya based on PERT and Gantt diagrams and also detailing for each of their Projects, the activities that were carried out -- to be carried out. And also with the amounts invested to be invested, and also the goals attained and the environmental objectives to be attained between 2002 and 2006.

This is a list of requirements by the authority to present the annual schedule for the updating project or modernization project, and for each project the activities to be -- that were developed and to be developed because it was seen that the information provided by the company was of a global nature. It was not detailed, and it was not feasible to determine the level of progress.

And also, in connection with the Sulfur Acid Facility under PAMA, given its scope and also the negative

impact, the following had to be presented: Technical feasibility, economic feasibility, including the market study for the Sulfur Acid Facility May 2003. We know that as of February 2014, Doe Run presented a letter to the Ministry of Energy and Mines indicating that they only had conceptual information on the Sulfuric Acid Plant.

A year earlier, the Ministry had asked them to comply with the presentation of the technical feasibility. Doe Run had committed to have the engineering ready by 2002, but they did not have it.

And also to present the schedule for the implementation for the various updates that were not considered for the sulfur plant. And here we have different requirements. We have pollution due to lead, cadmium, and arsenic.

I'm not going to go into detail, but we have many schedules, many specific Measures, and also information requested by the authorities because they were only receiving global general information.

So I do correct my statement, meaning that this Resolution that I did mention was not commented in my answer during cross-examination.

Q. Ms. Alegre, I understand that at page -- on the next page there is a resolution by the MEM in connection with this Report; correct?

A. Yes.

Q. You would recall that Mr. Fogler asked you whether at some point MEM had issued a resolution in connection with the compliance with PAMA or noncompliance with PAMA?

A. Yes. I had forgotten this resolution in my answer.

MS. GEHRING FLORES: Thank you very much.

PRESIDENT SIMMA: Thank you very much. We have 10 minutes left for questions. And I would like to ask my colleagues whether they have questions.

QUESTIONS FROM THE TRIBUNAL

ARBITRATOR GRIGERA NAÓN: Ms. Alegre, you were questioned about the requirement of a Notice of Default (in Spanish). Could you address that issue under Peruvian law? Because my impression is that you, in your answers, that you think this is not a requirement in this case, in connection with the PAMA.

Could you explain your vision of that?

THE WITNESS: I do consider that under Peruvian legislation or law, Peruvian law, compliance with the obligations that were not being complied with should have been demanded and the Company should have been sanctioned and there should have been a cease of operations.

But, once again, this a very complex case for the

authorities. I don't know what they were thinking or what the decisions were that had to be made back then, but, legally, they should have closed down the smelter.

The effort by the Ministry, for example, 2004, I am familiar with it, since I was working with the Ministry in January of 2005 after the issuance of that law, and that was quite controversial internally, and a decision was made to grant an additional extension even against the opinion of inspection authorities because the General Director resigned when that law of passed.

So that was a very complex period for decision-making with the authorities -- within the Peruvian authorities.

PRESIDENT SIMMA: Thank you. I have a couple of questions of my own, and two of them actually relate to the -- what you could call the "context" of our case here.

So my first question would be, is it really true, as was said several times, that with regard to mining and, let's say, refining, there was no rule? There was no -- there were no limitations around in Perú until 1990 or the Decree --

THE WITNESS: 1993.

PRESIDENT SIMMA: Mr. Fogler says "no real." You used the term "no real," let's say, limits or conditions. Is that really -- or is that just a simplification?

Nothing in place? You could do what you wanted?

THE WITNESS: No. It was a simplification. As a matter of fact, there was no rule to control air emissions, but in 1969, 17752 was approved. That was the general water law. That was in 1969, and this was a Law on effluence, but there was no rule or law for emissions, up to 1996, when the maximum permissible limits were approved.

PRESIDENT SIMMA: Okay. Second of this preliminary questions. So DRP was certainly not the only company or foreign company corporation that engaged in mining and refining, et cetera, operations in Perú.

Was DRP the only company creating all the problems that lead to that, to the litigations in Missouri and here in Washington, or did you have similar problems with other companies?

THE WITNESS: I do not know the scope of the processes here in the U.S. other than by means of the public information, but there were several foreign companies in Perú.

However, in the case of La Oroya, it is clearly the main source of pollution, so much so that in 2005, the La Oroya was declared as a macro issuer -- that is to say, the one that was the main party responsible for the emissions.

And according to the 2001 Rule, that is macro

emitters should be the Company that issued more than 25 percent of the pollutants, critical pollutants for the -- based on the air quality standards. So in 2005, it was considered a macro emitter.

PRESIDENT SIMMA: Another question that relates to what was said this morning. If you wanted to summarize it, you could say there were 16 Projects, at least originally. 16 Projects. Project 1 was the greatest project and it got some kind of special treatment, to which I'm going to turn in a second.

The other projects, according to all the Inspection Reports that we have heard, were implemented, some of them even 234 percent. So I couldn't distill any criticism of any of that from what you said and from what Mr. Fogler asked you. So there is always Number 1.

And whenever you were asked about the result of an Inspection Report and whether there was something negative in there, you always said, very stereotypically, you said, "with the exception of Project 1."

So I think that all leads us, shouldn't it, to really have a close look at this Decree 046-2004, which is-- in a way, I would regard it as kind of a lex specialis on Project 1. I don't remember having it seen before, especially the Article 11. Or maybe I didn't get the number right.

But what does Article 11 actually say? Is there any provision that Decree which says that even -- that you get that extended time frame, but within that time frame there needs -- certain things need to be accomplished?

I'm asking this because whenever, both in the Pleadings of the Respondent, there is always nothing happened. Years passed. Nothing happened. Nothing happened with regard to the Sulfuric Acid Plant, which is the subject of my question.

So is that just a complaint because of all the dirt that went up in the air or is it a complaint that something that the special piece -- the special rules on Project 1 required, but the things that were not kept, that were not actually done?

MS. ÁLVAREZ OLAIZOLA: Could we please put the provision for Ms. Alegre to read?

PRESIDENT SIMMA: Yes, of course.

MR. FOGLER: It is R-29 at Page 5.

MS. ÁLVAREZ OLAIZOLA: Thank you.

PRESIDENT SIMMA: It is black like the situation.

ARBITRATOR GRIGERA NAÓN: Black as night. We need this on the screen.

(Comments off microphone.)

THE WITNESS: I can't see anything on the screen.

PRESIDENT SIMMA: Okay. Page 5. Can we have an

enlargement?

I could put my question more precisely. Is there anything in this document, in this Decree that regulates certain order or development on our -- the Sulfuric Acid Plant during the time that DRP may use or can take in order to complete the Project, or does it just say that it is 10 years, and after 10 years something has to stand? But you can use any technology. We heard various types that are used there. You can kind of beef up the old stuff or build up some new stack. So that is my question.

THE WITNESS: No. This provision -- well, let's see. In Perú, you cannot issue regulations for a specific company.

PRESIDENT SIMMA: Wait a minute. Those were questions that I struck out because I thought they were a bit too academic in a sense, that we all have this idea of constitution law, and Hans Kelsen in Latin America where if knew he probably turn in his grave, he said: "Well, laws, yeah, laws can refer to one case. There's the lex sigma, which means we have abolished death penalty but we are going to execute this guy.

THE WITNESS: You can't do that. You can't do that in Perú.

PRESIDENT SIMMA: That is great. That is super. No, I recognize that.

But with regard to a company being treated differently from other companies by a piece of legislation seems to me to be interesting. So that it can be done?

Well, apparently it was done because you had mentioned a number of times that Congress passed laws, Decreeing were -- and all that referred to DRP and probably to our famous sulfur oxide stack or machine.

THE WITNESS: That's correct. The 2004 provision establishes this in general. It says: "The Companies that have not completed their PAMA Projects could obtain an exceptional extension to complete PAMAs." But it didn't say that it was Doe Run. It didn't say that it was the Sulfuric Acid Plant. It said that, generally, it opened up this process.

Now, there was a provision 29-410 approved by the Congress of the Republic that, specifically, had Doe Run in it. But the other ones were drafted generally and not specifically for La Oroya, but the only company that went under it was Doe Run.

PRESIDENT SIMMA: Now. Let's see. If somebody looks at this from the outside, this morning would create the impression this person that there must be a body of legislation, other rules, et cetera, which makes a big exception out of Project 1 and which, with regard to the all the periodic Inspection Reports, et cetera, just take

it outside, because the Inspection Reports were all kind of giving great satisfaction, both to the inspectors and probably to DRP. Okay.

Not a word is used about a lack of development with regard to Project 1. It is never mentioned. You all say it was fully implemented, even more than possible, et cetera.

So if there was no lex specialis on what to do during these years on the sulfur oxide thing, if there was no lex specialis and if you have all these reports spending not a word criticizing, but there is the big lack there, the big black hole, I don't understand something. So why can you, with the same breath, say nothing happened, the dirt -- there was more and more, let's say, dirty stuff used or not. Just let's assume -- what's the word?

ARBITRATOR GRIGERA NAÓN: Concentrates.

PRESIDENT SIMMA: -- concentrates and all that. But not a word on the development of the SO2 plant particularly. That is what I don't understand.

THE WITNESS: I think the breaking point was 2003. The breaking point was 2003, when SVS engineers and Golder Associates were asked to provide an inspection. It was confirmed that the production increase in Doe Run and the quality of the air in La Oroya had worsened. A lot of discussion, internally, took place within the MEM as to how

to handle the situation.

This worsened when in February 2014, Doe Run asked the Ministry for an extension until 2011, seven more years to implement Project 1. And there was no Regulatory Framework that allowed for that to happen.

The legislation, at the time, said the PAMA will end after 10 years, in 2007. So that's why in 2004, the way that the Ministry sought to solve this was bypassing this regulation. This was in 2004.

So the level of convincing that existed in connection with Project 1 was so great that a number of conditions were established, Special Conditions. For example, a maximum period of six years, a trust, a bond, public hearings, special measures, all of those were conditions that were imposed.

So whomever wanted to come under that provision had to meet these conditions, and is that why three international Experts were hired. We spent money, the Government did, to assess this request for an extension, and this had been done in no other case, and it wasn't provided for in the legislation, but the situation was so complex that that support was needed.

The toxicologist, the American toxicologist that was hired in order to assist the Ministry in the decision-making process, was proposed by the civil society

organizations. The Government had to give civil society organizations the possibility of proposing who was going to be hired as a toxicologist. This was done via an open-case file, and a lot of effort was made here.

So the Government granted the extension, knowing that there was a breach of Project 1, that it wasn't being complied with because we knew that La Oroya was very important for the central area of Perú, and it was important for the Project to continue operating because there was a local economy that depended on this smelter.

