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(9:05 a.m.)

CHAIRMAN:

Q. Good morning everybody. I'd just like to welcome everybody here this morning at these proceedings. My name is Robert Noseworthy and I'm Chair and CEO of the Public Utilities Board, and I guess for the purposes of this hearing, I'm serving as the Chair of the Panel. Indeed, two of us here assign responsibility to hear this application before us. My colleague joining me on the panel is Ms. Darlene Whalen, who's Vice-Chair of the Board. And I'd just like to take this opportunity to introduce the staff as well. On my near left here is Cheryl Blundon, who's the Board Secretary, and Dwanda Newman, who's the Board counsel.

This public hearing by the Board is for the purpose of deciding on an application of Newfoundland and Labrador Hydro, seeking the Board's approval pursuant to Section 71 of the Public Utilities Act to recover the cost of purchasing a lower sulphur content fuel to be consumed at the Holyrood Generating Station. The impact on rates of the proposed change to

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the lower sulphur content fuel is estimated in the application to be approximately one percent increase in rates to Newfoundland Power's and Hydro's non-Labrador Interconnected Residential and General Service Customers and an approximate two percent increase to Hydro's Island Industrial Customers.

The Board is hearing this application pursuant to the appropriate authorities and regulations contained in the Public Utilities Act. And I'd just like to ask at this point in time if I could ask those seated at the tables to formally introduce yourselves, indicate whom you represent and in what capacity you're participating in the hearing, and I'll begin with the applicant, Hydro. Good morning, Mr. Young.

MR. YOUNG:

Q. Good morning, Mr. Chair. Geoffrey Young for Newfoundland and Labrador Hydro, the applicant, legal counsel. With me today is the witness for today's hearing, Mr. Frank Ricketts, our Manager of Environmental Services.

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CHAIRMAN:

Q. Good morning, sir.

MR. RICKETTS:

Q. Good morning.

CHAIRMAN:

Q. Mr. Hutchings, good morning.

HUTCHINGS, Q.C.:

Q. Thank you, Mr. Chairman, good morning. Joseph Hutchings, and with me, Paul Coxworthy from the Stewart McKelvey firm in St. John's, representing the Industrial Customers, and also present in the front row is Mr. David McDonald from Corner Brook Pulp and Paper, who is the current chair of the IC Customer Group.

CHAIRMAN:

Q. Welcome, gentlemen.

JOHNSON, Q.C.:

Q. Good morning, Mr. Chair, Vice-Chair. Tom Johnson, the Consumer Advocate in these proceedings.

CHAIRMAN:

Q. Good morning, Mr. Johnson. Good morning, Mr. Hayes.

MR. HAYES:

Q. Good morning, Chair, Madam Vice-Chair. Gerard

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Hayes representing Newfoundland Power. Assisting me today is Mr. Jack Casey, Newfoundland Power's senior engineer.

CHAIRMAN:

Q. Thank you and good morning. Once again, welcome everybody. At this juncture, I normally do a bit of an overview, I guess, on the role of the Board and really the process that we're going to follow throughout the hearing. But, I think I'll dispense with that this morning, I think, unless do we have any public or media here? No, okay. I think most people here would know the process that we'll follow and what the Board is generally mandated to do.

There are a few housekeeping matters that I'll just review with you. All the documentation, including the daily transcripts, for this hearing will be available throughout the course of the hearing on our website and our currently there. I guess, the parties, anybody who has any particular concerns about the creature comforts in the room, you should bring those to the attention of the Board. It is a little

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bit warm here this morning, I think, and hopefully over the course of the morning, that will--I think we have the thermostat down as far as it'll go and hopefully that'll dissipate. If anybody gets too overcome, we'll just have to take a little break perhaps before schedule.

These proceedings are being recorded by Discoveries Unlimited under the auspices of Ms. Judy Moss and we will have the transcriptions available upon completion of the hearing and in advance of the start of the hearing of the following day. I guess we're proceeding on Monday, so we'll have those, Judy, sometimes over the weekend, so that people will have the opportunity to review those. The normal daily sitting time will be from 9 to 1:30 for this hearing, with a half-hour break from 11 to 11:30 and I would ask you if you could adhere to those times as much as possible, please. I understand the witness today is not available next week and if indeed, I guess, we need to go a little bit longer, we'll do that today, if everybody's in general agreement with that.

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For the purposes of referring to Ms. Whalen and myself, just for the transcription, either call us by name or Chair and Vice-Chair would be fine. You have your designated assigned seating arrangements and for the purposes of the witness, the witness stand would be over here to my right, and our witness may swear an oath on the Bible or certainly solemn affirmation may be administered, and indeed, if there's any other oath that may be appropriate or necessary, if you could just let the Board Secretary know, we'll try and accommodate that as well throughout the hearing. That's about it for me.

In summary, I want to commend you all for the work that you've undertaken in preparing for the hearing. I'd ask for your cooperation throughout it and I look forward to a productive hearing. I'll ask Ms. Newman now if she could enter the matter and confirm the issuance of the public notice and advise of any other preliminary matters. Good morning, Ms. Newman.

MS. NEWMAN:

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Q. Good morning, Mr. Chairman, Vice-Chair. I can confirm that an application was received from Newfoundland and Labrador Hydro on January 20th, 2006, the application which you've already referenced. It was an application seeking approval of the cost of low sulphur fuel as a fuel cost component to be recovered through the Rate Stabilization Plan charged to Newfoundland Power and the Island Industrial Customers, and it was filed pursuant to Section 71 of the Public Utilities Act. The Board did publish notice, beginning on May 18th, throughout the Province in several newspapers, and in response to the notice and in fact, in advance of the notice, we did receive three intervenor submissions, from Newfoundland Power, the Industrial Customers and the Consumer Advocate, all of whom are represented today.

In addition, there have been an exchange of information requests and documents and all outstanding information requests have been responded to. I understand that there's no preliminary matters and we're ready to proceed.

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CHAIRMAN:

Q. Thank you, Ms. Newman. Good morning, Mr. Young. I understand you have an opening statement.

MR. YOUNG:

Q. I do. Thank you, Chair. And before I start that even, I would like to thank the Board. The clerk of the Board and I have been working with some difficulties trying to arrange two dates or two days for this hearing. We had some limitations in our scheduling and both the Board expressed to us a concern as to getting this hearing done and we were very pleased to have that. I only raise that because I think ideally in a situation like this with a technical matter, it would have been a perfect opportunity to impanel a couple of witnesses and that wasn't a possibility, and I hope that--it's also a normal practice, I think it's fair to say, to have a policy witness go first, followed by the technical, and we've had to reverse that. So that's why Mr. Ricketts is appearing today alone, as opposed to putting two witnesses alone or perhaps Mr. Haynes, the Vice-President, on

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first.

By way of opening statement, this of course is an application whereby Hydro has applied to recover through its Rate Stabilization Plan, which is the way it recovers fuel costs, costs in relation to one percent sulphur No. 6 fuel to be consumed at the Holyrood Thermal Generating Station. The Holyrood Generating Station, as this Board is only too aware, is a very significant generator of energy for the Island Interconnected system. It's relied upon for some 465 megawatts of net capacity and typically generates between a quarter and a third of Hydro's Island Interconnected energy. The implications of the level of thermal generation are well known to all present in this hearing room today. At current fuel prices, this generation source is very costly and these costs must be recovered from Hydro's utility, industrial and distribution customers on the island.

But aside from the costs impacts, there's also a very considerable environmental impact from the Holyrood Generating Station in the

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form of emissions to the atmosphere and there are limits under applicable law as to how much Hydro is permitted to emit. These limits are set out in the Air Pollution Control Regulations, 2004, made pursuant to the Environmental Protection Act. Hydro has been informed by officials in the Department of Environment and Conservation that its Holyrood Generating Station emissions exceed permitted levels. These determinations were made based upon a rather elaborate set of computer models that predict maximum pollution levels that would occur under certain conditions. These processes are set out in detail in the Guidance Documents, many of which were filed very recently with the Board, last couple of days.

Measuring and predicting air pollution emissions is a rather complicated science, and I think that will become clear. Besides the computer modelling methods, it also involves a measurement of emissions by sophisticated air monitoring equipment. Hydro has in the fairly recent past added a fifth air monitoring station to its network of stations that are

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strategically situated around the Holyrood Thermal Generating Station so as to measure the emissions in a meaningful way. Information obtained from these air monitoring stations are used in conjunction with information obtained from stack emission testing and dispersion modelling. Now based upon the information Hydro has received from the Department of Environment and Conservation that the Holyrood Generating Station was emitting sulphur dioxide in amounts in excess of those amounts permitted by law, Hydro took action to reduce those emissions so it would be able to operate within the law. Besides dramatically reducing the production of energy from the Holyrood generating station, which is not an option in the foreseeable future, Hydro has only two means available to it to reduce its emissions so that it can come within the legislated limits. It can retrofit the plant with equipment that scrubs or otherwise removes the emissions before they escape the plant, or it can use fuels that produce less emissions.

The option of retrofitting the Holyrood

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Station with flue gas desulphurization and electrostatic precipitator equipment, and they're commonly referred to in literature as FGD and ESP equipment, this was considered and compared with the option of switching to a fuel with a lower sulphur content. The disadvantages of installing FGD and ESP equipment are twofold. The first is that they come with a very high sticker price. And the second is that once the capital investment has been spent, the carrying costs associated with them, which have to be recovered from rate payers, are there to stay for a long time. And should Hydro be able to acquire natural gas to fuel the thermal station or should in some time a transmission in-feed from Labrador become available, this will have been a waste of rate payers' monies. So using cleaning fuel for the Holyrood Generating Station is the least costly option and it has the important advantage of being immediately responsive to a conversion to natural gas or to a transmission in-feed scenario.

Choosing one percent sulphur instead of some lower or higher sulphur level was a

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decision made by Hydro after considering the level of emission reduction required to meet the legal limits. It is not a certainty that one percent sulphur will provide enough of a reduction in sulphur dioxide emissions to satisfy the legal requirements, but it is a substantial reduction and further testing and modelling will determine whether or not it is sufficient.

Hydro is obliged by the legislation that governs the regulatory processes carried out by this Board to provide least cost power consistent with safe and reliable service. Under the Environmental Protection Act, the Minister can issue a stop work order if operations are carried out in violation of the Act or a violation of certificate approval issued under that Act. Ensuring that Hydro operates within the applicable environmental legislation is therefore wholly consistent with the Board's duty to require and ensure that Hydro provides reliable service.

We'd also point out under Section 16 of the Public Utilities Act, and this is the general supervision section, the Board has the

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duty to ensure that Hydro operates within the law. By reducing the sulphur content of its fuel to one percent instead of the present two percent, Hydro is reasonably confident that it will be operating within the law. Hydro is also confident that choosing one percent sulphur fuel is conservative and prudent and respects least cost principles.

In summation, Hydro is required to operate within the law and it is entitled to recover the expenses it incurs that are prudently incurred for those purposes. Thank you, Chair, and we'd like to put Mr. Ricketts on the stand now at this time, please.

CHAIRMAN:

Q. Sure.

MR. YOUNG:

Q. And I have a few questions aside from the pre-filed testimony. I would add that I have a few questions in direct, largely arising from the recent RFIs we've received and we've identified some areas where I think the record could be a bit more thoroughly dealt with.

CHAIRMAN:

Q. Thank you, Mr. Young. I understand there are

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no other opening comments or remarks. That's my understanding. Okay. If you could introduce your witness, Mr. Young, please.

MR. YOUNG:

Q. Thank you, Chair. This is Mr. Frank Ricketts. He's our Manager of Environmental Science. I ask that he be sworn.

CHAIRMAN:

Q. Good morning, Mr. Ricketts, and welcome.

MR. FRANK RICKETTS, SWORN

CHAIRMAN:

Q. Thank you. When you're ready, Mr. Young.

MR. YOUNG:

Q. Thank you. Mr. Ricketts, I think I properly-- or I improperly introduced you then. You're the Manager of Environmental Services, is that right?

A. That's correct.

Q. I think I said science, apologize. As the first matter, Mr. Ricketts, there's been evidence pre-filed by Hydro in your name. Do you adopt that evidence as your sworn testimony?

A. I do.

Q. Thank you. Mr. Ricketts, much of the material

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before the Board, and you're familiar with it, I'm sure, deals with dispersion modelling for the purposes of determining emission compliance. Can you briefly explain how this process works and to what purposes that process is put by the Department of Environment and Conservation?

(9:18 a.m.)

A. Okay. Air pollution dispersion modelling is a set of models that bring together mathematical logarithms to determine the fate of emissions from either a source, a point source or area sources. There are different models that can be used for different approaches. The Department of Environment and Conservation of the Province has stipulated that a particular, CALPUFF model, be used in relation to the Holyrood Thermal Generating Station's emissions. It's considered the most appropriate model for that type of facility. And essentially what the--there are a number of factors that the model considers and extrapolates on a mathematical basis through a set of logarithms. The inputs include the emission rates for the pollutants of concern

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and those are input to the model on an hourly basis. So for every hour of output from the plant, an emission rate for the pollutant concern is input. That then the gas flow coming out of the plant is stipulated in terms of the flow rate of the gas coming out of the plant and the flow temperature coming out of the stacks. Those influence the momentum of the gas as it leaves the--exits the stacks and determines, to some extent, the height at which the gas will reach before it starts to disperse within the air column. After you've input the factors related to the plant, there's also the building dimensions surrounding a facility are input into the model to determine whether there's a downwash from the building. As the air flows across the building there is normally a downwash and you have to determine whether that's a factor influencing the ultimate dispersion and what you're trying to calculate is the ground level concentrations associated with the emissions from the stacks. Once the emissions information is input, you also input an hourly meteorological condition file for the period

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that you're modelling. Normally you model for a minimum of a year, but more if you have that capability. And so for every hour of output in that year, there is an emission rate from the plant, the gas flow and the meteorological conditions at the time.

The meteorological conditions include, the most important factors are the wind speed and the wind direction. The stability of the atmosphere, and that's very influential on the eventual outcome of how the air disperses and the gases disperse in that you can have a low--a highly stable atmosphere with very little mixing of the air in the up and down movement of the air column or you can have a very highly unstable air atmospheric condition with a lot of mixing up and down in the air, and that will bring the gases down to ground level much more quickly, therefore increasing the concentration because they haven't had the opportunity to disperse in the air column. And the model--or you can have what they call a neutral stability, atmospheric stability, and that has some level of mixing within the air column, but not as much as a highly

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unstable situation.

And the modelling basically takes the gas as it's emitted and calculates a dispersion of that on the basis of three dimensions, the height, the width, and the depth of it, and then predicts on the basis of the air flow where that gas that's emitted is going to eventually end and it recalculates on every hour of emission and recalculates on every change in the weather pattern or the atmospheric conditions that are there.

It also includes a--you have to input the terrain features that are around the location of the source to whatever dimension or, I guess, boundary is appropriate. That's also influential because if you have high terrain that increases the height of the ground at which the ground level concentration has to be calculated. Hills and other features will also--it will also calculate the dispersion of the gas around that feature, both its concentration as it impacts on the feature and then as it moves around the feature, what type of diminishing or dispersion of the gas flow will occur as a result of that.

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The landform or, sorry, the land use in the area is also very influential. One of the calculations relates to the friction of the air as it moves across the land, and that changes as a result of the different land uses. So an urban area will have a lot more friction and will slow the wind a little bit as it moves across an urban area, more than a rural landscape, for example.

Also an important factor why the CALPUFF model is determined as most useable by the Department of Environment and Conservation in this case is the land sea interface. Where you have a coastal environment, you have different wind patterns that are daily occurring as a result of that. The wind will move from the sea to the land at points in times in the day and from the land to the sea based on the differential heating from the sun of the land as opposed to the water, which have different heat rates, and you'll get wind movement as a result of that change in temperature. That's also factored into the logarithms or the mathematical calculations of the model.

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So the model is run over a period of time for each hour of each day and eventually calculates for receptor points and you normally set up a receptor grid with a boundary of the outside area that you're calculating for and within that point, you'll normally have a finer grid pattern, closer to your source, gradually extending out and widening out as you get away from your source. So you may look at a 50-metre or 100-metre spacing of your receptor points and these are the points close to the source and wider as you move away from the source. These are the actual points that the model will use to calculate for each point, each hour that you're modelling for, what the ground level concentration is expected to be or projected to be at that particular point. So the output will be a series of spreadsheets for each point for each hour of the period model what the maximum ground level concentration was calculated to be for that point. And it's capable then of expanding those to what are called isoplets. It's kind of like the isobars on a weather pattern map that you can

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map that and determine the grid of the concentrations within particular areas.