And that is why the Government made this big effort to prove this lex specialis against the Director of Mining Inspection and against the public opinion. The director at the time, the Director on Mining Inspection was opposed to this regulation and she stepped down when the regulation was approved.

PRESIDENT SIMMA: Fortunately, my -- the translation just got stuck when the interesting stuff appeared. But I think I get the point you want to make. Okay. Nothing happens. It is stuck. I think it's also impressed. If it only mine that gets stuck at this page. Well. Okay. I'm not superstitious or anything. So thank you very much. No further questions on my part.

So that means we have -- yeah, we have a lunch hour now getting us to 2:10, 2:10.

Is there anything? My colleagues?

So Ms. Alegre, thank you very much. That was a very tough morning, but, of course, you did it as we expected that you would do. Thank you. You are hereby released. And enjoy Washington. Thank you.

THE WITNESS: Thank you very much, sir. Thank you.

(Witness steps down.)

(Whereupon, at 1:11 p.m., the Hearing was adjourned until 2:10 p.m., the same day.)

AFTERNOON SESSION

ROSALIND SCHOOF, CLAIMANTS' WITNESS, CALLED

PRESIDENT SIMMA: All right. I think we're ready to resume the witness examinations. I was just asking who is the lady that I haven't seen, and now -- is she on the list of -- and now the answer is given.

So welcome, Ms. Schoof?

THE WITNESS: Thank you.

PRESIDENT SIMMA: But before I give you the floor, and even before you read your -- the Declaration, there is a question you will have seen that we got a -- an email from Mr. Schiffer, and I don't think I have to read it out. You have read it. And I would like to ask you and -- on your view, but let me insert into this proposal that we would be -- the Tribunal would be ready to go up to

1 hour of additional time in the evening, just in the evening if you -- if that was your preferred way.

So we would add. So if you want to have Closing Statements, concluding Statements, we would be ready to help in that regard. Yeah. Okay.

So now I give -- I think I -- do you want to introduce your statement? Or to save time, should I call on Mr. Pearsall immediately, give his view on that? Is that --

MR. SCHIFFER: I'm agnostic. I do want to say one thing, though, because our team is obviously smaller than their team. For every hour of arbitration time is about three to four hours of prep time. So if we're going into the evening, it's going to be a very challenging for us to prepare Closing Argument for Friday. I'm not -- if we have to do it, we'll do it. We'll do whatever it takes, but, you know, that wasn't part of the plan coming in. That's all. That's all I want to add.

PRESIDENT SIMMA: So what -- your comment on my additional proposal would be that it would take away of the time that you need to just write up the -- your Closing Statement, et cetera?

MR. SCHIFFER: Right. I mean, we're already working around the clock as it is, and then to add even more burden would just be -- I think the Closing would

suffer, frankly. That's all.

PRESIDENT SIMMA: Okay.

Mr. Pearsall.

MR. PEARSALL: Thank you, Mr. President. Well, we are prepared to go immediately into Closing Arguments at the conclusion of the Hearings, as is common practice. I'm a little -- I'm trying to put into words. I've allowed it twice now, to the kind of "we're a smaller team" to go. We're a State. We're using public money here, and the notion that we would delay, yet again, the conclusion of evidence in this proceeding is unacceptable to the State of Perú. We have waited long and hard for this day to come.

As Respondent, we are pushing for the conclusion of the evidence here, and we are prepared to move forward at the end of these two weeks. That is what the State has prepared for. Everyone is aligned. We have people back in Lima ready to go, to review our Statements. Additional delay to allow for further reflection after over a year of time for Counsel to get caught up to speed is unacceptable.

MR. SCHIFFER: Can I just add one more thing? Since there are somewhat fighting words in there, we looked at the flights from Lima to DC, and when they said that Ms. Alegre was in transit, I don't know about that. So they are the ones who shortened the Hearing by two hours last week. And they say they -- anyway. The Closing

Statement is not evidence; so if the evidence is closed this week, then the evidence is closed. We're not going to be adding new evidence.

All we're doing is having a reasonable time to digest what is going to be, gosh, I don't know, thousands of pages of Transcript, review it, brief it, and I'm not suggesting that we go another year. I'm suggesting, you know, within a few months we're back through the Tribunal. And I can't help -- well, I won't be snide. I'll stop there.

MR. PEARSALL: Can I be just heard on one more point, Mr. President.

PRESIDENT SIMMA: Mr. Pearsall -- yes, Mr. Pearsall. But let's not going into this -- who's offered more.

MR. PEARSALL: Fine.

PRESIDENT SIMMA: But just directly to the proposal. Either or.

(Overlapping speakers.)

MR. PEARSALL: Absolutely. Directly to the proposal. What this is about is delaying the proceedings further to allow the Eighth Circuit Court of Appeals to issue a ruling in the Missouri Case. That's what this is about. We are here, and we should conclude the proceedings.

PRESIDENT SIMMA: And if you had a choice between using up the time to Friday, 5, 4, 6, whatever, by evidence or having Closing Statements, and working later into the night --

MR. PEARSALL: It's just two hours. We'll work as late as the Tribunal wants us to work to allow us to meet our schedule, to have Closing Arguments on Friday.

PRESIDENT SIMMA: All right. It doesn't look like there is any agreement in sight. So what I suggest that, during the coffee break, we make up our mind and quickly we come with a decision?

Okay. So, without further ado, once again, welcome, Ms. -- how do you -- is it Schoof? Schoof? Is it --

(Overlapping speakers.)

THE WITNESS: Schoof. (pronouncing). It's Schoof.

PRESIDENT SIMMA: Schoof. Ms. Schoof. So welcome.

THE WITNESS: Thank you.

PRESIDENT SIMMA: Would you please read the Witness Statement that you have in front of you, Madam.

THE WITNESS: Yes. I solemnly declare upon my honor and conscience, I shall speak the truth, the whole truth, and nothing but the truth, and that my statement

will be in accordance with my sincere belief.

PRESIDENT SIMMA: Thank you very much.

Who is going to do the direct?

Mr. Fogler will be directing you; so I give the floor to Mr. Fogler.

You have the floor, sir.

DIRECT EXAMINATION

BY MR. FOGLER:

Q. Dr. Schoof, tell us what a toxicologist does?

A. Toxicology is the study of adverse effects of chemicals and other agents, both on humans and other forms of biota. And...

(Interruption.)

MR. FOGLER: Just move it more close.

THE WITNESS: There, does that work better?

Okay. We study toxic effects of chemicals and other agents on humans and other forms of biota.

BY MR. FOGLER:

Q. All right. Before you were asked to provide Reports in this Arbitration, had you had your own personal experience with La Oroya?

A. No.

Q. Okay. I meant before you were asked to give Reports in this arbitration?

A. I'm sorry. I was thinking back to 2004. Yes. I

beg your pardon.

Q. How did you come to be engaged to do any work in La Oroya before the arbitrations?

A. I was hired by Doe Run Perú to produce a health -- initially, one health risk assessment of conditions in La Oroya, and my understanding is that was at the request of the Ministry of the -- of MEM.

Q. All right. When was that, that you performed this first Health Risk Assessment?

A. During 2005.

Q. Okay. Did your work in 2005 involve working together with the Government as well as Doe Run?

A. Yes. We had Terms of Reference from the Government, and we had meetings with Doe Run and representatives from the Government, and we produced a work plan for our study that was reviewed by the Government, and they were involved, essentially, at all steps in the process.

Q. What is a health risk assessment?

A. So a health risk assessment, in the context of environmental contamination, is an assessment that looks at potential sources of chemicals being released to the environment that we are examining, and examines pathways by which the chemicals move through the environment, and get to people. And then we calculate doses, exposures, and we

compare those estimated doses or exposures with levels that are judged to be safe or to determine the relative risk of the exposures.

Q. The Tribunal has heard about several different reports that are in the record. And I want to make sure we understand which ones you were personally involved with.

Tell us which Reports did you help prepare?

A. The 2005 Risk Assessment and the 2008 Complementary Risk Assessment.

Q. What was the name of the company or group that you were working with for those two Assessments?

A. Integral Consulting.

Q. So if we refer to the 2005 Integral Report and the 2008 Integral Report, you'll understand what I'm talking about?

A. Yes.

Q. There was another Report that was mentioned earlier in this proceeding before you got here, a 2004 Gradient Report.

Were you involved at all in that Report?

A. No, I wasn't.

Q. Okay. Did you personally go down to La Oroya in 2005?

A. Yes, on multiple occasions.

Q. Tell us generally what you did, what did you do

when you were down there?

A. Well, the first time I went down my colleague, Alma Cardenas, went with me, and it may have been the same meeting when we first met with the Ministry. I'm not -- I don't remember exactly, but part of our goal, in addition to seeing what the community was like, and -- and understanding how the smelter operated, and getting a sense of the releases was also to collect data, because we needed a lot of different kinds of data to do a comprehensive risk assessment.

So we met with Doe Run staff, and it was, you know, the -- it took a while to get all the right data because we had to explain to them what we needed, and figure out if what they had -- when you do a risk assessment, one of the important steps is to understand data quality, and whether the data are suitable for use in risk assessment. You can't just use any bit of data that comes around. So that's one of the things that we were assessing, initially.

Q. Had you observed mining and smelting operations before you went down to La Oroya in 2005?

A. Yes. I had been working on issues related to both historical and operating smelters since the late 1980s.

Q. So you had some frame of reference when you went

down there to compare what you were seeing?

A. Yes.

Q. And tell us, generally, what you observed. What was the nature of the community and the environment when you went down there in 2005?

A. Well, it was, you know, clear that the smelter, the conditions of the overall smelter were probably more typical of a smelter operating in the 1950s than in a -- for a smelter operating in the 2000s. Doe Run was working hard to implement a lot of changes, but there were still significant emissions that were causing exposures in the community.

Q. When you interfaced with the Doe Run Perú personnel, did you find them to be cooperative?

A. Absolutely. They were working hard to understand what we wanted and tried to get it to us. We were an added burden -- right? -- in their jobs, but they took time, consistently, to help us get what we needed.

Q. What was their attitude in terms of -- as you observed it, in terms of trying to improve the environmental quality of the Plant?

A. Well, I think, you know, as we wrote about, a lot of those activities in the 2005 Report because -- and as I think I noted in that Report, I was very impressed with the number and breadth of activities that they had implemented,

and the -- one of the main points of comparison, for me, was just with the Trail Smelter in Trail, British Columbia, and I had been working on that smelter with a community group in the 1990s, and they were similarly -- they were -- technology was preventing them from updating a smelter as soon as they wanted to.