Just one of the factors that's influential on the dispersion that's included in the modelling and it relates to the land sea interface, it also relates to the atmospheric conditions, is what's called a boundary layer in the atmosphere. As the air--normally the temperature diminishes as you rise, as the air column rises, to a certain point at which it stabilizes for a period and then also it will diminish again after that.

(9:30 a.m.)

But at that boundary layer, that point in the air column, whatever height that occurs, there is a stabilization of the temperature, the air temperature at that and normally the emissions will rise to that level and will stop there. So that's what will set a cap on and the emissions will periodically bounce off that and come down. So that's used as part of the calculation as well and if you have a boundary layer that's low to the ground that will diminish, that will result in a compression of the gases down closer to the

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ground and result in greater concentration so that's one of the factors that's also included in that.

I think I've touched on the majority of the factors that are influential on it, and the reason why CALPUFF is used.

Q. I don't know if Mr. Hutchings remembers his days on Reach the Top. I'm not sure he'd refer to that as a short snapper, but thank you. Now the other part of the process which is described in the filing, in some detail, is the ambient air monitoring process that Hydro undertakes. Can you describe what that is and perhaps you can start with describing what an air monitoring station is, what it looks like and what it does?

A. Ambient air monitoring stations are set up to record--to sample the air at a particular location continuously and record over a period of time the concentrations that are present at that particular location. Analyzers within the set up draw in the air and route it through an analyzer that basically determines an output of the concentration within the air of the particular pollutant. We are set up as

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sulphur dioxide, nitrogen oxides, total suspended particulate matter and fine particulate matter, PM 2.5, 2.5 micron particulate matter analyzer capabilities within those. The analyzers themselves are--have to be quality controlled. So there's a detailed process for calibration and monitoring of those analyzers themselves as well. They have to be temperature controlled because they operate within a range of environmental conditions. So a set up has to have the capability of environmental controls within it, and normally it's a small building that you would construct or a trailer that you would retrofit to be able to have appropriate environmental controls within it for the analyzers. It has to be set up such that the air flow in and around the area is not hampered in any way. So there is a need to set it up in open areas where you don't have obstructions in close proximity to it, and there are set guidelines for that.

It has to have an adequate power and reliable power source because the analyzers are electrical pieces of equipment that draw

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in the air, go through a chemical process of determination or chemical luminescence process normally of determination of what the concentration of the pollutant is in the air and they have to be--the reliability of the power is one of the quality control factors. It can't have spiking or lows or highs to it. So in most cases you'd look to have an electrical source available and alternately you could have, you know, a diesel generation source or something like that specific to it, but that becomes rather complicated in trying to ensure that you don't have pollutants from your diesel generator influencing your monitors and that the reliability of the power is there. You can have, you know, alternate sources but they all have to have a level of reliability to them.

You have to have appropriate access in order to be able to ensure inspection on a quality control basis. So normally it has to be weekly inspection at a minimum with calibration quarterly of that, and auditing at least annually of that. So an outside auditor will come in and audit that in order for

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quality control purposes to ensure that your data is true and accurate.

Q. Mr. Ricketts, you mentioned earlier that the emission modelling process identifies a large number of points on a grid, and you were also describing the air monitoring stations. How many air monitoring stations do we have in the Holyrood area?

A. We have five at present. We had operated four locations since 1992, I believe it was, and we put in a fifth location in late 2003, early 2004. The data from that has been quality controlled since about late 2004. So we've been getting acceptable data from that for that period.

Q. So I take it from that that you don't have an air monitoring station in each of those particular locations where the computer modelling identifies -

A. No, we use the--the original set up of the four monitoring sites was based on modelling that we did back in 1992 to identify and that model set up was not the same set up or the same model that is being used today. That was a model process approved by the Department of

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Environment and Conservation. Again, it was a US EPA stipulated model of the day. There were two models actually, ISCST, industrial source complex models, and a complex terrain model, because we do have complex terrain in the area. We have high hills and mountains and that. They predicted ground level concentrations, maximum ground level concentrations at particular points that were associated with high terrain features in the local area. So we have--it was problematic to try and set up monitors at those particular locations because the high terrain features made access very much a problem. Power source was a problem. So we, in discussions with the Department of Environment and Conservation, agreed upon four particular sites that were representative of the local area. We're close to residential areas, but we're also close to the maximum ground level concentration areas that were predicted by the models. So there was a bit of a trade-off on the locations, but there is--you can't always get an ideal locations and always locate in the areas of the maximum ground level concentrations.

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The fifth site was set up more recently and that came out of two things really. It was the--we did have complaints from residents in the local area that said "we are smelling, we can see it. We can see it down in our area. We can smell it. We can taste it. There's something happening that your models aren't predicting and that your monitoring may not be picking up." We did set up a temporary monitoring site at a particular location as a result of that. We did record some levels that were higher than we had been seeing at other monitoring sites and we made the decision to put in the fifth monitoring location at that particular site then following that, and that's been in place for a little over a year now.

Q. To your knowledge, with other utilities or industries in Atlantic Canada, how does Holyrood compare when it comes to the air modelling--the air monitoring activities?

A. We've got really a much more intricate grid of monitoring than the other utilities in the other Atlantic Provinces that I'm aware of. I've been in contact with other utility

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environmental managers and have travelled to some of their sites, and typically they'd have one or two sites in the community surrounding their area or in adjacent areas and that, and that's about it. But they do have some more intricate modelling processes at times. I relate to St. John, New Brunswick where they get their main concern--although they have a couple of power plants in and around the city, their main concern is with the pollution that comes in from away, from the northeast States, and they have a method of modelling that includes incorporation of the air flow, greater air shed air flow from the whole of the Eastern Seaboard and when they predict that the pollutant levels are going to be a concern there as a result of the inflows from outside air, then they move that into--that can capture that in their overall modelling process and they actually regulate their operations of the local sources, including the power plants, in order to accommodate that, to reduce their output to accommodate that. But in terms of actual monitoring locations, we've got the most extensive monitoring that I'm

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aware of in Atlantic Canada associated with Holyrood.

Q. Does the network you have of air monitoring stations and the dispersion modelling information you have access to, does it give you the same results when you try to compare them, you know, over a period of time?

A. No, not necessarily. As indicated, the model predicts the ground level concentrations over a full area whereas your monitors are set up in particular locations, and sometimes it doesn't take--the variability of the meteorological conditions has to be considered there. It doesn't take a large degree of variance on a wind direction to move the air column or the pollutant one way or another. If it comes--especially if it's coming down to ground level, in close to your facility, because it hasn't dispersed greatly in the air column before it's brought down to ground level and it's particularly focused and the wind direction is important. Then what particular site gets hit, gets the most impact.

The monitors are intended really, the

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compliance monitoring or the ambient air monitoring set up that we've had is intended to give an overall awareness of the level of the pollutants in the ambient air in the surrounding area. They're not meant to be portrayals of worst case situations at particular points.

Q. So is there a way that these results, these different results can be reconciled or compared and does one take preference or precedence over another?

A. One doesn't necessarily take precedence over the other. Certainly from the regulatory perspective, and this is true with the Department of Environment and Conservation, how they apply it, and true with other jurisdictions, how they apply it. If the models shows the potential for exceedances or of ground level concentrations, they consider that to be indication of exceedances, of non-compliance. If the monitors don't show that, then that's not evidence necessarily of full compliance because they may not be in the location that's specific to the meteorological condition of the time. They can be--you can

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overtime compare the two and try to rationalize what the model is showing as the worst case at your actual monitoring site and pro rate that against the levels that you have been detecting at your monitoring site and fine tune your interpretation of the model that way by saying "let's apply that ratio, that same ratio, to the ratio at the high concentration site that the model is indicating" and the Department of Environment has included that in their guidance that that can be done over time to look at that.

Q. I wonder if you can speak briefly about the significance of a single exceedance or an exceedance, or I suppose, a smaller or larger exceedance over a period of time? I wonder if you can explain to the Board, from your understanding, how the Department or how generally in the environmental science treats an exceedance which may appear to someone to be rare, maybe just a couple of hours a year, maybe that's many more hours a year? How do these fit on a scale?

A. Well, you have to realize that especially if it's at a monitoring site, if you're picking

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up a monitor site, that's one exceedance at a particular location. So you have--unless you have, you know, a monitoring set up that's very extensive and applies to all of the areas and different types of terrain features and the prevailing condition, meteorological condition at the time, you're not going to have any assurance that you're picking up the worst case. So the fact that a monitoring location has the--picks up an exceedance means that there may well be other areas that are showing exceedances as well that you're not detecting that at. As well, I guess, Newfoundland and Labrador, no different from other provinces, has adopted the 900 micrograms per cubic metre as the regulatory limit for one hour for sulphur dioxide, and they do have other levels for three hours and for 24 hour and for annual regulatory limits on those. Those are similar to the limits that are set in other provinces. But the Canadian Council of Ministers of Environment have identified as standard, I guess, for Canadian ambient air quality that they recommend and 900 is the maximum acceptable

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limit that they've recommended. But the maximum desirable limit that they've stipulated is 450. So it's half the 900. So essentially what they're saying is 900 is not what you should be bumping up against. 900 should be the level that shows you that you've got concern in general there. And so the 900, as regulatory limit, is not something that you strive to achieve. It's something that you strive to be below, I guess, as a--if you're intending to assure yourself that you're in compliance on a regular and routine basis.

Q. As you're aware, of course, Hydro has switched to one percent sulphur. What effect will this have on the sulphur dioxide emissions at Holyrood?

A. The percentage of sulphur content in fuel has a direct relationship to the emission rate. So where we have been burning two percent sulphur fuel, in essence moving to one percent sulphur fuel will half the emission rate. It's not necessarily completely half, because some of the sulphur does switch to sulphur trioxides as well, but in general, it's accepted that 95 to 98 percent is converted to

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sulphur dioxide and goes out the stack, unless there's capture technology associated with your facility. So it will have basically result in 50 percent reduction in the emission rate.

The emission rate is part of that calculation and one of the factors that goes into your dispersion modelling. It has a direct effect on the ground level concentration as a result of that. It's one of the factors. But the other factors can be influential, I guess, and you have to use those in interpreting. That you've had a halving of the emission rate doesn't necessarily mean that, in all cases, all meteorological conditions, your ground level concentration is going to be halved. You may not have modelled your worst case meteorological condition. If meteorological and climatic conditions are changing or if meteorological conditions are variable in an area, it depends to some extent on that, but you can accept that your actual emission rate has halved and that will have a direct effect on if you look back at your calculated ground

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level concentrations, you can basically say that those, you would think of were halved. If the same meteorological conditions were occurring at the time, they should be halved.

(9:45 a.m.)

Q. Mr. Ricketts, do you expect this switch to one percent fuel to enable Hydro to come within the compliant range as determined by the regulations?

A. We have, you know, reasonable expectation that it will. I can't give you an firm assurance that it will because the use of the modelling as a determinant for compliance, as I said, the influence of the meteorological conditions is always there. And so reducing--the modelling that we have done shows that the frequency of potential non-compliances is relatively low. So that means that your association of meteorological conditions with your emission rate at the time that gives you those ground level concentrations in excess. Although they spread over a significant area, the frequency at which that is occurring is low. So you have to put those two factors together, and we're not always emitting at the

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highest load obviously so the emission rate, if it's dropped by 50 percent because of the sulphur content and at the particular time that the meteorological conditions occur, you're also not generating at your highest load, then you may not. The model, when you model that process, it may not show non-compliance, but it's possible that it could. We have high hopes because of the--and expectations with the low frequency that we've seen it in the past, that it could lead to compliance as well.

Q. Thank you, Mr. Ricketts. Those are the only questions on direct, Chair.

CHAIRMAN:

Q. Thank you, Mr. Young. Mr. Hutchings, will you be undertaking to cross Mr. Ricketts?

HUTCHINGS, Q.C.:

Q. I will, Mr. Chair, and just for the information of the Board, Mr. Coxworthy will be dealing with the cross-examination of Mr. Haynes when he takes the stand.

CHAIRMAN:

Q. Thank you.

HUTCHINGS, Q.C.:

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Q. Good morning again, Mr. Ricketts.

A. Good morning.

Q. I just want to start off by getting a little bit better feel for your duties and functions as Manager of Environmental Services. I understand you've had that position in Hydro since 1995. Is that correct?

A. That's correct.

Q. And how would you describe your duties in that job?

A. We have a department that has four ecologist positions, two environmental coordinator positions and a manager's position. I'm responsible for the management of the section, so that one of the duties is the management of the personnel that are within it. Our mandate or role within the Corporation is multifunctional, I guess. We have responsibility for reporting, environmental performance reporting, both to the general public, to the Government agencies that require it, and internally within the company, we manage the reporting of environmental performance, collection of data, transfer of information that way. We have environmental

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auditing mandate requirements. We have a compliance monitoring or compliance auditing process and program within Newfoundland and Labrador Hydro, and we manage and implement that program. We have an environmental management system within Newfoundland and Labrador Hydro that's ISO 14001 registered and certified, and our department and myself as manager is responsible for management of the implementation of that throughout the corporation, although each individual that we have ourselves divided into four--sorry, six management areas and they have autonomous responsibility for implementation of the environmental management systems within their areas but we, our department is responsible for the coordination of the corporate environmental management system which provides guidance to all the others and direction to all the others.

We have responsibility for issues tracking, legislation--tracking legislation and emerging issues related to environmental concerns and advising our senior leadership team and the Board of areas that are coming to

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a fore in terms of environmental compliance requirements or things and issues that may affect our operations. We provide service to the line departments, our regulated business departments and our new business development departments related to addressing the environmental issues that arise within their operations and their activities. So we manage the identification of environmental protection requirements associated with them, environmental monitoring requirements associated with their activities. They may well, and normally we'll try to have them implement those particular elements of environmental protection or environmental monitoring, but we provide them with advice and assistance.

We have a responsibility for identifying and recommending to our senior leadership team, areas of environmental standards that the Corporation should adopt, that may be outside of the strict requirements of regulation and legislation but, for example, there are Federal guidelines that relate to our activities and our facilities and we would

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provide advice to our senior leadership team and our managers related to the adoption of those types of standards that are out there. I think that's the breadth, fair amount of the breadth of it.

Q. All right. So within the corporate structure, as a manager of environmental services, to whom do you report?

A. I report to the Vice-President of Human Resources and Organizational Effectiveness, Mr. Gerard McDonald.

Q. I think that's a new title, since I was here last.

A. That's right. We have reorganized.

Q. All right. So in terms of the role of your group as it relates to environmental legislation and regulation, in your pre-filed testimony you say you're a member of the team that's responsible for ensuring that so far as possible Hydro is compliant with applicable legislation and regulation. From what you've just said, I guess, your group may have a tendency to make recommendations that would actually go beyond that into additional measures beyond what are actually required by

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the legislation and regulations? Is that--am I taking that correctly from what you're saying?

A. On occasion, we may identify those areas that would be worthwhile for the Corporation to move in terms of a standard and recommend to the senior leadership team and managers related to the adoption of those. It's not our role to make that decision as to whether they should be adopted or not and there are other departments that have to be consulted related to the effect of those and the implementation of those.

Q. And I think, you know, just on a very broad and general level, we'd have to recognize that there are generally costs associated with those types of initiatives to the extent--well, even to get to the level of compliance with legislation and beyond that, there is still a cost associated with, you know, an even more better--an even better practice.

A. Yes, it is. You have to recognize, I guess, that the environmental management system that we implement as well has a factor of continual improvement associated with that, and so you

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do look for areas that you can improve your operations to minimize environmental impact overall and the effect in the long term that you will have, yes.

Q. But it's not possible, I guess, to operate in that area without realizing that everything you do in that respect is going to involve a cost?

A. Some of it is cost based. Well, I mean, most obvious thing is if you were recommending that, you know, we take an implementation of a new technology or something like that to reduce things. But a lot of it is procedurally based, how you do your business, how the people that are out there operating your facilities do things procedural wise to try and minimize the impact that you have. So you may set in place mechanisms to better record and report on actual activities to identify impacts that you may not have been aware of before or to control their activities and limit those impacts.

Q. Is it fair to say that the presentation that you're putting before the Board today is based upon the notion that the additional

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expenditures associated with this proposal are required in order to be compliant with the law?

A. Yes.

Q. Okay, all right. So we don't need to consider, for the purposes of these proceedings, whether or not you're going beyond what's necessary. All you're proposing is to get yourselves into compliance?

A. That's the intent of this action, yes.

Q. Yes, okay. Now the report that's been produced from SENES Consultants Limited and which uses this CALPUFF program and so on that you've been talking about is a report that was prepared in October of 2005. What similar reports to that have been produced historically with respect to Holyrood?

MS. NEWMAN:

Q. Just so we make sure everybody has that reference, is that IC--provided in response to IC-1?

HUTCHINGS, Q.C.:

Q. IC-1B.

MS. NEWMAN:

Q. IC-1B.

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HUTCHINGS, Q.C.:
Q. - is the document, the SENES consulting report. I think I'm saying--SENES is that -
A. Yes.
Q. - how to say it, okay.
A. We've produced annual modelling reports that we've submitted to the Department of Environment and Conservation since 1995. So we've been modelling since that time.
Q. And why has it been that you've been producing annual reports?
A. We've had--since the 1994, we've had in place a compliance agreement with the Department of Environment and Conservation and one of the stipulations or items in the agreement was that we would submit annually a report to them that identifies the volumetric calculation of the emissions of concern, sulphur dioxides, carbon monoxide, particulate matter, nitrogen oxides. So that's a calculation of the overall volume or quantity of these pollutants that we've emitted in annual in the year, and a modelling of the ground level concentration associated with the hourly outputs that have been calculated.

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Q. And you say it's your understanding that under the agreement you were required to produce annual modelling reports?
A. That's right.
Q. And were each of those essentially of the same type as the SENES report we have from October 2005?
A. The reports would be very similar. The modelling that was used--CALPUFF was only adopted, I think, two or three years ago. Before that, we used the AIRMODE modelling process which is similar but doesn't have the same capability to the land water interface and is not as broad range. CALPUFF is often used as well for greater area calculations, but AIRMODE is more localized area and recommended mostly.
Q. If I could ask you to look for a moment at the response to IC-3?
A. Mr. Chair, in recent years they've gone really electronic with the screens.
CHAIRMAN:
Q. Makes it a lot easier, I agree.
HUTCHINGS, Q.C.:
Q. We miss our friend from the Southern Shore who

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used to do this all for us at the other hearing. Okay, that is, as I understand it, the environmental agreement between the then Department of Environment and Lands, and Newfoundland Hydro, which is dated March of 1994, is that the agreement under which the reports that you mentioned were submitted?
A. Yes.
Q. Now as I'm looking at this agreement, there is provision there starting on page three with respect to air monitoring, and I take it that reference is to the actual monitoring sites that you discussed with Mr. Young, and not to the modelling, which is a different procedure?
A. That's right.
Q. So that section doesn't deal with this. So it's paragraph 11, is it, under Environmental Effects Monitoring, is that where the modelling comes in?
A. Eight.
Q. Paragraph eight, okay. So that's the requirement for an annual report?
A. Yes.
Q. And Item "E" of that is the -- under "E" the reference is to the results of dispersion and

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modelling for the flue gas constituents listed in "C" based on locally available meteorological data?
A. Yes.
Q. Okay. Now the local available meteorological data that's referred to, is that actually collected by Hydro?
A. We were collecting locally available meteorological. We have -- at one of our monitoring sites, we also have a meteorological data collection system there. We, in effect, had problems with that site and we did use the meteorological data for a couple of years, but we haven't been able to use it for the last couple of years. We've had to use alternate meteorological data.
Q. Right. Why was it that you were not able to use that data?
A. It's a quality control issue. The equipment itself has a life to it and requires, as with the monitoring, particular attention and maintenance and calibration, and some of the equipment fell out of the requirements for that, so we're in the process of reconstituting that meteorological station and

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getting it up and running again.
Q. Actually, since this application has been filed, a certificate of approval has been issued in respect of the operation by the Department of Environment and Conservation, and that's attached to the pre-filed evidence at Tab 3, I believe. Do you have that?
A. Yes.
Q. I take it you're familiar with this document, this certificate of approval?
A. Yes, I am.
Q. Can you tell us what the requirements for dispersion modelling are under this document?
A. It refers to the Guidance Document that they have issued related to determination of compliance and modelling. It also -- it stipulates the requirement for stack testing every two years and modelling to be completed associated with that stack testing. So the modelling requirement now has been moved from one year to two years.
Q. Okay. If you look at paragraph 76 of Appendix "A" to the approval, as I read that first sentence in that paragraph, it appears that the testing is actually every four years if

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you're in compliance, is that correct?
A. Yes.
Q. And if you're not in compliance, then the testing is every two years?
A. That's right.
(10:05 a.m.)
Q. So moving from the Environmental Agreement which we looked at previously, the Department of Environment requirements for this dispersal testing have actually been cut back significantly, is that correct?
A. Yes.
Q. So instead of every year, if you're effecting compliance, you need to only do it every four years?
A. That's right.
Q. And if you're not in compliance, you need to do it every two years?
A. That's right.
Q. Can you give us any idea as to what the cost would be for a study of this nature, the modelling study to produce the report such as SENES has given us here?
A. Generally, if you've got the model information, the requirements to be put into

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it, it can be done for fifteen to twenty thousand dollars.
Q. So that's been an annual expense since 1995, roughly in that area?
A. Yes, and some years it's been more $25,000.00, depending on the range of data requirements to go into the model.
Q. The conditions that we find now in the current certificate of approval in Appendix "A", were these subject of any negotiation between yourselves and the Department of Environment?
A. We did have a number of discussions with them related to the conditions in the certificate of approval, yes.
Q. Okay. Would that be your responsibility as Manager of Environmental Services?
A. Partly. It also involved the facility manager and his environmental performance engineer as well.
Q. When you say "the facility manager", you mean the Holyrood facility manager?
A. The Holyrood facility manager.
Q. Was there a big issue between Hydro and the Department of Environment concerning the SO2 emissions during the negotiations leading up

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to this certificate of approval?
A. In terms of the dispersion modelling results, it was raised as a concern by the Department of Environment and Conservation, yes. It was part of the discussions. I can't say it was any greater of concern than other factors or other components of the agreement.
Q. Did you have to fight with the department to get this testing down to every four years?
A. We didn't have to fight with them to do that. We indicated to them at the time that we -- they didn't have a document or in their regulations stipulations of related to that. So there was no mechanism for us or any other party within the province to determine strictly how you determined your compliance on that basis. They do have a Guidance Document now that came out last fall that stipulates that, but we had been in discussions with them related to the certificate of approval prior to that, and we did point out there was no way for us to determine whether we were compliant or not aside from we had results from the modelling that showed non-compliance, but was that strictly the mechanism for determining it

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or other mechanisms.
Q. So at the time that you were negotiating the terms for the certificate of approval, there was no clear rule, if you will, as to when you were or were not in compliance?
A. We felt there wasn't. The Department of Environment felt, you know, if they determined that it was non-compliant on the basis of the modelling, that they could say that and that was it, I guess, but we pointed out that there was no published clear articulation of that.
Q. And I take it -- in your position you already mentioned that you monitor legislation, regulations, and so on. So you would be pretty familiar with the Air Pollution Control Regulations and the other legislation upon which the Department of Environment acts?
A. Yes.
Q. Do you have a concern as of today that there is any particular provision within that legislation or regulation under which Hydro could actually be charged with an offence for what it's doing in Holyrood?
A. Yes, yeah.
Q. What do you think would be any potential

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charge?
A. Well, the -- well, today, I guess, we've got the one percent sulphur fuel, so I have much less concern, but when we were, I guess, during negotiation when we were burning two percent sulphur fuel with the results of the modelling and other factors, I guess, that were there in terms of the results from our monitoring locations, some input from -- response from community members who indicated that they were feeling concerned and had indications of high sulphur content in their area, some indication from previous studies that we had done that there were effects on vegetation, localized, but in a local area that could be associated with high sulphur content in the air. I would have concern at that level that they could interpret our emissions to be non-compliant and could take action against us to either require us to input a particular type of control, or to stop the plant from -- putting a stop order, or make a charge, I guess, under that legislation.
Q. Okay. I guess my question was directed toward

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the last thing you mentioned which was a charge. I mean, what did you fear you might be charged with?
A. Well, a charge, I guess, the most likely scenario would have been a stop order related to your emissions rather than a charge. I have to say that.
Q. So you had no real concern that you were going to be charged with any violation of the Act?
A. Not without us refusing some further action, yes.
Q. Oh, sure, I mean, if you refused to comply with an order or something like that, obviously, I mean, there are very specific charges associated with that type of thing.
A. Yes.
Q. But from where you stood even before you started burning one percent sulphur fuel, you didn't have any real concern that you were going to be charged with any quasi criminal offence as a result of what was happening in Holyrood?
A. I felt from our discussions that we would more likely be required to take some action to reduce our emissions before they would move to

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that, yes.
Q. So your concern was some sort of administrative order or an amendment to your operating certificate or something of that nature?
A. Most likely, yeah, that would be the most likely.
Q. I see. I guess I'm trying to get to the impetus for making this application. Of course, this was in January of this year that the application was filed, which was before the certificate of approval was granted, correct?
A. Yes.
Q. So you were governed at that stage by the Environmental Agreement that we looked at earlier?
A. Okay, yes.
Q. I mean, are we in agreement on that?
A. Yes.
Q. Did you feel that you were in any sense in violation of the Environmental Agreement in January of 2006?
A. No, I think we were compliant with the conditions of the agreement in that we were

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submitting our reports and our monitoring data, those requirements specifically related to the agreement. I guess, we did have concern that we were potentially not compliant with the regulatory limits for ground level concentrations in the ambient air.

Q. If we can look again at the Environmental Agreement for a moment, and that's in response, as I say, to IC 3, in reviewing the document, obviously, Hydro is agreeing to do a number of things here in terms of investigating, reporting, operating, monitoring sites, conducting feasibility studies, and so on. Was the Department of Environment agreeing, to your understanding, to do anything in connection with this document?

A. You mean would they have had any action requirements coming out of the agreement themselves?

Q. Were they agreeing to do anything or not do anything? I mean, what was the quid pro quo for the agreement?

A. No. My recall to the basis of the agreement in 1994 was that the monitoring network had

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changed. That was rationale for them to require an agreement to be signed so that that information that -- that new set up for the monitoring network was accepted and the information coming out of that was stipulated in the -- the requirement for reporting that was stipulated in the agreement. The other things that they felt were potentially concerned that they were addressing requirements for us to submit information so that they could track those areas.

Q. Was there a predecessor to this agreement, or is this the only environmental agreement that existed between Hydro and the Department?

A. That would be the only -- well, that's not the only agreement associated. As well around the same time, there was an agreement related to our waste water discharges. We did also put in place a new waste water treatment system at the Holyrood plant and there was a separate agreement that related to our waste water discharges.

Q. That one is actually referenced in the 1994 agreement, okay, but there was no general environmental agreement other than this one?

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A. That's right.

(10:20 a.m.)

Q. Was it your understanding that so long as Hydro complied with the terms of this agreement, that the Department would regard it as being in compliance with the environmental standards for the province?

A. Yeah, I guess, unless otherwise advised by them.

Q. There is a provision in this agreement for termination on twelve months notice. Did either party ever give notice to terminate the agreement?

A. No.

Q. Just from -- I'm not asking you for a legal opinion on the subject, but from your understanding of it, has this agreement now been superseded by the certificate of approval?

A. That's my understanding.

Q. So you're not going to bother to look at this agreement any more now, you're going to operate under the certificate of approval?

A. That's right.

Q. I take it that since the certificate of

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approval has been granted, there hasn't been any other modelling data generated or any other studies done relative to sulphur dioxide levels, have there?

A. That's right, other than the ongoing monitoring. We do produce the monthly monitoring results and submit a report on monthly monitoring to the Department of Environment.

Q. Okay. Can I ask you for a moment to look at the response to CA 5. This was a question put to Hydro by the consumer advocate in connection with the suggestion that there was reason to believe on the part of the Minister that Hydro was not in compliance, and asked for provision of correspondence to indicate when the direction was made and so on. The answer is to say that the Director of Pollution Prevention Division of the Department confirmed and explained the Department's position in the matter by a letter dated February 9th, a copy of which was attached. Now February 9th, obviously, of 2006, postdates the application itself. Was there anything in writing from the Department

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prior to February 9th or prior to the date of the application which indicated that the Minister felt there was reason to believe that Hydro was not in compliance?
A. The only thing that I'm aware of would have been the cover letter with the actual certificate of approval which was dated, I think, February 2nd, so it was relatively close to that, which also made that statement.
Q. That again would have been after this application was filed?
A. Yes.
Q. Okay. So as regards the Department's concern of Hydro not being in compliance, up until the date that this application was filed, they had not put that concern in writing to Hydro, is that correct?
A. Not that I'm aware of.
Q. Now if I am reading the information correctly, if I can get you to look at IC 4, the response to IC 4. This is in response to a question about the calculation of the estimated rate increases. As opposed to looking at the percentages at the bottom, I just want to look at line four in the calculations there which

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show the incremental fuel cost.
A. Okay.
Q. And the incremental fuel cost stated in the application or used for the purpose of the calculation in the application is 7.9, almost eight million dollars, and that's an annual cost, right? It's what the differential was predicted to be for going to one percent sulphur fuel?
A. That's right, as opposed to two percent.
Q. So at the time of filing this application in January, Hydro was proposing an extra expense of eight million dollars a year to solve the problem that the Department of Environment hadn't even bothered to write you a letter about, am I understanding that correctly?
A. They hadn't indicated in writing to us, that's right, as far as I'm aware.
Q. I want to discuss with you the dispersion modelling report and that system, and I found your discussion useful this morning as it related to this procedure versus the monitoring procedures that you discussed with Mr. Young. The ambient air monitoring program produces actual results, does it not, of

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actual analysis of the air at those particular locations, is that correct?
A. It does.
Q. So we know that those are, in fact, factual?
A. For that location, yes.
Q. For that location at that particular point in time, we know that the concentration of sulphur dioxide was "x".
A. That's right.
Q. Am I correct in saying that as regards the SENES Report, other than it's references to the actual monitoring results, all of the numbers in here are, in fact, predictions?
A. Calculations.
Q. And they refer to them generally themselves, I think, as predictions, the predicted value would be "x" or "y" as the case may be, is that correct?
A. I believe so.
Q. Maybe I'll get you to look at page 4-5 of the SENES Report.
A. Yes, I have that.
Q. The table at the top there talks about the maximum predicted hourly averages, and in the second line below the table, this is one of

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the places, I guess, where they say the SO_2 hourly AAQS is predicted to be exceeded at least once in 2004?
A. That's right.
Q. And that's what this program produces is a series of predictions as to not so much what the result is going to be, but what the result would have been had someone been there and tested it at that particular point in time, is that correct?
A. Yes, it's a prediction in that it's a calculation of the factors that have been input into the model. That's the outcome calculation for that particular point, yes.
Q. And I think you mentioned this morning that the 900 micrograms per cubic metre was, in the view of the Canadian Council of Ministers, a maximum, and the target should really be around 450?
A. The maximum desirable is 450.
Q. Maximum desirable is 450?
A. Yes.
Q. And if I'm reading this table correctly, 99 percent of the time, even using this model, the concentration in the Holyrood area is 313?