And so in the interim, they were implementing all these kind of programs to try to -- hygiene programs, and other things to try to reduce exposures. And, actually, I think it's possible that the DRP staff in Perú may have even consulted with the Teck's tech people or their community programs to get help figuring out what might be the most effective programs to institute to try to mitigate exposures.

Q. When you went down there, did you see, for example, evidence that hygiene programs had been put in place for the workers at the plant?

A. I heard about the programs for the workers, but what I saw were the hygiene stations and activities in the community, and we spent a fair amount of time at the Convenio, which is the cooperative health program that was jointly sponsored by DRP and the Government, and we talked to the people who were given access to showers and hand-washing training and things like that, and they were really appreciative of having those benefits added since

DRP had started operating the smelter.

Q. What type of data were you and your team collecting for the health risk assessment?

A. So we needed air monitoring data, so that we relied on Doe Run Perú to provide to us, but we -- I sent a team of people down on two different occasions during the rainy season and the dry season to sample surface soil and outdoor dust and indoor dust in homes and schools and drinking water at the tap because those were -- we knew -- I knew from experience that those were the main exposure pathways that we needed to characterize in the risk assessment.

Q. Was that particularly related to the blood-lead levels?

A. Well, the air data would be most relevant to assessing sulfur dioxide, of course, and other sulfur oxides. But the -- typically, ingestion of soil and dust is the main exposure pathway for lead and for other metals in a smelter setting.

Q. Did you collect blood samples in connection with your work?

A. No. We were fortunate that there had been a very substantial blood-lead study conducted the prior year, and so we were able to use those data, which turned out to be crucial to how we designed and implemented the risk

assessment.

Q. Prior to the 2004 blood data that you had, did you have any data, either for workers or the community, for blood-lead levels before 2004 to compare that with?

A. I believe there were worker data. I can't recall. There may also have been some community data. I don't know that it was the same kind of quality in terms of breadth and specificity for young children who are kind of our focus of concern for lead exposures.

Q. Do you recall what the data for the workers showed in terms of their blood-lead levels during the period immediately prior to your visit?

A. Well, my understanding is that, once Doe Run Perú took over the smelter, one of the first things they did was institute some better industrial hygiene measures for the workers and the things like, you know, changing stations and showers and things, so that the workers didn't track home the contaminated clothing, and that the workers' blood-lead levels on average had dropped about 30 -- more than 30 percent over -- by 2005. I'm not sure about the -- when, exactly, between 1997 and 2005, that happened, but there was a very significant effect on the worker blood-lead levels, which is important because that means also those workers were not tracking that lead home, which can be a significant pathway for individual children to get

exposed, if somebody comes home and dumps their clothes and sheds lead dust on the floor in the house, for example.

Q. The 2005 Integral Report is pretty long, and there's a lot of information in there about modeling, can you tell us what a lead exposure model is and why you were doing that?

A. Sure. So the instruction that we had from MEM in the terms of reference was to conduct a risk assessment in accordance with U.S. health risk assessment guidance, and there are two lead-exposure models routinely used by the U.S. EPA that predict distributions of blood-lead levels in a population with a certain identified set of exposures.

So we used the adult lead, same adult lead model that EPA used. But the main model for children is called the IEUBK model, Integrated Exposure Uptake Biokinetic model, but, basically, it predicts blood-lead level distribution. You put in estimates of the average values and then the model generates this distribution. That model assumes that blood-lead levels are distributed lognormally -- I'm going to have to get a little technical here -- which means that they're skewed toward the higher end; whereas, what we found in La Oroya, because we had the blood-lead data, was that the blood-lead levels were normally distributed, meaning they were symmetrical; right? They had a peak in the middle, and then they dissipated

equally on both sides. So we judged we couldn't use the IEUBK model.

It also didn't have a component for outdoor dust, it just has soil and indoor dust, which are assumed to be linked in the model. In other words, if you have lead in soil, it's assumed that you track it also into the house and that the dust concentrations in the house, the default assumption is that they are 70 percent of the concentrations from the soil. So you can't ever look at just dust alone; you look at both. And so, we used something called the "integrated stochastic exposure model," which is a probabilistic model, and, instead of putting in average values for all these exposure parameters, we put in distributions, and it generated then this distribution.

So we had to derive distribution estimates for all the inputs, for soil ingestion, dust ingestion, bioavailability, which is how much lead is absorbed from the soil or dust. So things like that.

Q. Why were you trying to make these predictions about what the blood-lead levels would be in the future?

A. That was -- we had a two-part task: Our first task and goal in the risk assessment was to characterize current exposures and the sources of those, so we matched our model to the current blood-leads and, in that way, we

had a sense of how much soil and outdoor dust and indoor dust were contributing to the blood-lead levels. Then our next goal was to say, "okay, if the outdoor -- if the emissions decrease from the Facility, whether from stack or fugitive emissions, if the lead emissions go down, what is that going to do to the blood-lead levels?" Can you predict it? And so, we created a model to predict. And we were given estimates of how the emissions might change in the future. We put that information into our model and made judgments about how much a decline in air emissions would result in decreased concentrations in the outdoor dust, and in the soil and in the indoor dust.

Q. Did you also then make recommendations to Doe Run Perú for specific things they could do or should do in order to accomplish those decreases in emissions to result in the lower blood-lead levels?

A. We did. We were working very closely with Dr. George McVehil, who is an air modeler, and also with input from Doe Run, to understand the sources of fugitive emissions as well as stack emissions. And I had observed in a number of other sites how important fugitive emissions are on the exposures of people who live closest to a source, whether it's a smelter or a refinery or whatnot. And the issue, I think, had been raised, maybe, in the Gradient risk assessment, but I very much concurred that

controlling the fugitive emissions was -- and it wasn't just a task because there were many sources of fugitive emissions, but reducing fugitive emissions was going to be the most effective action that Doe Run Perú could take in the near term to reduce the most severe impacts to blood-lead levels, which was in La Oroya Antigua, very, very, very close to the smelter.

So we made a number of specific recommendations related to fugitive emissions, and then a whole host of other recommendations about improving air monitoring. We actually recommended one air monitoring station be relocated. And a lot of other community intervention recommendations.

Q. Your Report focuses a great deal on the current emissions from the Plant, but did you believe that historical emissions played any role in the elevated blood-lead levels in the community?

A. We were very clear in the Report that we were looking at current conditions, not just current emissions; right? So, obviously, the soil is the historical record of releases from the Facility since the 1920s, and the soil was contributing to exposures. It wasn't the primary source of exposure, but it was contributing. And there would be reservoirs of contaminated dust throughout the community, both outdoors and indoors. So I would say we

were looking at current conditions, not current emissions.

Q. Did those current conditions include contamination that had occurred even before Doe Run took over the Plant?

A. I assume so. I have no way of measuring that.

Q. After your Report was issued, did you and your team, together with the Government, present your findings to others besides Doe Run?

A. We did. And even within Doe Run, we made presentations to workers as well as, obviously, management. But at the end of the -- well, actually, I think it even occurred before we had completed the 2005 Risk Assessment. Before our Report was done, I presented our findings at a series of three public meetings, two were held in La Oroya and one was held in Huancayo. And the two in La Oroya were in these enormous soccer stadiums, and they were attended by thousands of people, and not everybody could get in. So I think there were screens outside, at least one of them. It was amazing. And people got to ask questions. They would write the questions down and give them to us. And it wasn't just our Report. These were meetings to present the whole PAMA Extension Requests, I think. And so, you know, the Experts, George McVehil, and Alma and I were up on the DS, but so were the technical people from MEM and Doe run Perú. And actually, in Huancayo, I was sitting next to the

Minister of Health for the Government.

Q. So you understood -- did you understand that your 2005 Report was part of the group of studies in connection with DRP's request for an extension?

A. Yes. Because that was part of the important part of predicting what could be accomplished by -- through 2007, and what might take longer. So that our predictions were based on which of the various projects could be implemented in that timeframe, and then we came back again in 2008 and -- to check how our predictions compared with reality.

Q. Let's talk about the 2008 Report.

So you came down and what did you observe? What had changed since your last visit?

A. Well, there was new blood-lead data, which was the most exciting part because the blood-lead levels had come down markedly, which is -- in a short period of time like that, I was pretty ecstatic. I mean, they were still higher than I wanted them to be, but they were a whole lot lower, so -- and they also pretty much matched what our model had predicted which is pretty amazing because it was a complicated model.

Q. Had DRP initiated or completed the recommendations that you and your team had put in the 2005 Report?

A. We have an itemized list in the 2008 Report of which recommendations were accomplished. I think, almost all of them -- I can think of one that wasn't, which we had recommended that there be -- and we were echoing a recommendation from others, I think, that there be some kind of joint oversight committee to help kind of move this process forward with all kinds of diverse representation, and that hadn't happened. But almost -- I think most of everything else had happened that we recommended.

Q. What did you see as the connection between Doe Run Perú working and completing these recommended Projects on the one hand and the lower blood-lead levels on the other hand?

A. Oh, they were directly related.

Q. Okay. Either in 2005 or in 2008, when you went down to La Oroya, had the Government done anything to remediate the soil around the community?

A. Not to my knowledge.

Q. Okay. I want to get a little bit more technical with you to ask you about a couple of specifics of items in your Report. And you had mentioned taking samples of soil, outdoor dust, indoor dust, drinking water, those specific things. Did your model permit you to be able to predict the impact of each of those individual factors on blood-lead levels?

A. Yes. We had a series of pie charts that showed the relative contribution of the different exposure pathways at different times and in different communities because that relative contribution was different in La Oroya Antigua versus in Huari and different in 2005 versus 2007.

Q. Okay. Did you also try to take into account -- I think you told us that ingestion of lead was the primary factor in the blood-lead levels themselves. How much lead -- is there a factor that takes into account how much lead in the soil or in the dust actually gets absorbed into somebody's blood?

A. Yes. That's an area I have done a lot of research on. And often, lead in soil may be less bioavailable than lead, say, in drinking water or soluble forms of lead in foods. But, typically, in smelter communities, we expect the bioavailability -- the degree of absorption from soil to be pretty high because those tend to be more soluble forms of lead and the particulate emissions are very small. So we use pretty high estimates of the bioavailability that goes into the model. You have to -- in this model, you have to put in an assumption about bioavailability of soil, dust, water, and diet. And we did a diet study too. So we had also that information.

Q. I want to show you the 2008 Report. It's C-139.

There's a table at Page 242, Table 4-4. And this is -- we're getting pretty far into the weeds here, but can you explain to us what we are looking at here.