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A. That's right.
Q. So well below the maximum that is desirable?
A. That's right.
Q. So at best we're talking about something less than one percent of the time when there might be a problem?
A. One percent of the hourly, yeah. It's not, I guess -- it's not the area, it's the hourly.
Q. Yes, I understand. It's time rather than space.
A. That's right.
Q. I did have a little confusion in my mind when you were talking about how the model worked in the sense that you were saying the model was run for each hour of each day. Is there, in fact, an actual input for the emissions themselves for each hour of each day?
A. Yes. It's based on the fuel consumption record for each hour, but it is extrapolated from the test, the stack test which is done at a rated output, and what the modellers have done is extrapolated a straight line extrapolation from that point to what the emission rate would be on any output time and that's determined based on the fuel

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consumption of that hour. So if the test was at 150 megawatts for a unit, each unit, then that is the test point that we have and they extrapolate down. If the particular hour the unit was only running at 100 megawatts, then the emission rate would be extrapolated from that 150 output time to reduce the emission rate based on the lesser fuel consumption.
Q. When I looked at Appendix "B" to the SENES Report, which is the executive summary, the 2005 source testing report, which was done by Air Testing Services Inc, the second page of that is the executive summary. The page number is a small roman numeral II at the bottom of the page headed executive summary. Do you have that?
A. Yes.
Q. That's in Appendix "B" of the SENES Report. They talk there about the testing that they have done, and they said the tests were completed between April 9th and April 30th, 2005?
A. Yes.
Q. So the actual numbers that were produced for emissions all relate to whatever tests were

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done between those two dates?
A. That's right.
Q. And do you know on how many actual days the tests were done?
A. There were three tests for each unit, for each stack, and I don't recall which particular days, but for each stack there would have been three tests and the emission rate that's chosen then is the average of those three.
Q. And the tests were done at a time that units were at full production, is that correct?
A. They have to be at least 85 percent of full production. The Department of Environment and Conservation has a Guidance Document that guides the acceptable stack testing procedure, and you have to be at least 85 percent of your maximum load.
Q. And if I'm understanding your explanation and response to my earlier question, the numbers for emissions produced by those actual tests, which is the average of three tests for each of three stacks, is then prorated on a straight line basis for each hour of the year depending upon the level of production in that particular hour, is that correct?

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A. For each stack, yes.
Q. And that's just a straight line proration. If it's on at 50 percent of the day, it was -- of the level it was on the day the test was done, then it's one half?
A. That's right.
Q. Assumed to be, okay. Appendix "E" of the SENES Report again which has the top 50 predicted hourly concentrations.
A. Yes.
Q. Just looking at Table E.1 which is on page E-1, these are the top 50 predicted hourly SO_2 concentrations. Do I take it that under the column headed "Month" that 11 would indicate the month of November?
A. Yes.
Q. And nine would be September and so on?
A. Yes.
Q. The day "6", do you know what that represents?
A. That's the day of the month, the 6th day of November.
Q. Okay. The hour would be, I presume, on the 24 hour clock?
A. That's right.
Q. That hour of the day?

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A. Yes.
Q. Do you see any significance to the fact that just about all of these 50 top predicted hourly concentrations occur on one of two days, or two or three days in November and September?
A. As I indicated, I guess, the frequency of the maximum ground level concentrations exceeding the regulatory limit by this modelling was predicted to be relatively low, a low frequency chance, and that's why we would have the expectation that the movement to one percent sulphur fuel would have the opportunity of moving us into compliance with that. You have to get the meteorological condition at the time that you're outputting the emission rate, that's the concern, and the meteorological condition that would go together with that. So it's a limited number of meteorological conditions in this one year, in this particular year, that resulted on those exceedances.
Q. So what you're saying is that a particular level of output during a specific weather condition is what produces these higher

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readings or higher predicted readings?
A. In general, that and it could be at times associated with the terrain features as well. We found that in previous modelling that terrain is a major component of the -- a factor involved at times as well.
Q. Is there anything on this table which would indicate to us where these concentrations were predicted to have occurred?
A. Yes, the "x" and "y" columns, those are the coordinates for the location.
Q. And those, if I'm reading this correctly, are almost always at precisely or very close to the same point?
A. Very close to, within a couple of hundred metres one way or the other, I guess, of similar points there. Again back in the previous table that you referred to, it determines a 2.2 square kilometre area that these exceedances occur over.
Q. Yes. Do you know where physically that area is?
A. I haven't gotten the exact location of those coordinates. I haven't done that. It's generally to the east and northeast of the

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plant close to the boundary, the plant property itself, within 500 metres to a kilometre of the plant property itself.
Q. Okay. In your direct testimony you compared the environmental monitoring and modelling done here with that done in other Atlantic provinces, and if I understood your answer correctly, the monitoring that Hydro does is probably more extensive than most others, whereas the modelling may not be quite as sophisticated as some others, is that fair?
A. I accept what you're saying on the monitoring side. I'm not aware of any as extensive a monitoring set up. On the modelling, it's just -- I guess, what I was trying to portray there is that in different areas, different factors are more important. Although this CALPUFF modelling is a USEPA recommended modelling accepted by the Department of Environment and Conservation, now accepted by most of the provinces across Canada and stipulated to be used by provinces across Canada for this type of purpose, in other areas there may be other factors that also have to be drawn into the modelling to really

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firm up your results and be able to determine your results. In our case, we don't have other major factors other than the plant itself, the Holyrood generating station itself to be considered there.
Q. So as regards the level of sophistication, shall we say, of the modelling, we're probably on a par with the Atlantic region?
A. Yes.
Q. Because we take into account what we need to take into account. There's is more complicated because they have other things to take into account?
A. Yes.
Q. But as regards to monitoring, ours is, in fact, more extensive than anything that sits in the Atlantic provinces?
A. That I'm aware of, yes.
Q. If we could look then to page 4-7 of the SENES Report, there is there in Table 4 a comparison of predicted and monitored SO2 concentrations. Would you agree with me that the purpose of the model is to predict what the actual concentration would be at a particular point in time and space if you could monitor it

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there?
A. Yes.
Q. So the table -- let's look first at the monitoring station at Lawrence Pond. There is a predicted figure for Lawrence Pond, maximum one hour, of 1481, I take it, micrograms per cubic metre, correct?
A. That's right.
Q. And the actual observed figure, the one that was really measured by the monitoring station at that time was 299?
A. That's right.
Q. The former being --
A. Sorry, not necessarily observed at that time. This was the maximum observed in that year.
Q. In that year?
A. Yes.
Q. So if that wasn't at the same time, in fact, the observed figure was lower?
A. That's correct.
Q. So there is at least a discrepancy of almost 1200 micrograms per cubic metre at that point, correct?
A. Yes.
Q. And maybe more?

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A. For a particular point in time, yes.
Q. Equally then with respect to the Indian Pond monitoring station, there is a discrepancy there of at least 1600 and odd, 1681, I think, micrograms per cubic metre from the highest observed figure to what the model predicts, correct?
A. Yes.
Q. Have you had any discussions with the Department of Environment around that discrepancy or those discrepancies?
A. We've had some discussions related to the results of the modelling, in general, yes, and a little bit on the specifics of it as well. The conclusions by the modellers there, I guess, that were drawn from these things was that in the prevalent -- the monitoring sites in the prevalent wind direction, down wind of the prevalent wind direction, the model was overpredicting, but in the area of non-prevalent wind conditions to the south of the site, the model was underpredicting. The Butter Pot and Green Acres site, it underpredicted the maximums that were achieve there, but it did overpredict for the

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prevalent down wind sites.
Q. The underprediction is on a totally different level of magnitude than the overprediction, isn't it?
A. Yes.
Q. I mean, 272, 324, I mean, that is probably within a margin of error of some of the calibration and 497 and 328 is not that big a difference either, but the overpredictions are huge, are they not? They're almost to the level of four times the actual.
A. They are larger, much larger. They are much larger, yeah.
Q. I mean, have you confronted the Department of Environment with the notion that this may, in fact, be some difficulty with the model?
A. We have suggested that the model -- the consultants did, that the model is overpredicting in these locations. Their response has been that the model shows non-compliance, so it's non-compliant. For those particular locations, they feel the model is showing reasonable results in comparison to the monitor results.
Q. So the Department of Environment is not

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convinced by reason of actual factual measurements that their model predictor, which is only out by about three or four times, is perhaps questionable?
A. They've included a provision for over time in their Guidance Document to be able to use a compliance -- sorry, an ambient air monitoring network to rate or prorate the results from the modelling output. They have approved that. So they've conceived of that as a concept or they've approved of that as a concept that could be used, but in a specific case for one year of modelling exercise, they don't see it as a direct correlation that can be made.
(10:45 a.m.)
Q. So from the point of view of the Manager of Environmental Services for Hydro, do you feel, given these discrepancies in the data, that it would be reasonable for the Department of Environment to make a corrective order against Hydro based upon the results of this dispersion modelling?
A. I guess, the weight of evidence overall would lead them to believe that non-compliances may

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be occurring out there that aren't being detected by our monitoring setup, and that, I would think, includes the evidence from other studies that have been done in terms of the effect on vegetation or the discoloration of vegetation, the input from the community related to the general perception of the concentration of sulphur dioxide in the areas a times, as well as the modelling and the monitoring. My impression from them is that they are including all of those factors in their deliberations on this and their thinking on it.

Q. In terms of the response that you've been getting from the communities, has that been related specifically to sulphur or is that more related to spotting on cars, and black spots on clotheslines, that type of thing?

A. The majority are related to the dust fall events that occur, but we have been getting also concerns related to the sulphur odour in the area and their perception of where the flume from the plant is coming to ground and impacting.

Q. Do you have a record which identifies those

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complaints, as to exactly what the complaint was about?

A. The complaints that are formally received at the plant we do have a record of. We have also had community meetings in the area where some complaints have been raised and they have been documented in the records of the community meetings, but they are less specific in terms of the time and the occurrence.

Q. So there's nobody out there measuring sulphur dioxide in the air other than yourselves, I take it?

A. No.

Q. To your knowledge, has the Department of Environment ever made an order against Hydro to change any of its operations for environmental reasons?

A. An order, you mean, an official order under the Act?

Q. Yes.

A. No.

Q. And have you, as Manager of Environmental Services, had a meeting within the past two years with officials of the Department of Environment that dealt with nothing other than

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sulphur dioxide emissions?

A. With other items?

Q. No, that dealt with nothing else other than sulphur dioxide?

A. Oh, sorry, nothing other than sulphur dioxide, no.

Q. Okay. So it was mentioned during the course of the discussions about the certificate of approval, sulphur dioxide?

A. Yes, it has been one of the factors.

Q. And the result was that you were relieved from doing the level of monitoring and reporting that you had done previously? You're down now to two or four years dispersal modelling rather than every year, correct?

A. They've set that as a general standard, not just for Hydro, but as a general standard throughout now, but that is also included in our specific certificate of approval.

Q. Yes, yeah. So that's a reduction in what was the prior requirement?

A. That's right.

Q. So other than what you've referred to and what you say was confirmed in a letter of Mr. Maddocks, there hasn't been any other

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communication from the Department of Environment indicating any impending action against Hydro relative to the sulphur dioxide problem, is there?

A. Any written communication, no. The discussions around the certificate of approval did raise that and address that, but nothing other than that, no.

Q. And at the end of the day, it is the Department of Environment that sets those conditions in the approval, correct? You negotiate with them --

A. Yes.

Q. But at the end of the day, it's up to them, they put in what they're satisfied with?

A. That's right.

Q. Has Hydro ever been assessed an administrative penalty for opacity exceedances?

A. No.

Q. Just so we can clarify the extent of your involvement, sir, I take it decisions as to how the rate effects of the decision to go to one percent sulphur fuel and whether or not the RSP is the appropriate way of doing that, is not really any concern of your division, is

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it?
A. We are not the ones who look at and review the cost, no.
Q. So your involvement would be primarily to identify the problem that requires something to be done and potentially suggest some solutions, is that fair?
A. We'd be participating in the review of the alternatives and the solutions to see whether -- although we would have knowledge of costs, that's not our main area of expertise, we would have input into the discussions surrounding the viability of the alternative in terms of being able to effect the change that we're looking at.
Q. Mr. Maddocks in his letter indicates that the generating station would be deemed non-complaint until such time as the modelling or approved compliance monitoring demonstrates compliance. Has there been anything either in writing or otherwise from the Department to indicate that there will be any other consequence to this non-compliance which they perceive?
A. No. My indication from them is that they're

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requiring or requesting Hydro to take action or an expectation that Hydro will -- they have an expectation that Hydro will take action to address the non-compliance.
Q. How was that conveyed to you?
A. In the discussions leading up to the certificate of approval. As I say, the discussions were on the expectation that Hydro would take action.
Q. Do you agree with the Department that the emissions are today currently in excess of the regulated standards?
A. Using the modelling, it's clear that the emissions have the potential to be in non-compliance with the regulations, and if that's the determining factor, then I'd have to agree with that. The monitoring network hasn't shown that, but there are other evidential areas that would indicate that potential is there as well. So in terms of the determination of it, that's the Department of Environment responsibility. From my own perspective, I hold more to monitoring, but you need an extensive monitoring network to be able to assure yourself that you're getting

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into the areas. On a scientific basis, you do use a sampling technique for any determination of levels. So you have to use the appropriate sampling technique with an appropriate level of sampling to make a statistical determination of things, for the most part. It's difficult to do in an environment where you have a variable -- such variable conditions as Holyrood does, and it's difficult to set up your monitoring locations in the points where if you were intending to choose to determine the maximum ground level concentrations, it's difficult to do that. So you have to accept that you may be overall missing some opportunities to determine the maximums that are in the ambient air, but whether that level that you're missing is the same and true as the modelling shows, I'm not sure that the -- you have to work a little more and over more time, I think, to be able to make that kind of a judgment.
Q. Would you agree with me that putting the Department's case at its highest and best, there might be exceedances?
A. I guess the -- you know, the Department has

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specified in the Guidance Document how you determine exceedances, and going on that, they're true in saying there are exceedances.
Q. They are true in saying that the model as it was applied in 2005 predicted exceedances?
A. Yes, and their Guidance Document for their interpretation of how you determine compliance relies on that.
Q. And would you agree with me that reasonable people could disagree on the interpretation of the results of those modelling -- the dispersion modelling?
A. The dispersion modelling results are the dispersion modelling results. You know, it's a USEPA approved modelling methodology, it's been accepted across Canada, so I -- you know, I'm not able to question the viability of the model itself, and we've input the factors that are required into the model to be able to make the predictions. This is a common usage of the model to make that kind of prediction and there comes a conclusion resulting from it.
Q. That's the purpose for which this model was developed, correct?
A. That's right.

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Q. But the model does have to be tweaked for each individual situation, doesn't it?
A. Yes.
Q. Okay, and there can be anomalies show up? I mean, SENES themselves said there was a bug in the thing with respect to a particular parameter, was there not, the downwash calculations?
A. Yes.
Q. So, I mean, there are bugs, the thing is not foolproof?
A. The thing is not foolproof.
Q. And we know -- we know that it has predicted results that are three or four times higher than actual results in some cases?
A. Yes, it shows that.

HUTCHINGS, Q.C.

Q. Okay. I'm getting into a slightly different area now. I won't be too much longer, Mr. Chair, but maybe this would be a good time to take a break.

THE CHAIR:

Q. I think so, yeah. Thank you, Mr. Hutchings. Mr. Ricketts, we'll reconvene at 11:30.

(RECESS)

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(11:30 a.m.)

CHAIRMAN:

Q. Any items, Ms. Newman, before we get started?

MS. NEWMAN:

Q. Not that I'm aware of, Mr. Chairman.

CHAIRMAN:

Q. It looks like, unless somebody can indicate to the contrary, we could be finished by 1:30, I guess, generally. We'll see, anyway. We'll play it by air and see where we are.

MR. FRANK RICKETTS - CROSS-EXAMINATION BY HUTCHINGS, Q.C.

Q. Mr. Ricketts, there is a suggestion originally that the move to one percent sulphur fuel might perhaps be staged over a period of time. Is that a suggestion that came from within your group?
A. There was a team of people, I guess, that worked on the options and that was discussed in the team. It wasn't -- I can't particularly recall who initiated it, but it was discussed in the team.
Q. Okay. What was the thinking behind that?
A. At the time that we originally did our work on the options and the cost related to the options, it was felt, I think, that the stage

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approach would -- the differential rate between the one percent sulphur fuel and the two percent sulphur fuel was forecast to be significant, and that that would be a mechanism for staging in the cost associated with coming to the compliance item of one percent, or what we felt was one percent.
Q. Uh-hm. Was there a time then when Hydro made a specific decision to the effect that the staging of the change would not be a sufficient step to take?
A. I think that's probably -- because the decision to do that was more at the senior level at Hydro, I think that would be a more appropriate question for Mr. Haynes.

MR. YOUNG:

Q. Thanks, Mr. Ricketts. I was going to suggest that Mr. Haynes might be the person who's got better evidence on that point.

HUTCHINGS, Q.C.