A. Yes. These are the input assumptions to that probabilistic model that I explained, and you can see that, for soil ingestion and the water ingestion rate scale, we have a point estimate as our central estimate. And then we did a distribution from that. But, for absorption, which is the bottom band of numbers, you'll see, if you look in the middle, there are three numbers. There's -- so let's look at outdoor dust. It says we have a triangular distribution, and the low end of it is 15 percent absorption. The midpoint is 35 percent, and the maximum is 65 percent. So we assume that all -- that the range of absorption in different people in a population would be in that triangular distribution.

Q. If you were doing -- you've got the same thing for water, diet, soil. And so for soil, for example, what are the three factors, the minimum, the likely, and maximum factors that you have listed there?

A. 10 percent, 30 percent, and 50 percent.

Q. If you were trying to do a prediction for what blood-lead levels in the future might be based on proposed remedial measures, which factors do you think should be used in order to make that prediction?

A. Well, if you're asking, on average -- to make an average prediction, you have to use the likeliest value that is in the middle, so 30 percent instead of 10 percent.

If you assume 10 percent, you would underpredict the soil contribution to blood lead by a factor of three.

Q. Does the soil factor that you have here in this chart, does it include the indoor dust issue that you were discussing a little while ago?

A. Well, I think we assumed indoor dust had the same absorption distribution as the outdoor dust because I don't see it listed here. So we assume that the absorption from dust is actually even higher than the absorption from soil.

Q. Let's go to Page 143 of this exhibit. That's the top three paragraphs. In this part of your Report, you're talking about dust concentrations. In this top paragraph, you say: "Indoor dust concentrations were calculated as a percentage of outdoor dust concentrations based on the observed ratio of indoor to outdoor dust concentrations sampled in 2007, a factor of 0.6."

Tell us what that means.

A. Right. This is when we were predicting the future where we didn't have indoor dust data and where we were assuming that the acid plants had been installed and so the aerial emissions were greatly reduced.

At that point, even though you don't have aerial

impacts to the dust, you still have impacts to the soil and indoor dust -- from the soil to the outdoor dust and the indoor dust. So you can't just zero those out when you are looking at future impacts of soil.

You have to consider that that soil is still an active environmental medium in the community that will cause the same concentrations to be present in the outdoor dust and then some fraction of those concentrations to be present in the indoor dust.

Q. If we could take out all emissions in La Oroya in the plant, would there still be some impact from the soil and indoor dust that would be shown in your predicted blood-lead levels?

A. I believe that is, essentially, what we are predicting in the next paragraph where we say that in post-2009, when the acid plants were all installed, presumably, that we would still see an average blood-lead level in La Oroya Antigua of 15 micrograms per deciliter, and that most of those -- a very large fraction. I don't know if it's in that sentence in that paragraph, but almost all of the children in La Oroya Antigua would still have blood-lead levels greater than 10 micrograms per deciliter.

Q. 10 being --

A. The level of concern from the U.S. Center for Disease Control at that time.

Q. You say, though, that this is an impressive reduction from the observed value in 2007 of 21 micrograms per deciliter. So you were -- if the impact of the remedial measures being taken by DRP were actually instigated, you were predicting what you called "an impressive reduction"?

A. Yes.

Q. So would that also have impacted the sulfur dioxide as well?

A. The Acid Plants would have, yes.

Q. And had you noticed or noted in your Reports back in 2008 that there had been already some curtailments in sulfur dioxide emissions?

A. I don't remember exactly what we said in 2008. I know in 2005 we commented that the curtailment program had caused pretty significant reductions in exceedances of the 1-hour and 24-hour standards. And maybe we had that in the 2008 Report too, but I can't remember at the moment.

Q. Overall, if we take -- I'm trying to get to a conclusion here. These lengthy Reports -- they are over 300 pages each, both of them, with lots of statistics and data, et cetera, but did it appear to you that -- why don't you describe for us how you think DRP's standards and practices were from your own personal observations?

A. Just in general? I mean, they seem to have a

very strong focus on worker and community safety and seem to be -- you know, doing everything they could while trying to operate this big complex antiquated plant and modernize it. They seemed to be, you know, committed to doing that.

Q. From what you personally observed, did it appear to you that the standards and practices of DRP were more or less protective of the environment and public health than Centromín's?

A. Well, I didn't have any direct observation of what was going on when Centromín operated the plant. I can't imagine it was any better than when DRP first took it over. I know that the community seemed very supportive, and they were -- they were very happy to have us there.

I know when I went back in 2008, I was talking to one of women at the Convenio, and I asked her, I said: "Did our Report have any -- bring you any positive benefit?" She said: "Oh, yes. It has been great. We have all these additional programs and it has really helped us a lot."

Q. So did you see with your own eyes substantial improvement from 2005 to 2008?

A. Yes.

Q. And if you could put this, this Project -- how long did it take, by the way, the 2005 Project and the 2008 Project? How many weeks or months did you spend working on

those?

A. Well, the 2005 Project especially was -- it was amazing that we got it done as quickly as we did. We got it done within a year, and it was -- considering the magnitude of that effort to deploy people to sample and get the data analyzed and write this Report, especially going through rounds of review and approval by MEM. I believe we got it done by the end of 2005.

And in 2008 we were also on a strict timetable. And in that case, the data were available to us. We didn't have to collect the data, but we got it done. I don't remember how long it took. It was probably six months at least. I assume.

Q. From a personal standpoint, Dr. Schoof, what did those La Oroya Projects mean to you for your career?

A. Well, I have done a lot of research and had a lot of publications that are important to my career, but these two risk assessments are closest to my heart because I feel like we really made a difference, and they were -- they were important to do.

MR. FOGLER: That concludes my questions.

PRESIDENT SIMMA: Thank you, Mr. Fogler.

So I hand over the floor to Ms. Gehring Flores. Is it you? You smiled at me.

MS. GEHRING FLORES: Yes.

PRESIDENT SIMMA: So you have the floor for the examination.

MS. GEHRING FLORES: Yes, the smile wins. I wonder -- I don't know if you want to have the coffee break now, or do you want me to start?

(Comments off microphone.)

PRESIDENT SIMMA: So we have a coffee break until 2:12.

MS. GEHRING FLORES: Until 3:12?

PRESIDENT SIMMA: Sorry. At 3:12.

MS. GEHRING FLORES: Okay. Thank you.

PRESIDENT SIMMA: You know the rules.

THE WITNESS: I have to sit here except for maybe a quick dash.

PRESIDENT SIMMA: I don't think you have to sit here, but just not talk about the case, et cetera, but you probably also need some coffee, and you will be helped. If you want, I'll bring you a coffee. No, it would be a favor, yeah.

THE WITNESS: Thank you.

(Comments off microphone.)

(Brief recess.)

PRESIDENT SIMMA: We are all set.

Just on the procedure issue, we have thought about it, and our Decision is that we are going to spend

one hour in addition to the usual sitting time on Tuesdays and Wednesdays. You will have Friday to present your concluding observations, your Submissions. Then we are going to make up a list of very pertinent, say, questions for you to answer in the Post-Hearing Brief.

So they will point you, really, to the points that we -- that we really want you to focus on. And then there will be -- if we think that might assist the Tribunal, there will be a final opportunity for you to make an additional Statement. I think that's it.

So I ask my colleagues, did I sum that up correctly? If you want to add something to that. Chris?

(Comments off microphone.)

ARBITRATOR GRIGERA NAÓN: Well, we'll put questions to you, but we will define what is going to be the full scope of the Post-hearing Briefs, in addition to receiving -- to the questions. Okay.

PRESIDENT SIMMA: But that we'll do on Friday, as usual, at the very end of the discussion.

Okay. Martin, anything to add? Okay.

So that's it. "Yachta" -- what is it? "Alia yachta est." I don't know whether this is part of this common law, kind of falsification of English, but whatever that is, the case, please continue with the examination of Ms. Schoof.

MS. GEHRING FLORES: Thank you, Judge Simma.

CROSS-EXAMINATION

BY MS. GEHRING FLORES:

Q. Good afternoon, Dr. Schoof.

A. Good afternoon.

Q. It's nice to meet you. I am Gaela Gehring Flores, and I represent the Republic of Perú and Activos Mineros in this proceeding. And if you need a break at any time, or if you need to see more of a document, please let me know. And, for the record, your work at La Oroya was extremely important to the people of La Oroya, and I'm quite certain that they will always be thankful to you for that work.

So during your direct examination, you discussed the two Reports that you did through Integral; right? There was one in 2005 and 2008.

A. Yes.

Q. And then you also mentioned there was another health risk assessment done of La Oroya previously by a Company called Gradient, and that was in 2004; is that right?

A. Correct.

Q. Okay. Have you ever conducted any health risk assessments for any other facilities run by Renco?

A. No, not that I recall.

Q. Or Doe Run?
A. No, I don't think so.
Q. Or any entity related to Renco or Doe Run?
A. No, I don't -- not to my recollection.
Q. I only ask because there are a few places in your CV where you mention work in Utah. Did that work at all involve a facility that was owned by Mag Corp.?
A. No, I don't think so.
Q. Okay. And are you familiar with the Doe Run's facilities, the lead smelting facilities in Missouri? Well, that -- I think they might be closed down now.
But are you familiar with those facilities?
A. Yeah, I know they exist, but I don't know that I would say I'm familiar with them.
Q. Okay.
A. I haven't been there.
Q. Okay. Because I noticed in your CV is that did you work for a midwestern city, and I didn't know if it might involve Missouri.
A. No.
Q. Okay. So with respect to the first health risk assessment that you performed for -- or in La Oroya, or about La Oroya, your 2005 Report, before performing that Report, did you study information regarding the emissions of DRP's Metallurgical Complex?

A. We were focused on gathering data; so I don't recall if we -- looking at records of air emissions, other than looking at air -- looking for and looking at air monitoring data.

Q. Okay. Did you study the Gradient-- the preliminary health risk assessment that Gradient performed?

A. I read it before we did our risk assessment, yes.

Q. And did that provide information about the Complex's emissions?

A. It -- probably. That's a long time ago.

Q. And you studied the document that we all, in this case, known as the "PAMA," I imagine?

A. We tried. We didn't have a reliable English translation necessarily at the time. So I remember us -- my colleague, Alma, could read Spanish, and we were trying to understand it, but...

Q. And I believe in your 2004 -- or, sorry, 2005 Report, you state that the main goal of the PAMA was for DRP to complete Projects to reduce DRP's emissions in order to attain maximum permissible emission levels identified by MEM.

Do you remember that, Dr. Schoof?

A. I'm sorry. At the beginning, did you say that was in my Report?

Q. Yeah, in your 2005 Report.

A. Report?
Q. It might be in all of them.
A. Okay.
Q. But I saw it there in the 2005 Report.
A. Well, I don't have reason to question what you say is in the Report.
Q. And, I mean, today, is that your understanding of the principal goal of the PAMA?
A. Yes.
Q. You said during your direct examination that DRP was very helpful when you were doing your evaluations, and provided you with information.
And do you feel that DRP gave you all the relevant information with respect to their operations and their emissions; so that you could perform your health risk assessment?
A. Yes. At -- there were times when they had -- when some of the individual staff had difficulty understanding exactly what we were asking for; and so we made repeated requests, but by the time we conducted the risk assessment, we felt like we had everything that was relevant.
Q. Okay. And do you recall if you reviewed information about DRP's, and maybe even Centromín's, emissions at the time?

A. I'm sorry. I don't recall.
Q. But you do recall discussing fugitive emissions, I imagine?
A. Yes.
Q. Okay. And was it -- was it clear to you when you went to DRP's Facility that the Facility had fugitive emissions?
A. Yes.
Q. Could you tell me why that is?
A. Well, because you can see plumes, essentially, or atmospheric impacts from through -- across different parts of the Plant, depending on the weather and the day, and the operations that were going on.
Q. And I imagine that you and your staff wore masks when you were at DRP's Facility?
A. I didn't spend a lot of time at the Facility. I don't recall wearing a mask. I assume my -- or the staff were probably wearing masks when they were specifically sampling dust on floors, but I don't know that, generally, they wore masks. If there was a requirement in the facility, we certainly would have complied with whatever their rules were.
Q. But if you knew that the Plant had a number of sources of fugitive emissions, I guess, regardless of your memory, would you walk around the Plant in the presence of

fugitive emissions without a mask on?

A. Yes. I -- if you're -- you know, I was just going for a short period of time. And you're talking about actually in the facility itself?

Q. Yeah.

A. Usually when we go to various kinds of industrial facilities, we follow the health and safety requirements that they have in place.

Q. All right. And I think during your direct, you did mention that one of the main conclusions of your 2005 Report was that reduction of fugitive emissions were the priority; is that right?

A. From my perspective, the reduction of fugitive emissions was going to have the greatest impact, particularly in La Oroya Antigua.

Q. And there was a comment that you made during your direct, where you were talking about air monitoring information regarding sulfur dioxide, and I imagine that the levels of sulfur dioxide in the La Oroya community when you were there in 2004 were quite high; is that right?

A. In 2005.

Q. 2005. Excuse me. Yes.

A. Yes. Yes.

Q. And -- but you mentioned that the -- that air quality monitoring with respect to lead wasn't quite as

important -- and I just kind of wanted to stop there, and make sure the Tribunal understands exactly how the lead arrives in La Oroya. So -- and correct me if I'm wrong -- as a general matter, gaseous emissions leave the Facility, and those gaseous emissions contain sulfur dioxide, among other things, and also fine particulate matter, which includes lead; is that correct? It kind of is traveling in the gas cloud?

A. Well, they may travel at different rates, but --

Q. Okay.

A. -- yes, I mean, the particulate -- you have to model the particulates separately from the gas emissions if you're looking at longer term -- you know, transport.

(Overlapping speakers.)

Q. Okay. Because I just wanted to make sure that everyone is clear that the lead is actually traveling through the air; is that right?

A. Well, lead that is being released from the Facility, from either stacks or from aboveground vents and various things, certainly has to travel through air. I mean, there's lead possibly leaving the Facility by other means, but for the air emissions, yes.

Q. Right. And then, essentially, the lead falls on the community. Maybe the correct analogy is almost like snow, except it's not quite like snow, but almost -- it

dusts the community. As it travels and as it falls, it leaves layers of dust; is that right?

A. The particulates fall, and they mingle with the dust, outdoor surface dust that's already there, but, in general, what you said is correct.

Q. Okay. Now, in your 2005 Health Risk Assessment Report, you explain that Doe Run Perú commissioned Integral to perform the Health Risk Assessment to comply with -- and you use the term, "the Supreme Decree." Is it your understanding that the Supreme Decree was a Government document that allowed Doe Run Perú to request an Extension to complete the Sulfuric Acid Plant Project?

A. I don't think I mentioned the Supreme Decree, and I'm not really familiar with it.

Q. Oh, okay. I mean, I could -- for the record, it's at romanette Page -- let's see. What is that? 18, at -- or PDF --

(Overlapping speakers.)

A. Is this in my --

Q. In your 2005 Report?

A. Oh, that I don't remember.

Q. That's okay. That's okay. I just -- I'll represent to you that it's there. I just wanted to see if you understood what that was, and the context under which you were performing the study.

But you are aware, Dr. Schoof, that DRP was planning on requesting an Extension to complete the Sulfuric Acid Plant Project?

A. Yes.

Q. And the Supreme Decree essentially required Doe Run Perú to perform a health risk assessment in order to request an Extension.

Did you understand that at the time?

A. I understood that the MEM had said that they want -- that Doe Run Perú should hire an independent consultant to do a risk assessment. I can't remember if, at the time, I knew the exact basis for that.

Q. And was it explained? Did someone at the MEM or did Doe Run Perú explain that they hired you instead of continuing with Gradient because that was part of the Supreme Decree's requirement?

Did you -- did you understand that?

A. I assumed they needed someone who wasn't at Gradient.

Q. And why did you assume they wanted someone who wasn't at Gradient?

A. Well, because they said they wanted an independent consultant.

Q. And, just to be clear, I did see in your CV that you worked at Gradient before you worked at Integral.

Did you have any participation in the Gradient Study at all?

A. No, I did not.

Q. Okay. And did you speak with folks at Gradient before you did your study, just to get a sense of what you were going into?

A. Yes.

Q. Okay. And did the people at Gradient explain why they had been hired, the context under what they had been hired?

A. If they did, I don't remember.

Q. Okay. Did DRP provide you with any information on kind of the context and how, you know, why Gradient was hired and then you --

A. Beyond what I've said already, I don't recall any details.

Q. Okay. And you were here observing the hearing when Ms. Alegre was testifying; is that right?

A. For part of her testimony, yes.

Q. Okay. And did you hear the part of her testimony where she was talking about the MEM Report of 2003, that followed the SVS Report of 2003? Were you listening during that time?

A. I have to confess, I wasn't paying a lot of attention.

Q. Okay. And I -- I only -- yeah. I only ask because the MEM Report of 2003 that Ms. Alegre was reading required Doe Run Perú to do a preliminary health risk assessment in response to the MEM, the MEM's concerns that Doe Run Perú had increased production, and was using dirtier concentrate, and that the air emission or the air quality was worsening in La Oroya.

Did you ever hear that from either Gradient or Doe Run Perú?

A. I don't recall hearing that.

Q. And so when you were performing your Health Risk Assessment in 2005, no one had told you that there were concerns about Doe Run Perú's performance and the worsening air quality?

A. I can't say one way or the other. I don't believe so, but I -- it's been almost 20 years. So I wouldn't recall.

Q. Yep. Yeah. It has been a while. And I just ask because in your 2005 Integral Report, you didn't mention any improvement in DRP's or Doe Run Perú's emissions, but at Page 10 of your Expert Report from this case, you state that Doe Run Perú made substantial improvements to the smelter operation that resulted in a 30 percent decrease in air particulate emissions.

Do you remember making that Statement in your

Expert Report in this case?

A. Yes.

Q. And do you remember where you got that information, that Doe Run Perú's emissions had decreased by 30 percent?

A. At the moment, no.

Q. Okay. I think I'll have that brought up on the screen, please, Kelby. It's Exhibit C-047 from the Treaty case. I'll show you the cover page.

Do you recognize this document, Dr. Schoof?

A. I at one point had a whole series of Reports that looked sort of like this. I have no idea if I had that particular one.

Q. And I'll represent to you that I am showing you the document that is cited in your Expert Report?

A. Oh, okay. Then, I guess, I've seen it.

Q. And we can go -- if we could go to PDF Page 7. And maybe -- I don't know if this would make you remember. This is a -- it's a Report to the La Oroya community that Doe Run Perú issued in 2002. At that time, Mr. Kenneth Buckley was the President and General Manager of Doe Run Perú. And in this document, Doe Run Perú does make some assertions about emissions reductions, some of which I actually reviewed with Mr. Buckley last week.

Did you have a chance to watch Mr. Buckley

testify last week?
A. No.
Q. Okay.
Could you go to PDF Page 10, please, Kelby.
Do you think that you got the information on emissions reductions from something like this from the Report, Dr. Schoof?
A. I'm sorry, I don't recall.
Q. Okay. And you thought, in your Expert Report, that this document, this DRP document was a credible and reliable source of what DRP's emissions were at the time?
A. If I cited it, I probably did.
Q. And there was nothing that you saw when you were there? There were no conversations that you had that might make you doubt that the information that DRP was giving you might not have been accurate regarding its emissions?
A. Not that I recall.
Q. And when you say in your Expert Report, in this case of 2021, that DRP had made substantial improvements to the Complex, leading to a 30 percent decrease in air particulate emissions, that's not accounting for fugitive emissions, I assume; right?
A. Again, I don't -- I'm short on details in my memory at this point, but presumably that would refer to stack emissions.

Q. Okay. So just stack emissions. Because you were very concerned about fugitive emissions in your 2005 Report; correct?

A. Correct.

Q. And you didn't see any evidence that Doe Run Perú had actually decreased fugitive emissions; is that right?

A. I don't know at this point if there had been some reduction. I just felt like we were kind of fighting a battle to get MEM to accept that control of the fugitives was going to be very important.

Q. And the goal of your first 2005 study was, in fact, to predict what would happen -- among other things, but what would happen to blood-lead levels in children if Doe Run Perú actually completed the Sulfuric Acid Plant Project; right?

A. Right, but we also did predict the reductions that would occur with various specific fugitive sources being controlled, based on the air modeling that was done with George McVehil.

Q. And the notion that Doe Run Perú had made substantial improvements to the smelter operations -- I'm focusing on substantial improvements -- do you have any idea what those improvements may have been to lead to this 30 percent decrease in air particulate emissions?

A. I don't recall at this point.

Q. Would it have come from that -- from this document, the Doe Run 2002 Report to the community?

A. I don't know. Sorry.

Q. One of the reasons why fugitive emissions are so particularly concerning, you know, and certainly what I gather from your 2005 Report, is due to their particularly toxic and high-dose impacts on communities living around the smelter; is that right?