Q. Okay, we can certain reserve that for Mr. Haynes. Another subject that may or may not be within an area that you can address, sir, but are you familiar generally with the fuel storage arrangements and the controls for the

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delivery of fuel from storage to the actual generators at Holyrood?
A. In general, yes.
Q. And how many storage tanks are on the site?
A. Four.
Q. Four?
A. Yes.
Q. Okay, and from a technical point of view, can the operators designate a particular tank to supply a particular generator at any given time?
A. My understanding is yes, that, you know, depending on the equipment, maintenance and that, that you can choose to draw from any particular tank at a particular time. I'm not familiar with how they determine which tank they're going to draw from at any particular time related to what issues that they consider in doing that, but I believe that you can.

MR. YOUNG:

Q. Again, Mr. Hutchings, that might be something you'll follow up better with Mr. Haynes because he's probably more closer to that.

HUTCHINGS, Q.C.

Q. Yeah, I was thinking along those lines, but I

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just wanted to make sure that we weren't skipping the witness who could answer, but I presume, sir, that Mr. Haynes would have more engineering information --

A. Yes.

Q. Relative to that exact arrangement. Again with respect to the actual deliveries of one percent sulphur fuel that Hydro has already received, do you know if they have been segregated in particular tanks or have they been mixed in with other fuels?

A. My understanding is that they were individual tanks, they were segregated into individual tanks, and the two percent sulphur fuel that was in the tanks was drawn down -- has been drawn and we're actually burning one percent sulphur fuel now.

Q. Okay. Just going back for a moment to the dispersion modelling results, can you describe for us in layman's terms what particular types of weather conditions are likely to result in higher predicted levels of sodium dioxide?

A. Sulphur dioxide.

Q. Sulphur dioxide, sorry.

A. Yeah. Well, the latest modelling set and the

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previous one to that indicated a relatively neutral leaning on the unstable atmospheric conditions and moderate to high wind. So what you would be getting is a turbulence in the atmosphere, a reasonable degree of turbulence in the atmosphere, which has the capability of both up and down currents in the atmosphere, and the wind would be shearing off the plume and acting it -- bringing it closer, not allowing it to reach a significant height in the atmosphere, shearing it, and bringing the flume down to ground relatively close.

Q. So there's no significant effect that's been observed, shall we say, rain or fog or anything like that, it's basically wind conditions?

A. The majority is wind conditions, that's right, wind and atmospheric stability are the main factors. In some of the previous modelling that we have done, there has been indication of low wind conditions and high stable atmospheric conditions resulting in the plume just slowly wafting back onto the high terrain features considerably more distant from the plant than you would get if you had an

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unstable condition, and those had resulted in some highs in the past in our modelling output, but what the latest year of modelling had shown was the opposite condition.

Q. So you say as regards the opposite condition, you mean a more unstable air condition?

A. That's right, yeah.

Q. So, I mean, are these types of conditions predictable at all over time?

A. Not really because meteorological conditions are variable. The -- normally you would look to a five year or greater meteorological data set to model over, and there's -- it's normally accepted, I guess, that if you model over a five year data set of meteorological conditions, you're getting reasonable expectation of the worse case meteorological conditions, but you would also normally extend that, continue on with your modelling periodically to confirm that.

Q. Did I understand your earlier remark to say that in the last set of modelling that was done, you had a year with generally more unstable air conditions than had been observed in previous years?

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A. Just that in previous modelling that we've done, the maximum ground level concentrations were found to be associated with more stable atmospheric conditions with lower wind speeds. In this past year, the maximum ground level concentrations were associated with more unstable atmospheric conditions, higher wind speeds.

Q. And was there a discernable relationship between the highest concentrations and the level of output at the generating station?

A. As we indicated before, the higher concentrations were in November of the past year, and that would have been, you know, not the highest output conditions, I guess, but individual unit or two may have been on higher, but you try to manage your unit output to get the maximum output at a particular time because of efficiency that you get out of that. So the units would have been -- that were on would have been maximum, but November, depending on the particular hour, the particular day, I can't say whether that was whether he had three units on or not, I didn't go back to look at that particular situation.

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Q. Are specific events such as maintenance incidents or soot blowing, those types of things, input into the model?
A. No. The range -- for sulphur dioxide, the soot blowing factor is not a significant factor in terms of the sulphur dioxide emissions. It is more of a factor in terms of the particulate emissions.
Q. Yes.
A. But the operation of the plant is modelled on the basis of output only, the particular megawatt output or fuel consumption emission rate determined from our test, stack test.
Q. So the model is going to reflect whatever happened to be going on during those days upon which the testing was done in April from the stacks, is that correct?
A. The emission rate was -- yeah, that's the emission rate that is the lead emission rate for the calculation of all the other emission rates that are determined for the hourly basis, yeah.
Q. So do we know whether or not there were any unusual conditions affecting the emissions during that time or not?

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A. No. As I say, the rate of output will have been at a high load at the time, so it would have been capable of operating the unit at one of its higher loads, so the unit should be operating effectively and efficiently in order to be able to do that. So during the stack test period itself, as long as you're at that high load, for the most part you're assuming that things are working relatively well.
Q. Okay. The results that have been adduced were based upon the actual operations during what period?
A. 2004.
Q. It was the calendar year 2004?
A. This particular report was calendar year 2004, yes.
Q. Okay. Has there been any effort to rerun the model with the inputs being modified to reflect a lower level of production as a result of decreases in load on the hydro system generally?
A. Since this --
Q. Yes.
A. No.
Q. Is it possible to predict within a qualitative

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sense what those results might show?
A. No. For a modelling exercise, you'd have to input the particular output conditions, emission rates, and emission gas flow and temperature associated with a meteorological condition of the time to be able to give you any -- you can't really estimate that. You've got to run it through the model and see what the output is.
Q. But generally speaking, the emissions overall will reduce with less fuel being burned?
A. The emission rate will reduce, yes. The grams per second emission rate is lower with less fuel consumed because the sulphur content is set for the fuel so the quantity of fuel burned is less.
Q. And whether or not that will impact the highest measured prediction is going to depend on what output happens to be at a particular time and the meteorological emissions and so on at that particular moment?
A. That's right.
Q. Have you had any discussions with the Department of Environment since receiving the letter in February of 2006 as to what steps

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Hydro should be considering to deal with the Department's allegation of non-compliance?
A. No. I guess, the -- the straight answer is no. The certificate of approval stipulates what you have to do, I guess, if you're determined to be non-complaint, what steps you have to take to then move towards improving compliance if you take action.
Q. I'd like to refer you to the reply to CA 18, and specifically the document at CA 18A, which is the Guidance Document entitled "Determination of Compliance with the Ambient Air Quality Standards".
A. Yes.
Q. At page ten of that document in paragraph nine there's reference to the potential for a compliance agreement. Are you familiar with that concept?
A. Yes.
Q. So this is the document that presumably provides guidance for the Department in enforcing the ambient air quality standards, and it is a document that is adopted in your certificate of approval, correct?
A. Yes.

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Q. Paragraph nine provides that if non-compliance is determined, the facility may elect to enter into a compliance agreement with the Department for the purposes of attaining compliance within a reasonable time frame, or establishing a compliant ambient monitoring network. Have you directed any thought toward what might be a reasonable time frame to address the allegations of non-compliance that the Department has made?
A. My understanding of the requirements of the compliance agreement would be a time frame to institute action to bring yourself into compliance.
Q. Yes.
A. And on that basis the -- this also stipulates -- the Guidance Document stipulates a two year time frame for determination of compliance again to -- once you're non-compliant and you institute action, you still have the two years stack test modelling to determine compliance.
Q. You're talking about the paragraph "B" reference to establishing a monitoring network, right?
A. Even outside of that, the stipulation of how

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you again test by modelling -- this is a test by compliance monitoring of compliance, but for modelling, it's again the two year stack tests and modelling to reconfirm.
Q. But I think we have two options here in paragraph nine?
A. Yes.
Q. Option "A" is to enter into a compliance agreement for the purposes of obtaining compliance within a reasonable time frame, okay. That doesn't deal with establishing monitoring networks.
A. Okay.
Q. So my question was directed toward what would be a reasonable time frame for attaining compliance?
A. We haven't had discussions with the Department of Environment that would specify a time that would be agreeable to them.
Q. So have you had any discussions at all with the Department relative to potentially entering into a compliance agreement?
A. Yes.
Q. What have those discussions involved?
A. Those discussions have involved the general

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concept of reduction in the fuel sulphur content as opposed to mechanical removal or conditional removal at the back end, and the ability to -- the concept of whether that would be viable and acceptable.
Q. Have you raised with the Department possibilities for any modifications to the operation of the Holyrood facility that could bring it into compliance without going the whole route of reducing to one percent sulphur in total?
A. Not that I'm aware of, no.
Q. Okay. Have you had any discussions with the Department as to what the effect might be of lower production from the Holyrood facility on an annual basis?
A. No.
Q. If I can get you to look for a moment at CA 6.
A. Okay.
Q. This was a question from the consumer advocate about the incidents where it was established that Hydro failed to meet the requirements, and there was discussion here of a number of results from the monitoring, and the results being talked about here are all monitoring

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results as opposed to modelling results, correct?
A. That's right.
Q. Okay. So in the third paragraph there starting on line 19, you refer to a review of the data and subsequent agreement with the regulator indicating the readings in question to be related to equipment calibration testing with respect to that 1362 microgram reading?
A. Yes.
Q. And, basically, what that means is that there was a problem with the machine and it didn't read the right result, is that fair?
A. There was a -- the investigation of the incident seemed to indicate that the equipment was undergoing calibration itself, a calibration check at the time the reading occurred, so it wasn't actually reading true from the ambient air.
Q. Okay. So 1362 was not a correct reading of the ambient air at that time?
A. That's the indication, yeah. I guess, it was believed to be initially when the reading was identified, and there wasn't an indication in the record at the time to indicate that it was

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a calibration, but it was subsequently investigated and found to be reasonable to expect there was a calibration going on.

Q. Now at line 22 the reference is to the readings being inconclusive due to recording anomalies, and that seems to refer to the three readings from December, 2005, which were referred to in lines 14 and 17. What do you mean by recording anomalies?

A. There are two methods of recording at monitoring sites. One is a digital output onto a data logger; the other is a chart recording that should track the same, they should give you the same indication. In this case, the data logger gave the readings that were found to be non-complaint, but the chart recorder didn't record the same levels. So you had the two recording devices not recording the same.

Q. Can I get you while you have that before you to also look at the reply to PUB 6. Page two of three, starting at line 16, that paragraph apparently refers to the same incident in December of 2005?

A. Yes.

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Q. The reference in PUB 6 says, "The quality control process instituted at HTGS indicates that the monitoring equipment was performing satisfactorily at the time", but in CA 6, you're basically saying, no, the readings weren't correct?

A. The monitoring equipment itself, the analyzers and that, were within spec. You've got -- the analyzer has to operate within a certain specified range for its calibration limits and that. So the indication there, the analyzers themselves were operating correctly, but as the other indicated, there was a discrepancy between the two recording devices.

Q. Is there some reason why that explanation wasn't included in PUB 6?

A. No, no particular reason.

Q. I take it that's been known for some time, has it, that this was the full explanation?

A. It's been known, yeah, for -- once the anomalies were fully investigated, it has been known, yes.

Q. Under the current guidelines, the CALPUFF modelling system is, in fact, the one that is approved by the Department, is that your

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understanding?

A. Yes.

Q. But there is provision for the Department to approve other modelling methods?

A. Yes.

Q. Are you aware of whether or not any other modelling methods are under consideration by the Department?

A. Not that I'm aware of, no.

Q. Does Hydro have any position as to whether or not other modelling methods ought to be considered in this regard?

A. No. As I say, these are the model type that is approved for similar types of situations across many jurisdictions.

Q. If we can look briefly at SGE Acres Report that was, I guess, filed with the initial application material. It's the air emission control assessment from Holyrood, dated February, 2004.

MS. NEWMAN:

Q. That's attached to the application?

HUTCHINGS, Q.C.

Q. Yes. Can you tell us who determined the objective of this study and specifically the

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emission targets that are referred to at the first page in the introduction, page 1-1. The first page is headed "Introduction" and in the body of the second paragraph the emission targets are laid out. Do you know who determined what those emission targets would be?

A. Again there was an internal team in Newfoundland and Labrador Hydro that reviewed the options available and it was part of that team discussion, I guess, that this was set up, from my understanding.

Q. I'm just curious as to how the third emission target is worded there, and why one would address the study to maintaining oxides and sulphur at no more than that equivalent to one percent sulphur content.

A. At that time the one percent sulphur content fuel was chosen as a target because of the federal regulatory initiative or consultation initiative that had been previously identified and was enacted on by Environment Canada or the federal government to review and consult with parties on regulation of federal across Canada regulation of the sulphur content in

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heavy and light fuel oil, and it was identifying one percent as the regulatory requirement that they were striving for or consulting related to. At that time, they didn't specify that -- they were consulting on the basis of specifying one percent sulphur fuel rather than a recovery to equivalency of one percent sulphur fuel, but that we felt should be an option if there were other alternatives to actually going to the one percent sulphur fuel, it may be advisable or arguable that, if economically for individual situations, it was more viable to go to an alternate process that had the same equivalency, such as a flue gas desulphurization or other alternative, that that should be looked at as well.

(12:00 noon)

Q. And just turning over to page 1-2 under the heading "B" in the second sentence there, a remark is made -- this may be in talking SO2 levels to acceptable levels. It says, "This may be achieved by a less costly partial switch in which low sulphur fuel would be used during heavy load periods and high sulphur

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fuel during light periods". Is there some reason why Hydro has not put that forward as an option here?

A. I'm trying to recall the discussions of the team related to that. I can't recall exactly, so I wouldn't want to speculate on it. I can't recall. I know when we looked at the -- it doesn't relate there. I'm trying to think if the discussion also was around switching to light fuel oils which automatically have low sulphur content in them, and that was determined to be a more costly alternative to it, but other than what is specified in the report, I can't exactly recall the discussions, and whether that is articulated later on in the report in parts of its recommendations.

Q. No, I couldn't find any further specific part of the report that addressed that potential, but it did seem that it would be a reasonable approach, and, I guess, we were surprised that there wasn't some more detailed consideration of it.

A. I'd have to get back to you. I can't recall exactly right off. I might have to look at

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that and respond separately. Is that okay?

Q. Oh, sure. So as of this stage, that possibility hasn't been explored any further so far as you are aware?

A. It may be my lack of memory, so I can't say for sure.

Q. All right. Well, if you have something more that you can share with us on that, you can make your counsel aware and I'm sure he'll provide us with additional information.

CHAIRMAN:

Q. Would you like an undertaking to come back?

HUTCHINGS, Q.C.

Q. Well, it's entirely in the witness' hands as to whether or not he can come up with something more. If he does, fine; if he doesn't, so be it.

MR. YOUNG:

Q. If that's determined later on this afternoon, perhaps we can introduce that evidence by some agreeable means. I don't know how that would work yet, but we can probably -- it would depend on the nature of evidence, if any.

MS. NEWMAN:

Q. We'll sort it out and report back on Monday

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perhaps.

HUTCHINGS, Q.C.

Q. Thank you, Mr. Chair. Those are all my questions.

CHAIRMAN:

Q. Thank you, Mr. Hutchings. Good afternoon, Mr. Johnson.

MR. JOHNSON:

Q. Good afternoon, Mr. Chairman.

MR. FRANK RICKETTS - CROSS-EXAMINATION BY MR. JOHNSON:

Q. Mr. Ricketts, the application and your comments when you were on direct, you indicated we're obviously constrained by what the law tells us to do, whether it be environmental law, and law in relation to the Public Utilities Board jurisdiction in terms of what it can order. I just want to ask you a couple of general questions first. The Acres study indicates, and just for the record this is at page 2-2, that the Holyrood station is subject to an annual cap of 25,000 tons of SO2 emissions, and I note in the record that that's not explained where that cap comes from. Could you advise me where that cap comes from?

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A. Sure. That was in the early 1990s. The federal government and the provincial government conjointly got together and determined that they would set provincial level sulphur dioxide emission caps in response to concerns related to acid rain along the Eastern Canadian -- Eastern Continent both in the US and Canada, and the federal government was of the concern that they had to -- they needed to have caps set within Canada in order to be able to adequately negotiate caps in the United States. At that time, Newfoundland government and the Canadian government agreed to a cap of, my understanding was, 45,000 tons of sulphur dioxide in total for Newfoundland and Labrador's output, and the Minister of Environment requested Newfoundland and Labrador Hydro limit its overall sulphur dioxide outputs in a year, and the Chief Executive Officer wrote to the Minister of Environment at that time and agreed to a 25,000 ton sulphur dioxide cap in an average water year. That was actually -- well, it predated the 1990s, in the late 80s that the

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negotiations were ongoing. The cap was in effect from 1991 onward, and the discussions between the federal government and the United States government, as I understand, was on the basis of a sulphur dioxide level cap overall that would be instituted in a base year of 1994.

Q. And is the 25,000 ton max still in place?

A. The max is in place -- that letter is still apparent and still there from Newfoundland and Labrador Hydro to limit itself. We haven't received any further requests from the Department of Environment and Conservation to vary that or change it, although they have in discussions at times indicated that they would like to see the maximum at 20,000 tons, but they haven't asked strictly that that be agreed to. They have instituted in the Air Pollution Control Regulations now a variance on the provincial cap overall to 60,000 tons. So that has been set by regulation in the Air Pollution Control Regulations that Newfoundland and Labrador's total SO2 emissions will be limited to 60,000 tons. They haven't specified, as far as I'm aware in

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that regulation, specifically who is to achieve what.

Q. So the overall provincial cap has gone up over time from where it had been earlier?

A. Slightly it's -- since all the other provincial ones have gone down, they've recently -- Nova Scotia, New Brunswick and Ontario recently diminished their caps by agreement with the federal government.

Q. And how does Hydro determine in any particular year whether it has exceeded this 25,000 ton cap?

A. There's an agreed calculation, a methodology that's agreed to with the Department of Environment and Conservation, and we annually do that calculation based on -- it's based on the sulphur content of the fuel, the API or specific gravity of the fuel, and the overall volume of fuel consumed, to determine whether we're complaint or not.

Q. And how is Hydro doing in terms -- relative to the requirements of that 25,000 ton cap?

A. In years that we've had high water levels in our reservoirs it's been achieved and more than achieved, and we have never exceeded the

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cap. In high production years at Holyrood, we've moved into the 22 to 23,000 ton range, I think.

Q. And just going off some memory now, there's been years in the not too distant past where Hydro Holyrood facility consumed well in excess of three million barrels of oil and still was within that cap?

A. Yes.

Q. And --

A. We did at the time -- I'm sorry, I don't mean to interrupt you.

Q. That's fine.

A. We did take the initiative in order to comply with the cap in our projected production levels, I guess, when the Chief Executive Officer made that commitment. We were burning, I believe, 2.8 percent sulphur fuel prior to that and we did reduce our sulphur content to 2.2 percent sulphur fuel in order to ensure compliance.

(12:15 p.m.)

Q. In terms of rounding out the legal framework a little bit more, to your knowledge, is there any jurisdiction in the country that would

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mandate that you have to burn one percent sulphur fuel or less?
A. The federal government has still got that on the books as part of their review package that they will be looking at overall in Canada to limiting the sulphur content of heavy fuel to one percent. There are agreements, I believe, in place in Ontario between Ontario Hydro and the Ministry of Environment or the Government of Ontario that limits the sulphur content of their fuels when they burn it. As indicated in the Acres Report, there are limitations by States in the US related to sulphur content of fuel.
Q. If you could turn to CA 5 for the moment. That's the letter from the Minister. That letter indicates that in the view of the Department, that the emissions of both sulphur dioxide and nitrogen oxides from the Holyrood facility is non-complaint with ambient air quality standards.
A. Yes.
Q. Is the proposal of Hydro with respect to the burning of the one percent sulphur fuel and the cost recovery of it, is that anticipated

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to cause compliance with respect to the nitrogen oxides?
A. Again it was on the basis of the modelling that they determined non-compliance, and the reduction in the sulphur content of the fuel will have a low impact -- it should have a low reduction in the overall nitrogen emissions in that the nitrogen oxides are formed in the combustion process in two ways. The nitrogen comes from two sources for that. One is from the nitrogen content in the fuel, and the other is from the nitrogen content in the air that's used to assist in the burning of the fuel. The majority of it comes from the air. So the combination of the oxides and the nitrogen, the majority of the source of the nitrogen comes from the air supply, but there's some percentage that comes from the fuel. The expectation of the lower sulphur fuel is that the nitrogen content of the fuel also will be slightly lower, it's a cleaner fuel. So it will have a marginal effect on that, and can't be certain whether that effect is substantial enough to be able to effect this conclusion, but the conclusion is on the

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basis of a very low exceedance. Our maximum was 405, and the regulatory limit is 400. So the potential is there that it could -- again that's a modelling exercise, a one year modelling exercise, and it depends on future modelling to determine that. The other factor that's there is the modelling was based on overall nitrogen oxides emissions tests and the significant concern with nitrogen oxides is on the basis of NO2, because it's a precursor in the atmosphere, the formation of ground level ozone. So whether the full component of the emissions of nitrogen oxides are NO2 or a mixture of NO and NO2, and so on, is not determined, so we also feel that there's an avenue for compliance related to that, but the potential is that it's not all NO2, although the majority of it likely is in the combustion process.
Q. Before I forget the point, in your response to questioning from Mr. Hutchings, you spoke about the -- I think it was the 1362 reading and the digital readout was not jiving with the graphic readout?
A. Yes.

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Q. And the digital one, as I understand it, was showing the 1632?
A. Yes.
Q. Do you know offhand what the graphic reading was showing?
A. I don't right off -- I know it wasn't showing a high level, but I didn't look at the chart to read it myself, no.
Q. In CA 15, if you could refer to that for a second. In reference to the question in CA 15, the answer provides that in order to -- operating improvements could be achieved through upgrades in the combustion system for a significant reduction in the emissions of nitrogen oxide at an approximate cost of four million dollars. In terms of -- do we know the likelihood of whether or not you'd have to proceed with the four million dollar capital expenditure in order to deal with the nitrogen oxide?
A. To deal with the level that we've been shown in our modelling and monitoring?
Q. Yeah.
A. I don't know. If we continue to show modelled non-compliances, the Department of

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Environment's perspective, I guess, is we would be non-complaint and action would be necessary, but they have indicated in the past a willingness to look at the NO2 as the real concern, so the nitrogen oxides concern would be reduced on the basis of that. So it wouldn't be -- it would then not be non-complaint if that was determined to be the case based on the level of -- level that we received in the past modelling. So it would seem to be, you know, not a big concern that we would have to go to that level, at least for compliance on the basis of ground level concentrations in the regulatory context right now. There is a federal government Guidance Document for new facilities that has identified an emission target or an emission level that is much less than what we achieve right now in the Holyrood plant, but that is a document that's applied by both the province and the federal government to new facilities only. Right not it's not, and I'm not aware of any indication that it's intended to be used at this time to existing facilities.

Q. Okay, fair enough. If I could ask you to go

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to CA 18, and, in particular, the Guidance Document regarding compliance determination, and I'm referring to paragraph nine of that which is on page ten, and as I read the scheme, on the basis of the dispersion modelling, government says or the Department says you're either compliant or non-compliant, and then the question then becomes how do we get back on the compliant wagon essentially, and paragraph nine sets out a couple of means, one of which is establishing a compliance ambient monitoring network as we've been told this morning. Is Hydro in a position to put this forward, the establishment of a compliance ambient monitoring network as a possible means of showing to the Department, look, we do have compliance after all, if you look at what our monitoring is able to show us over -- as I understand it, after two years of monitoring, the facility would be deemed compliant if we show compliance at all locations within the time frames. Is Hydro in a position to say, look, you should be looking at this as an election that we are able to make?

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A. The particular situation at Holyrood, it is problematic to chase down the specific locations that the model shows of the highest highs of potential non-compliance, the highest highs of ground level concentration. The area is developed around that. We've got -- Indian Pond is adjacent to there, so you have a pond occupying a particular amount of area surrounding the plant, we have residences and cottages occupying some of the land that surrounds there as well.

Q. And I'm referring to paragraph 9 of that which is on page 10. As I read the scheme, on the basis of the dispersion modelling, Government says or the Department says, you're either compliant or non-compliant and then the question then becomes, how do we get back on the compliant wagon, essentially and paragraph 9 sets out a couple of means, one of which is establishing a compliance ambient monitoring network, as we've been told this morning. Is Hydro in a position to put this forward, the establishment of a compliance ambient monitoring network as a possible means of showing the Department, look, we do have

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compliance after all, if you look at what our monitoring is able to show us? Because as I understand it, after two years of monitoring, the facility will be deemed compliant if we show compliance at all locations within the time frames? Is Hydro in a position to say, look, you should be looking at this as an election that we are able to make.

A. The particular situation at Holyrood, it is problematic to chase down the specific locations that the model shows of the highest highs of potential non-compliance or the highest highs of ground level concentration. The area is developed around that. We've got a--Indian Pond is adjacent to there, so you have a pond occupying a particular amount of the area surrounding the plant. You have residences and cottages occupying some of the land that surrounds there as well. So, land availability, finding a site that has the specific clearance requirements for your sampling protocols, power source and access and stability can be problematic instituting that kind of a regime. And the modelling itself, as I say, the degree of variance when

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you're in close to a plant, a facility that's your emitter and you find your non-compliance or highest highs in close to that, it doesn't take a whole lot of degrees variance on the wind direction to change your location of your highs. The monitoring set ups themselves are, although you can develop and institute a more mobile set-up, it's not amenable to a lot of changes to it because of the requirements for quality control. So, it's difficult to say at this time that we would be able to institute a compliance monitoring viably there that meets those requirements of getting into locations of the highest highs and provides for quality control monitoring location. We do have two monitoring sites that are on--one of which is at Indian Pond Drive. Right now that's the newest one that we put in place two years ago, that is down in that general location. It's on an individual's private property, but they have a trailer located there themselves and they don't have a lot of use. They use it for periodically during the summer. We have another monitoring site on Indian Pond Road, that's on the edge of the projected zone of

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the highest highs right now. Both of those monitoring sites are fully operational in that they--and they provide some data, but they aren't necessarily in the right locations for the highest highs either.

So, I guess we're not in the position to be able to say that we could institute a compliance monitoring.

(12:30 p.m.)

Q. Well, has Hydro ever said to the Department, look, what other monitors and where should they be located, what would we have to do if we were going to try to elect to prove to your folks that after years, our readings are compliant with these monitorings? Has Hydro ever had that discussion with Government?

A. We did briefly, as part of the Certificate of Approval process, we asked what would be required in order to prove the compliance. And, in essence, we were told that Hydro would have to move forward a proposal for specific locations and reach their agreement that they weren't--the Department of Environment doesn't specify how you have to do it, or in terms of the specific locations, you have to reach

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their agreement on a proposal in order to do it.

Q. Okay. And so there was no step taken by Hydro to put forward a proposal as to further monitoring?

A. We had instituted new monitoring two years ago, but none since that, no. And this, I guess, the determination game in September, so we were in the latter stages of the discussions related to the Certificate of Approval at that time and we were still on the road of our modelling for that year.

Q. Has the Department ever told Hydro point blank that, you know, despite your efforts in putting these monitoring sites in place and the monitoring equipment in place, that this would not cut it from the point of view of electing, you know, Paragraph 99(b) compliance under that document?

A. Yes, I guess in the letter they've indicated to us that or whether it was in the letter or separate, indicated to us what we have is ambient air monitoring network. It's not a compliance monitoring network. So, what we've got is a method for determining in general the

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ambient air quality, but its' not a strick compliance air quality regime monitoring regime.

Q. And I take it Hydro's understanding is that the Department's position is that what's on the ground would not be eligible to be a compliance monitoring network.

A. Yes.

Q. And had they ever stated that in writing?

A. Not that I'm aware of, no.

Q. And when did they make this position know to Hydro?

A. That would have been, I guess, in the latter stages of receiving the Certificate of Approval. So, I'm not sure, you know, if it was January or February or December time frame.

Q. Do you have any idea as to how much these monitoring stations costs each?

A. Yes, our monitoring stations now monitor for sulphur dioxide, nitrogen oxides, total suspended particulate and fine particulate pm 2.5 and they're in the range of 250 to $350,000.00.

MR. YOUNG:

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Q. I wonder, Mr. Chair, if I could just ask--I know I'm speaking out of turn--was that each or is that for all of them together? You just gave a figure and I'm not if the question is meant -

MR. JOHNSON:

Q. My intent was to ask, each.

MR. YOUNG:

Q. Each, okay.

A. For each monitoring -

MR. JOHNSON:

Q. Yes.

A. Each monitoring set up includes that full package right now that we have there and that's required under the Certificate of Approval, that each monitoring site has that capability. So, separately, a sulphur dioxide monitor would cost you, I think around 70 or $80,000.00, set up and then you have to house it. So, part of the overall general cost is the housing capability and the climate control within the building and the access requirement for that set up and so on. So, the analyzers themselves costs 70 to $80,000.00 perhaps, but the overall set up then has a cost to it as

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well.

Q. I take it, it would be a fair statement to say that, you know, Hydro in this application is looking to achieve compliance with the emission regulations, etcetera, just basically by trying to satisfy these modelling results, would that be a fair statement on my part?

A. Well, the modelling is representative of the overall air quality. If you accept the modelling as representative of the overall air quality, yes, that's what we're trying to do. That's the requirement of the Department of Environment that you satisfy them by modelling the spaces.

Q. And given as we've heard that this modelling is subject to fairly significant over and under prediction, as we found out from your examination by Mr. Hutchings. Would it be fair to say that an expenditure of one percent sulphur fuel could be much, much riskier in terms of whether we're going to get there at the end of the day, in terms of the modelling, then say further investigating whether the compliance monitoring network would produce the compliance under the legislation, there

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would be less money at risk.

A. For the cost of the individual monitoring sites, yes, but again, the problem is trying to institute a compliance monitoring network there that satisfies the requirements of getting into the worst case situation. The model is used by the Department of Environment, I guess, to determine what the worse case situations are and the probability of having exceedances. And you have to, in order to satisfy that by monitoring, you have to put those locations in the particular situation as well. And that may change again, those locations may change again if modelling again shows meterological conditions that vary and your again, out chasing another highest high location.

Q. But I take it all the current monitoring stations, their placement was specifically approved by the Department as being in areas of high expected ground level concentrations?

A. No necessarily the highest. They were ones that were achievable, representative and have approximations to the highest locations, I guess, but still had reasonableness of being

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able to put a monitoring site there in terms of the access, the power source, the viability of doing quality control on it, having the conditions in the location that permitted you to have air flow across the monitors unobstructed air flow and that kind of stuff.

Q. Mr. Ricketts, are there any other specific potential sites for monitoring that your department of Hydro has looked at and you've said, it's took bad we can't get there because we've investigated it, it's too difficult to acquire the land, we don't know if we can get a power source in there. Has there been any specific sites that, you know, if Hydro had as druthers, they would have, but that have been investigated that you hadn't been able to proceed with?

A. In the past, the problem areas have been on high terrain features and those have been very problematic to try to get in there, initially in the monitoring set-up, you know, Kelly's Mountain and those areas, those high terrain features, it's very hard to get anything in there that would be viable in terms of monitoring. We'd wanted to because that's

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where the highest highs were recording and we were seeing evidence of that, I guess, at times with the plume from the stack coming back onto those features as well. Plume leaving the stack and coming back on there. So, detecting whether that highest high is actually true and those locations would have been something that we would have desired to do, but weren't able to do.

Q. Did you then investigate whether you could find a site that would be the next best thing to putting it there?

A. That's where the Butter Pot and the Lawrence Pond site are, you know, approaching those areas, but they're not directly within those areas, but they do provide the closest access and closest power source, closest viability for creating a site that is allowed for quality control.

Q. The latest modelling results that are referred to in response to PUB 5. I think I've directed both yourself and myself to the wrong document. What I'm referring to is the latest modelling finding that, the maximum one hour standard for sulphur dioxide within an area of

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2.2 square kilometres would be exceeded for .06 percent of available hours. Just trans -

MR. YOUNG:

Q. It is PUB 5.

MR. JOHNSON:

Q. It is PUB 5?

MR. YOUNG:

Q. It is the last sentence, second last -

MR. JOHNSON:

Q. Okay.

HUTCHINGS, Q.C.:

Q. It's page 2 of 2.

MR. JOHNSON:

Q. Yes, I'm sorry. Can you just translate that into the number of hours a year that this might be occurring? Is it possible to do that?