A. It's not that they're more toxic. It is that for -- it's the contribution to the exposure that occurs. So the lead in -- from any of those sources is going to be similar and have similar toxic potential, assuming the particle distribution is similar. I mean, that's the main way it would vary.

But, you know -- and in fact, if the fugitives have some very large particles, those might be less toxic unless -- but it's the fact that the fugitives are going to impact those nearby populations to a greater extent than the stack that was -- what? 450 -- what is it, 150 meters high. So the relative contributions are very different.

Very quickly, as you go away from La Oroya Antigua, but for La Oroya Antigua, where the children had by far the highest blood-lead levels, the fugitives were going to be critical, and controlling stack emissions wouldn't have been sufficient.

Q. Yeah. And, again, just so that the Tribunal is very clear on this concept, at least at the Doe Run Perú smelter facility, gases that were directed to the main stack went through, for lack of a better word, a very large filter called the "main Cottrell."

Is that your understanding?

A. Umm-hmm. I don't remember specifically. I have heard of Cottrells.

Q. So those gases were filtered and then directed out a very tall stack where they would then dissipate very high up in the air.

Is that your understanding?

A. Well, that would be pretty highly variable because of the tendency to have inversions in that entire river valley, which is why there was the whole curtailment program for the sulfur oxide. So if you were having an inversion, it might -- there might be impacts much closer. When the weather conditions changed, it might be much farther away. So you would have to -- it depends on whether you're worried about short-term impacts, like you are with sulfur dioxides, or long-term averages like you are with the metals.

Q. Right. But, I guess, just to be very clear, the main-stack emissions, even in the event of an inversion, and then, in that case there would be -- they would cover

La Oroya instead of dissipating into the atmosphere, those emissions are filtered; right? Before they leave the Facility.

A. I will have to take your word for it. I don't recall details like that.

Q. Okay. But you're aware that fugitive emissions aren't filtered; correct?

A. Probably depends on what the exact source is, but that could be true.

Q. Okay. And fugitive emissions is not something that just the Peruvian Government, for instance, is worried about. I assume you have experience with U.S. Regulatory Authorities like the U.S. EPA that are also very concerned about fugitive emissions; is that correct?

A. I have more experience, actually, in Canada with fugitive emissions because I've been involved in -- because in Trail, that was, you know, an issue, and I also was involved with a nickel refinery in Ontario. But, you know, at the time, the relative importance of fugitives was kind of dawning on everybody, at least during the '90s, I guess, and maybe a little after that. So I remember I was on an advisory commission for the Ontario Ministry of the Environment looking at Port Colborne at the refinery, and it was the same issue. We were raising the concern about the fugitives being a near-term source that we were

concerned about for the community.

Q. So in the '90s, maybe in Canada and, would it be fair to say, probably, in the United States as well, the awareness about fugitive emissions was starting to elevate?

A. I have less information about the U.S. because I wasn't working on any U.S. smelters, operating smelters, at that point.

Q. Do you have any reason to believe that the U.S. EPA would not be concerned with fugitive emissions, at least by the Year 2000, say?

A. I'm sorry. I don't know one way or the other.

Q. Okay. So to make -- I guess, to bring this case a little bit into a smaller sphere, I think sometimes it's hard to comprehend when you have such a large facility and a large town -- surrounding town around it. I thought I would come up with a smaller analogy, and let me know if at any point you don't agree with the analogy, and I know it might not be perfect, but I can adjust it.

So let's say your neighbor, your next-door neighbor, living next to you, has, for whatever reason, a spout that has -- from which is coming poison rain, and that poison rain has lead. And let's just suspend disbelief for the moment, I know sulfur dioxide is a gas, but let's say it's lead and sulfur dioxide raining down on your house and garden. And the sulfur dioxide, from what I

understand, dissipates. If that spout were turned off, the sulfur dioxide would dissipate, it would go away; is that correct?

A. As long as it hadn't been converted to particulate sulfates.

Q. Okay. Are particulate sulfates a toxin?

A. Well, if you get to toxic -- you get to say the toxicology, but the dose makes the poison. So everything can be toxic in sufficient dosages. Particulate sulfates can be irritants.

Q. Okay. But, I guess, at least in this case, particulate sulfates were never an issue, as far as I've seen. Do you know if they were?

A. Well, I assume that, if you're releasing sulfur dioxide from a stack that you are also getting some particulate sulfates in the mix.

Q. Okay. So back to the poison rain example where you have sulfur dioxide that will dissipate if the source of it is turned off. Then, you have lead particulate matter that's carried within the rain, and that forms kind of a film or coating on your house, you know, any hard surfaces, and then some lead seeps down into the soil in your garden outside. And that's where it's going to remain until, I guess, something is done about it.

So in this circumstance, your neighbor provides

you with umbrellas so that you can protect yourself from the poison rain. Your neighbor also teaches you to wash your hands, to shower frequently, to wash off the lead film, and teaches you to clean up the lead film from different surfaces in and around your house.

So, of course, in this analogy, Dr. Schoof, the poison rain spout is a representation of the emissions, which are gaseous, coming from DRP to La Oroya which have, at least for this case, two relevant components: One is the sulfur dioxide which, if the emissions stopped, would dissipate; and then, also, particulate matter that includes lead particulate matter which doesn't dissipate. It essentially snows down or dusts down onto the community covering all the surfaces and getting into things the way dust does, like getting into people's houses. Is that representative? Is that a fair representative of my analogy and how it relates to the emissions from La Oroya?

A. I'm not clear on the purpose of that. It was certainly -- that would be true for the emissions from Centromín and from Activos Mineros as well, so I'm not sure why you said emissions from DRP.

Q. Is it your understanding that DRP didn't have emissions of sulfur dioxide and lead particulate matter while it was operating the Plant?

A. No, of course they did.

Q. Okay. Okay. Yeah. No. That's all. So at least for this proceeding, we're -- for some of the case, we're talking about what happened while DRP was operating the Facility. We certainly realize that Centromín operated the Facility beforehand, and that would certainly apply -- the analogy applies whether it's Centromín or DRP.

And, I guess, the other thing is, just rounding out your Reports -- so there's sulfur dioxide traveling -- you know, kind of encompassing La Oroya -- that will dissipate if the source stops; is that correct?

A. The sulfur dioxide gas will, yes.

Q. Okay. The lead will kind of snow down on the communities and coat surfaces; is that correct?

A. Yes.

Q. And then, over time, the lead dust will eventually be in the soil over time?

A. Yes. That's my expectation.

Q. Okay. But the dust that is falling down and coating everything, that's related to the emissions coming at La Oroya?

A. Well, the dust won't go away when the Facility emissions stop. There will still be dust. The concentrations of lead in the dust will decline, presumably. That's what you would expect.

Q. Right. But, assuming, just for the moment, that the source of the emissions is actually -- it's ongoing, as it was when either Centromín was operating it or DRP was operating it.

A. Umm-hmm.

Q. The source is ongoing, it's not stopping. So you have a snow of lead dust and you have gaseous clouds of sulfur dioxide, and I just want the Tribunal Members to be able to differentiate between, kind of, the two different principle toxins we've been looking at in this case.

A. Well, but that -- you should also consider the nature of the toxicity of those two, which is also different. Because, you know, with the sulfur oxides we were worrying about short-term excursions of -- short-term standards -- right? -- and less about longer-term, and that's partly because of, I think, the analogy you were -- the dissipation but also because of the nature of the toxicity, that it was the short-term high exposures that were more concerning; whereas, with lead and the other metals, longer-term consistent exposure through ingestion, incidental ingestion of soil and dust is the primary exposure pathway.

Q. Right. So going back to the home and garden analogy, the umbrellas that your neighbor gives you, the hand-washing and showers, those gestures might reduce

exposure to the poison rain or the poison emissions, but they won't actually reduce emissions; am I right?

A. Yes.

Q. Okay. So it is appropriate, I assume, to distinguish between programs or improvements that actually lead to a reduction of emissions versus programs that protect people from exposure from the emissions; is that right?

A. Well, we made that distinction in our risk assessment, and I think it was pretty clear that a lot of the activities to try to reduce exposure were -- and this is actually true for what -- as the example I gave for Trail earlier, that, if there are problems in reducing the emissions as quickly as you want, it certainly is in all of our best interest to do whatever you can to reduce exposures as quickly as you can.

Q. Thank you. And I think -- did you listen to the Opening Statements in this case, Dr. Schoof?

A. No.

Q. Okay. I'll represent to you that Counsel for Renco and DRRC made the following statement, and I can pull it up from the Transcript, if it's available. Mr. Schiffer stated: "Mr. Buckley will testify in this Hearing, and he will talk about these other issues. When he went down to the site, he never saw any worker protection. Workers

didn't wear protective equipment. Workers didn't wash their hands before they ate. Workers didn't shower before they went home or change their clothes. I mean, these are all, like, basic things to help reduce lead in the air."

Dr. Schoof, hygiene programs, like teaching people to wash their hands, change their clothes, shower frequently, those don't reduce lead in the air, do they?

A. Right. But, yeah, I would say they reduce lead exposure.

Q. Okay.

A. They might reduce lead in the immediate microenvironment of that person, but not air more broadly.

Q. Yeah. And that's why I'm asking you these questions, Dr. Schoof, because I'm quite certain that you have this clear. I just want to make sure that everyone in the room has this clear.

And maybe, much like the umbrellas that your neighbor might give you to protect you from the poison rain emissions, you know, I'm sure Doe Run Perú's community programs and hygiene programs were greatly appreciated, but the one thing that's going to have the most impact on human health would be reducing the emissions; right?

A. That would ultimately be the biggest -- well, I wouldn't say "ultimately." That would be the biggest first step. There was still going to need to be soil remediation

and a lot of other activities in La Oroya because the ongoing emissions weren't the only cause of elevated exposures.

Q. Right. And I think that's actually exactly what the U.S. CDC said in its 2005 Report.

Do you recall the U.S. CDC Report?

A. Somewhat, yes.

Q. And if we could pull that up, Kelby, it's Exhibit C-138 in the Treaty case, at -- there's the CDC Report, at PDF Page 22. Just right at the top. You can zoom in on that. It states: "A hygiene education program is being implemented in La Oroya. Some local officials thought hand-washing and housecleaning would protect children from lead poisoning. However, studies conducted around the world have demonstrated that efforts focused solely on hygiene and behavior change will not yield significant results until reduction of emissions level and remediation of historical contamination are prioritized."

Did I read that correctly, Dr. Schoof?