A. The statement that 2.2 square kilometres at .06 percent?

Q. Yes.

A. That translates into about 5 hours during the year.

Q. Okay. And that's according to the modelling, just to understand that point?

A. Yes.

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Q. Okay. And then the maximum three hour standard within an area of 1.7 square kilometres was over .8 percent of the available three hour period, I take it. How do those model exceedances compare to previous years model exceedances?

A. Our previous modelling had been showing higher highs and longer percentage frequency.

Q. And would this have represented the best modelling result that Hydro has ever received regarding the sulphur dioxide?

A. Yes.

Q. And is there any explanation for why that would be the case?

A. We did use a different approach in this modelling set in the meteorological specifications. In the past modelling we had used St. John's Airport, Gander and Argentia. Meteorological conditions in the CALPUFF modelling which takes all of those areas and rationalizes to the meteorological conditions of the area. In this case, we use a forecast process that has been approved by the USEPA and they have identified spot locations in North America that they use, they forecast the

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meterological conditions for specifically in use in modelling purposes. And we use that for this series of modelling or 8 points in the local area, not specifically all within the boundaries of our modelling zone, but in the general area. And that was used this time and considered to be more representative of the actual meterological conditions because they tended to show more west south west prevalent wind conditions than the St. John's Airport data showed for the same period. And the topographical features in the area are generally trending that way.

(12:45 p.m.)

Q. Is there--I find this material rather interesting actually, but one of the questions I had in my mind was, is there any way to translate these predicted exceedances, you know, into tonnes of sulphur dioxide that would be put into the environment over and above what would be put into environment if we were within compliance, as we would be 99 percent of the time or is that too simplistic a way of looking at it?

A. I can't say that I can think of an easy way of

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calculating that, no, accurately.
Q. So, is it possible to say, come again another way, whether that under those predictions that Hydro would be put offside in the law in terms of the environmental regulations? I think Schedule C to the environmental regulations speaks of maximum allowable annual emission without an administrative penalty, and it puts it at 20 tonnes a year.
A. Yes.
Q. I guess at some point or other if the province were to decide to come forward with administrative penalty, it'd have to determine the amount of the exceedance and certainly whether you got over the 20 tonnes.
A. Yes.
Q. And that's where I'm sort of driving at it, you know how they would -
A. Well, that would be on the overall volumetric calculation that we've got. You have a 1 percent sulphur fuel, you burn a particular quantity of fuel over a period of time and it has a specific gravity that affects the weight of the emissions. So, that calculation will give you volumetric calculation of the amount

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of sulphur dioxide emitted in any particular time period based on the field consumed.
Q. And just so that I understand it, I understand that even with the switch to the 1 percent sulphur fuel, that it's still possible that on occasion to be offsides in terms of the permitted sulphur dioxide emissions and concentrations, would it?
A. In terms--it's an estimate only, in terms of the highest high that was recorded, you'd need to get down to, I think, a .6, around a .6 percent sulphur fuel. If you did the straight calculation on percentages related to the concentration that was projected, but again that's dependent on whether, you know, you are actually, have--when you're burning 1 percent sulphur fuel at that emission rate, that you achieve then is associated with the meterological condition that shows it. So, if that meterological condition, if we're not burning at the same rate in the same period, whether that meterological condition occurs again at the time that you are burning at that rate, it's an estimate at best right now and it's low frequency potential.

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Q. Do we know from these models that there's an absolute guarantee that even if you went to .6 percent sulphur that, you know, under no circumstances under the modelling would you have an exceedance?
A. Not on the basis of the modelling that we've done. As I've said, this was a one year model run and so you're not over the time frame that normally would be required to determine worse case or is agreed to that would normally specify worse case. It's possible that it occurs in there, but it's possible that it doesn't as well.
Q. The reading that's referred to at CA 9, this is a pretty high reading, 3147 units per cubic meter. Yes, I'm reading now page 1 of 3 of Hydro's reply -
A. Yes.
Q. - at lines 22 to 25, the Completed Air Dispersion Modelling for the Holyrood Thermal Generating Stations 2004 emissions indicated a maximum one hour ground level concentration of 3147 for sulphur dioxide. Now, would there be a monitoring station very handy to where that would--you would have got that high value in

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the predictions?
A. That high is probably--the new monitoring station that we have at Indian Pond Drive approaches it closest, I think. And it still could be a couple of hundred meters or so north or south of that.
Q. And certainly as know that monitoring stations showed compliance.
A. Yes.
Q. Yes, okay.
A. That was 2004, it was operational in 2004, but the latter--yes, it was operational in giving data in November of 2004. So, we would have had data for that period.
Q. In terms of the problem of opacity which we heard about, I think we all know about, what the complaints have been, et cetera. And I take it the opacity exceedances are rather frequent, in Hydro's view, at the facility.
A. Yes.
Q. And the complaints generally are around times of soot flowing and load transition units start up, et cetera.
A. Yes.
Q. Okay. And as I understand the rules regarding

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opacity, they are--the idea is to, and the requirement is to maintain opacity at 20 percent on a six minute running average base is not exceeding 25 percent for more than six minutes in any one hour period, except for starting a new fire, in which event the limits are not exceeding 40 percent for one six minute period and the first 30 minutes after such new fire has started. Is that the goal for compliance?

A. Yes.

Q. And do I understand that it's the larger particulates which has the greater effect on the opacity level rather than the smaller particles?

A. Not necessarily, certainly larger are inherent on that. The opacity is a measure of the density of the particulate. It's a light transference measure. If you have an opacity, then the light is not transferring through that and you read it on the basis of the percentage of light transference across that path. So, if it's large particulate, it will certainly block the light transference and block it fairly considerably. But if there's

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a high concentration of a finer particulate that can also have the same effect.

Q. Okay. Just to--at PUB 7, I note at line 16 to 17 indicates "particles larger in size than 10 micrometers have a greater effect on opacity levels than smaller particles". That's as a general rule.

A. It's true to say that they have a larger effect and that they can block more light transmittance, but if you have higher concentration of smaller particulate, it will have the same effect, yes.

Q. And as I understand it, from the Acres Report that the switch to one percent sulphur fuel is expected to result in a 40 to 60 percent reduction in total particulates.

A. That's right.

Q. And that would be important in terms of the goal in trying to get to where we need to be for opacity.

A. Yes, indeed, yes.

Q. Okay. And Acres indicates that, can't say for sure whether it will, but it will have to require ongoing monitoring after you look at--the switch to one percent sulphur fuel.

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A. Yes, part of that is in relationship to the quantity of heavy particulate as opposed to fine particulate, the variance and the concentration of each. You will have a greater effect on the heavy particulate than the fine particulate in the reduction of sulphur content of the fuel.

Q. Okay. And there is some reference, brief reference, in the Acres Report at page 62 where they speak about proprietary fuel additives.

A. Yes.

Q. Towards the top of page 62, proprietary fuel additives may provide a reduction in total particulate emissions of about 50 to 60 percent is what they're suggesting. However, the additives may not achieve the required reduction in PM 10 emissions. Has there ever been any piloting or testing of these fuel additives at Holyrood to see what they can do for opacity, for the people who live around that facility?

A. My understanding is not and I may not be the best person to address exactly why because there was engineering reasons for why, is my

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understanding. Although there are fuel additives out there that are being tested, is my understanding by other, there are none in Eastern Canada and none that are commercially available that way. There are some that are being tested and are being promoted by potential suppliers, but none has, at least, are not used commercially in this part of the world right now.

Q. Are these new technology?

A. I think some of it is new and some of it is not so new, but hasn't been--has a new flavour to it. So, it has been tried in the past, not been effective for some reason or another and not found to be viable in certain situations, but are being changed and reapplied.

Q. Has Hydro tried to determine from other, you know, sister utilities elsewhere, wherever they may be, how they made out with trying these fuel additives?

A. My understanding is yes, again, it might be more appropriate to talk to our engineering. My understanding is that we have had discussion with other utilities in other parts of the world related to their use of fuel

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additives.
Q. Do you have any sense of how expensive they would be given how much fuel is generally consumed at Holyrood in a typical year?
A. I wouldn't be able to give you a number. I have a sense that they are relatively expensive, yes, that they add cost.
Q. Who would have that type of information?
A. Well, Mr. Haynes may be able to address it because I know it has been discussed as part of the plant operation, looked at from the plant perspective. So, he may be able to talk to you on that.
MR. YOUNG:
Q. Yes, we'll see what we can do to get that information. I have no idea of anything of that nature, but I can certainly see what we can do between now and 9:00 Monday morning.
CHAIRMAN:
Q. Thank you.
MR. JOHNSON:
Q. At page--I'm referring now to the report that's appended to PUB 8 at page 24 of that report. Paragraph number 2, one of the recommended courses of action at that point in

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that report was to research and consider the use of intelligent soot flowing practices, optimizing soot flowing process should reduce the number of opacity excursions. And what is meant by intelligent soot flowing practices and has it been researched and investigated as to what benefits it might provide in Holyrood.
(1:00 p.m.)
A. The plant has part--Holyrood generating facility, as part of its efficiency improvement goals has looked at its soot flowing practices over the last number of years and made some changes to those to try and optimize, in terms of the efficiency that it relates to, being able to keep cleaner air heaters and boiler helps in the efficiency. So, they feel, it's my understanding that they've optimized their operations and their way of doing business to get the best efficiency in that way and that has helped in terms of reducing the accumulation of soot and the result in concentration of materials during soot flowing. But there are, you know, programmable components that you can put in place that will look at blowing over shorter

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periods of time isolated sections of your air heaters and isolated sections of, you know, your equipment to maximize that again, to make improvements to that in terms of the efficiency that you get. So it's, I guess, a computerized methodology for doing your soot blowing that is more focussed on individual areas where soot accumulates than on the overall. I know that the plant has looked at it, I'm not the right one to tell you the reasons why or what the results of those investigations are.
Q. Okay, those are my questions, Mr. Chairman. Thank you.
CHAIRMAN:
Q. Thank you, Mr. Johnson. Good afternoon My Hayes, do you have any questions?
MR. HAYES:
Q. Newfoundland Power has no questions, Mr. Chair.
CHAIRMAN:
Q. Thank you very much. Ms. Newman, do you have any?
MS. NEWMAN:
Q. Yes, I just have a couple of questions and

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it's mainly just for clarity. The first place I want to bring you to is that Guidance Document that we referred to at numerous occasions at question No. 18 from the Consumer Advocate, and at page 10, clause 9, I understand the difficulties that you've communicated today about establishing a compliance ambient monitoring network, but I just wanted to get your comment on whether that is, while perhaps difficult, whether it is a practical alternative, it should be or could be investigated?
A. It's, in my mind, I guess, not highly practical that we would be able to set up a monitoring system that would be able to capture the ground level concentrations in the areas that the model shows to be the highest highs, but it's not unachievable perhaps to do that.
Q. Okay, and if Hydro were able to do that, establish a compliance and monitoring network that was acceptable to the Department of Environment and I guess that would be then ongoing for a period of two years, would Hydro then be, in your view, in compliance with the

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regulations?
A. Until such time as the new stack testing and new modelling indicated, if there were other potential areas of non-compliance that the models showed highs in excess of the regulatory limits.
Q. So for that period of time it would be in compliance?
A. It's my understanding.
Q. One of the other points that was raised here today was about the staging in of the move to the one percent sulphur fuel and I take your comments that Mr. Haynes perhaps would be best to speak to that, but I did want to get your opinion on whether a level, other than one percent, higher than one percent, for example 1.5 percent, might in fact bring you in compliance, or is it your opinion that no, the one percent is necessary to bring you in compliance with the regulations?
A. It would be my opinion that one percent is needed to give us a viable option of being in compliance on the basis of the modelling, yes.
Q. And then the last question relates to timing. I note from Hydro's response to PUB 1, that

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Hydro began purchasing the one percent, sulphur fuel in January of this year and has moved to burning that fuel now, at this point in time, and I just wanted to get clarity on when Hydro was seeking to have this change reflected in its rates, would it be July 1 for Newfoundland Power?
A. That would be Mr. Hayne's question, I think.
Q. Okay, all right.
MR. YOUNG:
Q. Might be a Mr. Young question.
MS. NEWMAN:
Q. I guess we'll find out on Monday who is going to answer that one. That's all my questions.
CHAIRMAN:
Q. Thank you, Ms. Newman. We move now to any Board questions. Ms. Whalen?
MS. WHALEN:
Q. Good afternoon, Mr. Ricketts. My questions actually will just follow up on what Ms. Newman was referring to, and I guess it refers back first to PUB 5 and see if I understand this correctly now. Hydro has been performing dispersion modelling testing based on their stack ratings, I guess, since 1995?

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A. Yes.
Q. So that's annually?
A. Yes.
Q. And each of those annual modelling reports has shown ground levels of sulphur dioxide concentrations in excess, so you've had exceedances in each of those modelling reports since 1995?
A. Yes, we have.
Q. So would I understand then that Hydro has been non-compliant every year since 1995?
A. On the basis of the modelling we have, yes.
Q. Okay, would Hydro have been issued a letter of non-compliance every year since 1995?
A. No, we have not.
Q. Is this the first year that Hydro's been issued a letter?
A. As far as I'm aware, yes.
Q. So what's happened since 1995 every year when you've been non-compliant, I mean, what has Hydro done? I mean, if you've been non-compliant based on the same methodology that's been in use -
A. Yes.
Q. - have you installed new monitoring stations

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or, you know, have you undertaken any measures to put yourself into compliance in previous years?
A. The 1995 was the first year of modelling on the basis of the agreement that was reached in '94, and at that stage, the agreement indicated that we would do the determination of the emission rates, stack testing, that we would report to a stack test, that we would have the four monitoring sites that we had in place, instituted and quality controlled and the information from that submitted to the Department on a monthly basis, and that we would do the calculation of the volumetric emissions and produce an annual report that identified that and submit it to the Department of Environment and that we would do the modelling each year and submit those results to the Department of Environment. So the results of those were submitted to the Department of Environment for their consideration. They have, in the interim, came back occasionally with changes to the calculation methodology, fine tuning of the calculation methodology, commented on the

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modelling parameters and the inputs the modelling parameters and we've tried to fine tune those and work with them to ensure that the modelling is most representative. They have changed the modelling methodologies occasionally to adopt--as I say, we started off with a USCPA approved models set and then once they switched to a new set, we switched to that new set and whatever. The plant has instituted the efficiency programs that have resulted in the greater--less use of fuel for the same output, so we've tried to improve our things that way. We have had studies, effects monitoring studies that have gone out and determined, looked for evidence of damage to vegetation in the local area and we've reported those to the Department of Environment when they've become available. We had done soil sampling in the area for sulphates and vanadium and nickel to characterize whether there's deposition and increase level of those in the local environment. We have had a health risk assessment, a human health risk assessment as well that we completed in 1999 and we're

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redoing, at present, to analyze the potential that the levels of emissions and the levels detected in the environment are--have any concern related to human health in the area. Those are the types of initiatives that we've taken, some independently, some in agreement with the Department of Environment, but on the basis of the information that we had submitted to them, they had, up to now, never formally required us to institute any actions related to the sulphur dioxide compliance issue.

Q. So as of right now and I'm just going back to this CA-18, the Guidance Document, that I guess is operative here, as of right now, non-compliance has been determined based on the dispersion modelling. Would that determination have been in place in previous years without a communication from--like, would you have considered yourself to be, to have a non-compliance having been determined in previous years or is that only when you've been formally notified that you're in non-compliance?

A. That's the only time we've been formally notified with a non-compliance, yes.

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Q. So as of right now, based on that letter, February 2006 and it's been determined that Hydro is non-compliant and then Sections 9, 10 and 11 seem to set up the path that Hydro can elect to take once it's been determined that you're non-compliant, that's the way that reads to me, so "Hydro could elect to enter into a compliance agreement with the Department for the purposes of", so are you in discussions now with the Department of Environment with respect to a compliance agreement?

A. Not at present, we, during the negotiations associated with the Certificate of Approval or discussions associated with the Certificate of Approval, we also discussed the compliance agreement as an option. We weren't able to reach agreement with them on finalyzing that, so what was issued was a Certificate of Approval in place of any compliance agreement.