A. Yes, that's what this says.

Q. Is your Opinion regarding hygiene programs any different than that of the U.S. CDC?

A. Well, this is a pretty narrow statement. It's talking about hand-washing and housecleaning. Housecleaning would have limited effectiveness because,

with the dust coming regularly, it would continue to be replenished, the lead in it, which is -- so the question is how frequently are all of these things implemented? And the issue with La Oroya was that there weren't -- in many of these homes, there wasn't running water. There was a sink in a courtyard. And people didn't have regular access to be able to try to wash hands regularly. If you are having cleaning programs in home or in schools or in houses, it would have to be done very frequently to have an effect. But I still think that's not a reason not to try to do things like this, and I think there's probably more quantitative study of the effectiveness of these kind of program for Trail, actually, because that is a -- they struggled with that issue for a long time. It is hard to make hygiene programs have a marked effect. But you've got to do something if you can't reduce the emissions right away. And there were also nutrition programs which is another big issue in La Oroya because there's significant iron deficiency and a fair level of calcium deficiency, all things that make lead be absorbed more readily.

So there were so many things that could be done, that, even if you think any one of them might not have a marked effect, if you can do five or six or seven, maybe you'll have an effect.

Q. Yeah. But -- and one of the reasons why it might

be difficult to keep up with hygiene programs and even housecleaning programs is because it's hard to keep up with the snow of lead?

A. But some of the house programs were related also, I believe, to actually improving the houses because some of the houses had dirt floors or unfinished concrete that would hold the dust. And if you put adobe on the walls and put proper flooring in and window coverings and door coverings, you know, that may have more of an effect than housecleaning. You know, that's not something that I think was applied very broadly in the community, but it may have been targeted at some of the kids with the highest blood-lead levels. Things like that. Like taking the children who had the highest blood-lead levels out of the community for daycare. I think that was in Casaracra. You know, they all show an effort to try to do something as they were -- Doe Run was trying to implement the more substantive technological changes to the Complex operations.

Q. I guess my question is more basic, Dr. Schoof. Could the people of La Oroya ever stop cleaning as long as the poison emissions keep coming? When could they ever stop cleaning?

A. Well, that's a fair point. Yeah, you can't stop while there's still the emissions if you want it to be

effective.

Q. Would it be fair to say that your 2005 Report found a serious health crisis in La Oroya due to DRP's emissions?

A. I would say that the conditions in La Oroya in terms of blood-lead levels were very bad. All the origin of that, I won't say, but there was certainly a contribution -- a significant contribution was from the air emissions which is why, when there was the first step in reducing the fugitives by 2007, those blood-lead levels fell a lot. So, you know, that says, yes, those emissions were very significant contributors. There was still a long way to go, but they came down a lot in just three years.

Q. And I believe, at your Expert Report in this case at Page 20, you state that your 2005 human health -- Human Health Risk Assessment concluded that the residents of La Oroya had elevated risks of adverse health effects from exposures to chemicals released by the Complex including lead, arsenic, and cadmium. Both sulfur dioxide and air particulates were found to exceed air quality criteria.

Do you remember saying that in your Expert Report?

A. Yes.

Q. Okay. And when you say chemicals released by the Complex, in 2005, the entity operating the Complex was Doe

Run Perú; correct?

A. That's correct.

Q. So -- and maybe this isn't a fair statement, but you would agree that the situation you saw in 2005 was a serious health crisis in La Oroya; correct?

A. Yes. I agree.

Q. And understanding that attention should eventually be paid to the lead in the soil, the greatest priority was placed on reducing Doe Run Perú's emissions; is that right?

A. Well, it wasn't Doe Run Perú's purview to do -- to deal with the soil, although I know they did some revegetation projects, but their priority certainly was to reduce the emissions.

Q. Okay. But, in your 2005 Report, you did prioritize reducing Doe Run Perú's emissions --

A. Yes.

Q. -- for anything else; correct?

A. Umm-hmm. Yes.

Q. And if we could go to Dr. Schoof's -- or, the Integral Report, which is RS-012. This is the 2005 Report at PDF Page 183. The passage that starts with: "The results of this risk assessment indicate that implementation of the planned technological changes to reduce fugitive emissions and stack emissions will reduce

sulfur dioxide concentrations to levels that will not pose a major health burden. While lead emissions will also be greatly reduced, blood-lead levels are still predicted to exceed health-based goals in 2011. This is due to the fact that dust and soil in La Oroya will still have high residual concentrations of lead from historical emissions."

Did I read that correctly?

A. Yes.

Q. And then, in the next paragraph: "The U.S. Centers for Disease Control and prevention's, the CDC, recent Report on La Oroya, CDC 2005, recommends that all stakeholders in La Oroya collaborate in a coordinated program to reduce emissions, reduce exposures, and to eventually remediate historic contamination. Due to the diversity of issues facing La Oroya, we strongly support the CDC's recommendation."

Did I read that correctly, Dr. Schoof?

A. Yes.

Q. Now -- so if I understand it correctly, in your 2005 Report, you support the U.S. CDC's recommendation of targeting and prioritizing, reducing -- or, reduction of emissions first, and then turning to soil remediation; is that correct?

A. Well, I was focused on La Oroya Antigua, where the blood-lead levels were the worst. I think that

studying the extent of contamination and figuring out if there were things that should be done further out quickly might have been appropriate.

Q. And I only ask this because it seems like the Expert Report that you submitted in case, Dr. Schoof, kind of turns that conclusion on its head. And maybe it's just a misimpression and maybe it's just because the lawyers have been talking too much, but are you now suggesting that, while Doe Run Perú was running the Facility, the number one priority should have been addressing the lead in the soil?

A. That's not the intention of my statement.

Q. Okay.

A. I hope in my Expert Report.

Q. Okay. And, I guess, just to kind of put a finer point on this, I want to go back to the home and garden example, you know, where you have this source of poison rain raining sulfur dioxide and lead onto you, and trying now to distinguish between emissions reduction programs and soil remediation programs. So as we discussed, you have this source of sulfur dioxide and lead -- we're just focusing on lead for the moment -- the lead filters down into the soil, is there. You know, it's there, and you've got the lead that still keeps coming down. While the lead still keeps coming down on you, would you prefer to take

care of the soil or would you prefer to get the lead shut off or greatly reduced?

A. I think I answered that essentially last round. Yes, I would prefer to have the air emissions stopped first.

Q. Okay. And if you did go to the soil, if you did go to the lead in the soil while the lead keeping coming, and let's say you dug up all the soil in your garden and put new, clean soil back, what's going to happen to that soil after a bit of time?

A. Well, it all depends on the relative amounts, but it will accumulate lead again.

Q. Right.

A. But if it was very, very high and the emissions were moderated, then it might still be worthwhile. It's hard to -- you know, I would say, if we're talking about La Oroya Antigua, the answer is yes, it would become recontaminated pretty quickly. If we're farther out, maybe not so much.

Q. And -- okay. Going back to the two different components that we keep talking about, that's in the poison spout, we've got sulfur dioxide, we have lead. I believe, in your 2005 Report, you make it clear that the Sulfuric Acid Plant Project would have significantly reduced fugitive emissions, sulfur dioxide, and lead; is that

correct? Was that your understanding at the time?

A. I don't remember if that would also reduce fugitives, with the Acid Plants. I just don't recall.

Q. Okay. Did DRP ever discuss with you the modernization of the Plant that was required to complete the Sulfuric Acid Plant Project?

A. I believe so.

Q. Okay. Because I know you mentioned that you could just see the fugitive emissions coming off the really old equipment.

Did you understand that Doe Run Perú, as a part of the Sulfuric Acid Plant Project, was going to replace that really old smoking equipment?

A. Well, there was lots of old equipment, so, yes. Maybe some of it. I don't recall specifically, though.

Q. And I believe you just stated on the record not too long ago that, once the Sulfuric Acid Plants were installed, the aerial emissions would be greatly reduced.

Is that your understanding?

A. Yes.

Q. Okay. Is it your understanding that the Sulfuric Acid Plant Project was the only PAMA Project that could address sulfur dioxide?

A. I don't know if I had an understanding. I assumed that that was the major way to control sulfur

dioxide emissions. I don't know if it was the only way.

Q. Okay. And in your Expert Report in this case, you state that the operational changes by Doe Run Perú were expected to cause lead emissions to decline by 91 percent.

Do you remember that part of your Report?

A. Yes.

Q. Okay. And, perhaps, for these reasons, you would really want to prioritize reducing Doe Run Perú's emissions first before anything else; is that right?

A. You're saying that very generally. You mean all the air? Just the fugitives or the stack or both?

Q. Well, if it is true that the Sulfuric Acid Plant Project would address fugitive emissions, lead emissions, and sulfur dioxide, that would definitely be a very good reason to prioritize that particular emissions reduction project; correct?

A. Assuming it was technically feasible, yes.

Q. Yep. And, in fact, in your modeling of blood-lead levels in children in La Oroya, you had predicted that blood-lead levels would start to drop once Doe Run Perú completed -- once they actually completed the Sulfuric Acid Plant Project; is that correct?

A. Yes.

Q. This might seem like a weird question, Dr. Schoof, but did you see any evidence when you were

performing your assessment in 2005 that water was a significant lead exposure pathway?

A. No. The water samples we collected from the taps were probably, mostly non-detect for lead.

Q. Did you see any evidence that the people in La Oroya drank water from the river, the nearby river?

A. Not that I recall.

Q. And I ask because during Opening Statements -- if we could pull up the Transcript on Day 1, Mr. Schiffer stated: "You see how the Projects" -- sorry: "You'll see how the Projects. The number of the Project means nothing. It is an identification of what they are, but in terms of how they are to be done, they mean nothing."

"So the first projects that had to be done right away were water-related, and, in fact, the big problem, the immediate problem for the people of La Oroya was that all of the effluent, untreated effluent from the plant was being dumped into the river, the river that they washed in, they drank, they washed their clothes in, and so that was dire. And so the first Projects were designed to curb the environmental disaster of the water, so that was the priority."

So, Dr. Schoof, I guess I'll go back. In your experience being in La Oroya, you didn't observe the citizens of La Oroya drinking from the river, did you?

A. I didn't. I didn't have any knowledge of that and my understanding was that there was very strong political pressure to attack the water effluents first because of agricultural interests down the river valley that were more powerful than the people of La Oroya.

Q. In your Report, did you come to a conclusion that piles of slag around the metallurgical complex were a significant lead exposure pathway?

A. Well, I believe the big slag pile is at Huanchan; is that right? And I don't remember whether we saw a lot of slag elsewhere in the community.

Q. I guess I would just like to pull up the U.S. CDC Report. Again, it is C-138, Treaty Case, PDF Page 30. I think I'll go to Page 36, where the U.S. CDC says "reduce air lead emissions, both stack and fugitives, to levels that protect children from having blood-lead levels greater than 10 micrograms per deciliter. Until this is accomplished, no other interventions will have a great impact on lowering children's blood-lead levels."

And I believe you stated in your 2005 Report that you agreed with this conclusion of the U.S. CDC; correct?

A. Well, I agreed that reducing both stack and fugitive emissions was going to be the most significant intervention, but as our Reports explain, that still wasn't going to reduce blood-lead levels to below 10 in La Oroya

Antigua.

Q. Dr. Schoof, are you aware of the claims being made in the Missouri Litigations, what is commonly referred to as the Missouri Litigations in this case?

A. I'm vaguely aware it exists, but I'm not familiar in any detail.

Q. Okay. Where did you get your vague familiarity with the Missouri Plaintiffs' claims?

A. I don't recall exactly how -- why I know about it.

Q. Okay. Would it have come from Counsel for Renco and DRRC in this case?

A. Yes, but that might not have been the first time I've heard about it.

Q. Now, at Page 2 of your Expert Report, in this case, you state: "Any environmental exposure that occurred between 1997 and the present cannot be exclusively attributed to DRP."

Do you remember making that statement in your Expert Report?

A. Yes.

Q. Is there a reason why you chose the term "exclusively attributed"?

A. Because my understanding is that one of the matters at issue is whether or not the historical

contamination is contributing to exposures in La Oroya.

Q. Was it explained to you that the Missouri Plaintiffs' Claims are based on lead exposure due to soil?

A. No, I don't think so.

Q. And I imagine you did not review the Contract in this case that includes the term "exclusively attributable"?

A. I don't know what Contract you mean, but -- so probably not.

Q. Okay. I'll represent to you that there is a contract Between DRP and Centromín that is relevant to this case, and there's a clause in it that contains the term "exclusively attributable to."

So you didn't review that Contract?

A. I don't know. I don't remember reading it.

Q. So if it's true that the Missouri Plaintiffs' Claims don't have anything to do with exposure to lead from soil, just hypothetically speaking, then would you say that those Claims would involve acts that are exclusively attributable to DRP?

A. I don't know if I understand enough of the context to answer.

Q. So let me understand this correctly. I think you are trying to make sure that people know that there is lead in the soil and that if a child -- in this case, if a child

ingests lead from the soil, that that lead exposure is due to the soil. There's another pathway, which is through dust, which is driven by contemporaneous emissions.

Am I right?

A. That the component that is most changeable is going to be from the current emissions?

Q. Right. And the current emissions or concurrent or contemporaneous emissions pathway exposure is through dust. This is the snow, you know, in the analogy, coming down and, you know, let's turn it into snow and coating everything in your garden and in your house.

That is coming from contemporaneous emissions; is that correct?

A. That proportion of the lead and dust that exceeds the soil concentration --

Q. Right.

A. -- is from the current emissions, most likely. Most of it.

Q. So if the Missouri Plaintiffs were only -- if they had tailored their claim to say that we are only claiming, making claims about dust, not soil, would you say then that is exclusively attributable to DRP?

A. Only if they somehow managed to exclude the influence of soil on dust in those Claims.

Q. And I think -- Kelby -- again, I just want to

make sure that everybody in the room understands how this works because I think, Dr. Schoof, your description of how this works is really important. It is in your 2005 Report, so RS-012 at PDF 27.

Because you mentioned during the direct "ingestion of lead." And, yeah, I just want to make sure that everybody understands what we are talking about.

So: "An underlying premise of the ISE model which" -- I understand that is the model that you used, Dr. Schoof, to predict blood-lead levels in children in your 2005 and 2008 Reports; is that correct?

A. Correct.

Q. Okay. So quote again: "An underlying premise of the ISE model is the assumption that lead exposures at contaminated sites will be dominated by exposure to lead ingested from soil. Smaller contributions are assumed from exposure to lead ingested from indoor dust with minimal exposure due to inhaled lead in air. These assumptions do not apply to sites with ongoing air emissions of lead, such as smelters. The smelter in La Oroya releases lead to the air in the form of particulates. While some of the airborne lead may be inhaled, much of the airborne particulate lead settles out onto pavement, soil, and other outdoor surfaces. This outdoor dust contains much higher concentrations of lead than does the underlying soil.

Because children playing outdoors may ingest this dust after getting it on their hands, it is important to include outdoor dust as a separate exposure medium in lead exposure models. In this risk assessment, the ISE model was modified to add outdoor dust as an exposure medium independent of soil."

Did I read that correctly, Dr. Schoof?

A. Yes.

Q. So ingestion of lead, to avoid any confusion, you're not talking about kids in La Oroya going around and digging around and getting fistfuls of dirt and eating it, are you?

A. Well, not mostly, but there were reports of children with pica for soil in La Oroya.

Q. Okay. But outside cases of pica, you're generally not -- when you're talking about ingestion of lead, you're talking about wiping your hand on a surface and touching your -- usually it is touching your face, but you incidentally touch your mouth?

A. Well, or children put their fingers in their mouth.

Q. Right.

A. So, yes, that's correct.

Q. And I think we all had the experience during COVID of realizing, even as adults, how often we touch our

face or our mouths or our noses; right?

A. Yes.

Q. So this is the ingestion of lead that you are most concerned with, like, this is the true pathway. Yes, there are cases of pica where people are fistfuling, you know, dirt and eating it.

But the exposure pathway you're talking about here is kind of incidental and maybe not so incidental with kids who might be sucking on their fingers, but incidental touching of your mouth and you get the lead into your digestive system, and that's how you incorporate it into the human system; is that right?

A. Yes.

Q. So it is important to distinguish between dust, on the one hand, and soil, on the other hand; is that right?

A. Well, the reason that the IEUBK model and the way EPA models is that -- the reason they only have soil and indoor dust is because, generally, if you don't have an active air source, the outdoor dust has the same concentration as the soil. So they didn't need to model it separately.

But I had seen data from active smelters. So I expected that outdoor dust was a medium we needed to treat separately because it would have different concentrations.

So when I said that it was an independent exposure medium, that doesn't mean the soil didn't influence the concentrations in the outdoor dust, but because the concentrations differ from the soil, we had to model it separately to fully account for the exposure conditions.

Q. And you started that explanation by saying that, as a general matter, the IEUBK model is not assuming a constant source or active source of emissions. I'm not sure if those were your exact words because it looks like the transcript is a little muddled at the moment.

But when you do have an active source of emissions, it is important to distinguish between dust and soil; is that right?

A. In my opinion, yes. It is not commonly done. I'm not aware of many other risk assessments other than this one that have done that.

Q. Right. As you state, you separate the two in your Report because you did have that active source of emissions; correct?

A. Correct.

Q. Just to be clear, your Expert Report -- your 2021 Expert Report in this case, is that Report suggesting that you shouldn't distinguish between soil and dust anymore?

A. Not that I'm aware of.

Q. Okay.

MS. GEHRING FLORES: No further questions.

PRESIDENT SIMMA: Thank you, Ms. Gehring Flores.

Before I turn to Mr. Fogler, let me remind you what I said in the morning, that Mr. Grigera Naón will have to leave in about 10 minutes at the latest for a really cogent reason. And so the question -- then there might be questions on the part of my colleagues, and I have a few questions.

What do you think? Should we have all of that tomorrow. I hope you haven't planned to --

THE WITNESS: No, I'm at your disposal tomorrow as well.

MR. FOGLER: I think I can finish in 10 minutes, but that doesn't leave any time for the Tribunal. It's up to you. I'll go now or wait. It's your choice.

MR. RODRÍGUEZ: You probably don't have questions.

ARBITRATOR GRIGERA NAÓN: I don't have questions.

PRESIDENT SIMMA: Chris.

ARBITRATOR THOMAS: I have one or two.

PRESIDENT SIMMA: I also have questions, but, of course, they are not -- probably are not vital. So -- I would feel better if we did that tomorrow morning, I have to say.

MR. FOGLER: That's fine. I'm fine with that. It means that Dr. Schoof won't be able to enjoy my charming company, but she'll get over it.

PRESIDENT SIMMA: I'm very sorry about that, but there must be alternatives.

So you know the rules; right?

THE WITNESS: Could you tell me please?

PRESIDENT SIMMA: Okay. So you're not supposed to spend, let's say, time with anybody talking about the case and what could be waiting for you tomorrow. So that probably means exclude the Renco team a priori, and, yeah, probably also that team, but I can't imagine that that is really what you want to do.

THE WITNESS: Yeah, unfortunately.

MS. GEHRING FLORES: Unfortunately, Dr. Schoof, we won't be able to hang out tonight.

THE WITNESS: Darn.

PRESIDENT SIMMA: Okay. All right. The stress goes and we'll have some time tomorrow. So thank you for your contribution and your patience for tonight. We meet again tomorrow. We start at the same hour, but we'll have an hour longer which means we can sit until 6:00 p.m. tomorrow. Thank you very much.

(Interruption.)

PRESIDENT SIMMA: We are ready to do half an

hour, if you came, in particular, and said "we don't need that much," we would -- it would certainly be welcome.

MR. SCHIFFER: No, I was thinking -- no, a half hour is great. I mean, an extra half hour is great. To the extend right?

PRESIDENT SIMMA: No. We would be able to -- ready to add one hour. That is, we would stay until 6:00 p.m. instead of 5:00.

MR. SCHIFFER: That's the way I originally thought but -- anyway, I misunderstood. Thank you.

PRESIDENT SIMMA: Thank you very much.

MR. PEARSALL: One point, I think it would greatly assist us, and hopefully Claimants, if the Tribunal could give us a time and a date to submit our response, our written response to your question on applicable law.

It would be our preference to send it -- because you asked for it in writing, it would be our preference to send it on a time and on a date specified by the Tribunal so that we don't worry about sending it in advance or, you know, being responsive to one another. I think it would remove that temptation.

PRESIDENT SIMMA: But would that be sufficient if we tell you tomorrow morning?

MR. PEARSALL: Of course, sir.

PRESIDENT SIMMA: Okay. Thank you very much.

(Whereupon, at 4:45 p.m., the Hearing was adjourned until 9:30 a.m. the following day.)

POST-HEARING REVISIONS

CERTIFICATE OF REPORTER

I, Dawn K. Larson, RDR-CRR, Court Reporter, do hereby attest that the foregoing English-speaking proceedings, after agreed-upon revisions submitted by the Parties, were revised and re-submitted to the Parties per their instructions.

I further certify that I am neither counsel for, related to, nor employed by any of the Parties to this action in this proceeding, nor financially or otherwise interested in the outcome of this litigation.

Dawn K. Larson