(1:15 p.m.)

Q. So does that mean this is non-operative now, this compliance agreement and the compliance ambient monitoring network options?

A. I don't think it fully negates the options, it

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may negate the actual compliance agreement, unless we can reach agreement on what that--because that is, I guess my understanding is that an agreement on actions that would be taken to bring yourself in compliance; whereas the other options are mechanisms to test your compliance again.

Q. Right. When does the clock actually start ticking on non-compliance? I mean, the dispersion modelling was done for the year 2004, you have a letter now issued as of February 2006 which says you're non-compliant. If you were looking at the Section 9, you're non-compliant as of the notification, I would assume, it does, you know, allow for establishing compliance ambient monitoring effort obviously in conjunction with the Department and then it goes back to Ms. Newman's point, I guess that she was trying to get out for clarity, that there is a timeframe that kicks in because you have the opportunity then to actually do compliance monitoring for a two-year period before you would actually have to take any mitigative measures because you have a chance to prove that you're

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compliant, I guess that's the purpose of that, right?
A. Yes.
Q. So it would seem to me that that kind of, on an option, allows for the uncertainties that would be inherent in any modelling, with the weather data and terrain features and the over reads and under reads and that kind of stuff, right?
A. I think you're right, it allows for a period of time in which you would capture, reasonable would have expected to capture those, yeah.
Q. Right, okay, and then the option then, Section 11 there actually contemplates and the difficulties that you talked about with respect to getting at the highest of the high readings, that location, that you can actually prorate compliance monitoring data from a site being close proximity, I guess it's the next best site that you can get to and to get away from these difficulties that you have with the sites.
A. Yes, yes.
Q. So has that been considered? Is that something--I mean, have you looked at the

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existing Indian Pond station, for example, and tried to prorate that data? Because I understand it's a couple of hundred meters away from one of the sites that the high reading would be?
A. Yes, so that site doesn't have a long-term data, it has shorter-term data, so whether you've captured the period that's required there, I don't think, but yes, we looked at that, but in terms of the context of approving that our actions bring us into compliance, it--we'd still, on the basis of our understanding, be non-compliant until such time as we've proved that our actions--and using that prorated approach, it would be a reasonable test of whether our actions have brought us into compliance.
Q. The Certificate of Approval was issued as of?
A. February.
Q. February. So the letter that came on February 9th, 2006, which actually deemed you to be non-compliant did set out the two options, right, it did set out until such time as acceptable modelling, based on current stack testing data or approved compliance monitoring

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in areas we've seen this demonstrates compliance, right, so that kicks back to the Guidance Document where the compliance monitoring network would have to -
A. Yes, true.
Q. I'm just trying to--you know, it seems to me that there is an opportunity in the information that I have before me, to buy time, you know. I mean, it seems to me that you have a window to be able to demonstrate that you are compliant without assuming that you're non-compliant because the modelling says you're non-compliant when you have no record or any actual non-compliance that your existing ambient station, is that a fair statement?
A. The past modelling that we've had, as I say, this particular modelling showed the lesser of the--and it's individual yearly modelling that we've done, because that's the requirement of our agreement. The modelling in 2003, I think, had maximum levels of 5000, a little over 5000. Before that, they were higher than that and if you look at the proration of the existing monitoring sites to those levels, we

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haven't always looked at those as receptor points, but we have on this occasion and on the previous occasion. It seems that the levels are still, even using the proration are not getting you into a compliance, so if it's to be used moving forward, my assumption is that it has to be used on the basis of some action. You can't use it historically to say okay, by using that prorated method that you are compliant. We've been deemed to be non-compliant which requires some action and then the testing to see whether it brings you into compliance.
Q. Yes, except the Guidance Document says that if non-compliance is determined, you can elect to enter into a compliance agreement for the purpose of obtaining compliance or establishing a compliance ambient monitoring network. But, you know, even the first part, obtaining compliance within a reasonable timeframe, there is still no compliance agreement that contemplates that kind of a framework, I mean, Hydro is pursuing one percent sulphur as its mitigative actions to achieve compliance, hopefully?

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A. Yes.
Q. And there's no requirement under existing legislation for Hydro to purchase one percent fuel, two percent is the -
A. Is the regulatory limit across the province, yes, maximum of two percent sulphur fuel.
Q. Okay, that's all I have, thank you.
CHAIRMAN:
Q. Thank you, Ms. Whalen. I don't have very much, Mr. Ricketts. You've been there since 1995. I seem to recall a while ago, it may have been a few years ago now, there was some sort of survey in respect to the Holyrood site that categorized it among some of the--one of the worse in Canada, is that something that I heard or dreamt or -
A. We did have the notoriety of, you know, of being picked on. We report annually to the National Pollutant Release Inventory, it's a national database for a collection of pollutant releases. And is overall, individual pollutants are put into the data related to your annual volumetric releases, the same calculation we report annually to the Department of Environment, and we were the

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fifth largest emitter of fine particulate in the nation, in that time, in that year, and that was picked up on in the media.
Q. So would that be primarily in respect of what, SO2, I mean -
A. No, that's fine particulate which is the particulate, yeah, we're a lesser emitter of sulphur dioxide overall in terms of the volume annually than the many others, you know, smelters produce a lot of sulphur dioxide, other utilities that have larger capacity systems produce and use a sulphur fuel as coal or oil, would produce larger overall quantities of sulphur dioxide. But particulate, we seem to emit a fair amount of fine particulate in that year.
Q. So are you doing anything to mitigate that or have you done anything -
A. We have no capture technology. We have no capture technology at Holyrood at all. The majority of similar types of plants operated in the US or in Canada has some form of capture technology, especially related to particulate, and that's why ours would be high. We have no back end capture for

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particulate, but many of the others would have electrostatic precipitators or bag houses, or whatever, to capture that particulate before it goes out to stack. Ours was built in a time when it wasn't required and hasn't been upgraded to do that.
Q. You mention, I guess one of your responsibilities is sort of tracking in relation to environmental issues. Who is responsible for overall environmental planning within Hydro and what does that entail, I guess, in relation to--I mean, this happens to be one particular aspect of modelling, you know, I'm sure there are other aspects of emissions. Mr. Johnson mentioned a couple as well. I mean, how does that get addressed or -
A. It's addressed on a couple of levels. One, on the corporate, there are environmental management systems in place and there are six environmental management systems in place within Newfoundland and Labrador Hydro and CF(L)Co. There is a corporate environmental management system and its responsibility is to provide the procedures that others will use in

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implementing theirs, but it also has a responsibility for identifying the overriding issues that have overriding requirements for the corporation as a whole and that's where initiatives related to addressing general legislative requirements would come from. But each individual management area on Holyrood has its own environmental management system, our Hydro electric system has its. As part of that management system, they have to review all of their activities, products and services and identify those that have a potential for impact on the environment. Once an impact is identified, we have a system that they go through then to classify those in terms of their significance, and for significant environmental aspects, each is required to identify operational controls that limit those or can effect the control and limit the impact of the operation, the activity, or an area for improvement, an objective and target for improvement on that. And often times related to the Holyrood plant, these areas for efficiency improvements that have an associated reduction in emission quality comes

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out of their own evaluation of their significant environmental impact potential and their identification of their objectives and targets that they can achieve, they feel that they can achieve to implement, to reduce those and continually improve the environmental performance of their operation and their management system. Same happens for the Hydro electric system. They will review, in consultation and mostly the Environmental Services Department is a guide, an advisor related to that, but they have the responsibility for reviewing and understanding and identifying the impacts that their operations may have and looking at the controls that they have in place related to those and the areas and opportunities for improvements that they would have.

Q. I'm sorry, is that your responsibility or -

A. As environmental services, my responsibility is to co-ordinate with them and provide them with advice on the technicalities and technical aspects of it, but they have the individual responsibility themselves to understand their potential impacts and to

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identify opportunities for improvement. I will--our department will provide them with information and we have an environmental compliance directory that we maintain that identifies the specific legislative requirements or agreements that we have in place, and we train people, we provide a training or an understanding program for our operations' people related to that. And we have a listing, we assist them when they're identifying their aspects or their potential areas for impact in understanding what legislative requirements or what those potential impacts may be. But it's the individual management system's responsibility to try to come to grips with their understanding of that and what opportunities they may have for improvements.

Q. So that's in your operation side, I think.

A. That's right, yes.

Q. Yes, I see. And that's separate right now from your engineer, there has been some change -

A. That's right, the recent re-organization, there is an engineering services department

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that is separate from the regulated business or operating departments.

Q. Right, so any environmental improvements in relation to environmental plan, that would be done in each individual area and brought forward in the budget, is that correct, in the operating budget?

A. That's right, yes.

Q. So is there a master plan or is there anybody responsible for a master plan as it relates to the environmental considerations at Hydro, or is that the way it works from the grassroots up?

A. It does work from the grassroots up to the great extent, except for those overriding environmental issues that have a corporate response requirement and the senior leadership team, the executive has that responsibility and I do provide, you know, advice to them, attend, when invited to meetings to advise on that and to the environmental committee of the board of directors, which we do have, and they are interested as well in what areas need improvement or are problems and problematic issues that should be addressed. But

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certainly for things that have an overriding significant cost to the corporation or need to be considered in the larger scale, it's the executive management that has that responsibility.

Q. Did I hear you say you report to the vice-president of Human Resources Organizations?

A. In organizational effectiveness, that's the department.

Q. Can you just shed a little bit of light on that, Human Resources I've used, personnel matters, labour issues, you know -

A. Yeah. It also includes the safety and health group, so with the reorganization, the leadership team felt that, I think, there was a need to bring together the environment and safety components under the one house and that's why we had previously been reporting to the vice-president of transmission and rural operations, part of our operating system. And we do provide service throughout the organization and we still do that, not limited in that way, but the feeling I think was at the senior level that it was worth to amalgamating or bring together in the one

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house the safety and environment components.
Q. Thank you, Mr. Ricketts, that's all I have. Before we go to re-direct, are there any questions resulting from any questions that the Board asked?
(1:31 p.m.)
HUTCHINGS, Q.C.:
Q. I just have one matter that arose from a question from the Vice-Chair and that dealt with the potential for establishing monitoring under paragraph 9 of the Guidance Document. Did I understand you to say that the existing monitoring, ambient air monitoring stations that do exist would not qualify as monitoring, compliance monitoring under that document, and if so, why not?
A. Yes, that's my understanding because they aren't specifically in the locations of the projected highest high concentration from the modelling.
Q. But that's the only reason is because of location, it's not because of actually what they do?
A. No, that's right.
Q. Okay, so if they were in the right places or

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the department agreed that they were close enough, they'd be fine?
A. Yes.
Q. Yes, okay. I just wanted to clarify that. Thank you, Mr. Chair.
CHAIRMAN:
Q. Mr. Young, any re-direct that you may have?
MR. YOUNG:
Q. I do have some. I note the time and actually -
CHAIRMAN:
Q. Will you be--you won't be long, will you?
MR. YOUNG:
Q. I thought the first question I asked Mr. Ricketts this morning was going to be a much shorter answer, so I was a little guarded on saying how long. Having said that, I don't anticipate, you know, you're going to be too upset with me, just a few minutes, I hope.
CHAIRMAN:
Q. Okay.
MR. YOUNG:
Q. And I ask the Board's indulgence while I go through my scrolls. It's always nice to work from a transcript because it's printed and my

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scrolls aren't quite as easy to follow for re-direct. Mr. Ricketts, perhaps we can go back to the area that Mr. Hutchings and Vice-Chair were just discussing just for a moment and try to get some clarification on that one. And this is the Guidance Document we've been referring to several times and the issue of, perhaps I can refer you to it, it's the one attached to CA 18. I'm looking at No. 9 on the determination of compliance Guidance Document, it's at page 10. It says there, "If non-compliance is determined, the facility may enter into a compliance agreement"--or "may elect into a compliance agreement" and I stress that word in my question. Would it be of any value for Hydro to enter into a compliance agreement if it believed, based on the evidence it had, that compliance wouldn't occur or is a compliance agreement something you do once you have some belief that some course of events or some set of circumstances either will bring you into compliance or determine that you're already in compliance?
A. My understanding of the Department of Environment is that they enter into compliance

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agreements where they think action is viable to bring you into compliance, that a compliance agreement is only worthwhile if you're taking action to bring yourself into compliance.
Q. So it's not just a matter, I want to make sure we understand this because I think there was some confusion in some of the answers, it's not just a matter--well if you're not in compliance, you have two choices, you can test or you can do what you're told. Is it black and white that way or is it a matter of if you're not in compliance and you go down the road of the compliance agreement that that may have a whole lot of other presumptions with it, or is it just that you carry on as if you were and just do more testing?
A. My understanding is you take action to bring yourself into compliance and you test for that.
Q. And just further on this, 9(b) talks about the compliance ambient net monitoring network and Mr. Hutchings' question just received a response that the five locations at present don't cut it, as far as you understand it, is

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that correct?
A. That's right.
Q. And these are, of course, general documents. To your knowledge, are documents of this sort used in other places by the Departments of Environment in other jurisdictions? Is this a standard sort of document? Is this generic or is this very specific, for example, the Holyrood or to Newfoundland?
A. The Guidance Documents are out there in other jurisdictions. I haven't seen this particular Guidance Document in other jurisdictions, but there are--the ministry of environment in Ontario has issued a Guidance Document similarly, but all encompassing related to air emissions that encompasses both the monitoring of the compliance determination, the modelling requirements and that, so these are generally used, the Alberta environment have done the same thing, yes.
Q. I understand also in one of the questions you answered that there are other jurisdictions where standards are similar to the ones we had, as far as the actual numerical values, is that -

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A. Yes, these are similar. In most jurisdictions across Canada, the 900 is similar.
Q. Is the 9--and the question I really have is this, is the approach to modelling that's taken in Newfoundland, to your knowledge, similar in those other jurisdictions also? Is this modelling used there also?
A. Yes, Ontario used to have its own model set that was different from what the USEPA had set out, but they have recently adopted the full modelling set that the USEPA specifies and CALPUFF is included in that and AIRMODE is included in that, and they've got that included in their Guidance Document and Alberta has done the same. And those are particular ones that have recently changed their programs.
Q. Okay, so both the numerical values and the modelling are typical, is that correct?
A. Yes.
Q. Okay. I just wonder if I could refer you to Section 11 on that page, paragraph 11, and this talks about--I'll just read it, I think the first few words of it disclosed what's really going on here. "Where it is not

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practical to establish compliance ambient monitoring network at locations of maximum predicted non-compliance"--and then it goes on to review the option of cross-referencing or something, does this section have any applicability to what we are doing at Holyrood or might it?
A. Yeah, I would think it would in terms of if we can't reach agreement on specific locations that are viable to set up--if you couldn't identify a specific location is viable, set up a compliance monitor, location monitor or monitoring locations, then you could use that method to test for your compliance, again by prorating from what's really an ambient, what's set up as an ambient level monitoring program.
Q. Thank you. Mr. Chairman, I'm looking through these, I note that I have a few questions I may be referring to Mr. Haynes as far as he may be able to answer them, and perhaps I can give some direct with him on Monday morning if I can get some of the information through him. Some of it may not be in his personal knowledge at this time, but I imagine we can

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dig it up. This was also in response or arises from a question asked by the Vice-Chair. She asked you at one point to--some history of the regulatory circumstances and the fact that, I think it was February of this year when we first received a letter and I think your response was this was the first time you received a letter to that extent. I wonder if you could explain for the Board and you've touched upon it briefly and I don't need a full explanation, but just the nature of the interaction between yourself, at Hydro, and the people you deal with, with the regulator, and the nature of awareness that they would have of the kind of data that we're dealing with and their responses to you, whether it's always in writing, whether it's never in writing, might they pick up the phone, might you meet regularly. How does that communication go back and forth?
A. Yes, there's quite a lot of data that does get transferred between ourselves and the Department of Environment, some of which they absolutely require the monitoring data and the modelling data reports, and some studies that

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are required by agreement as well that we initiate, they receive that information. We, as well, because of the implications to compliance and our determination of the compliance, some of the studies that we do, such as the human health risk assessment, we engage the Department of Environment in that to make sure that they are agreeable to the methodologies that are used and will accept the results that come out, even if they haven't required that the work be done. If you want to be sure that they have full understanding and acceptance of the information so that if there are implications to you, that you can understand them upfront, rather than having to deal with them and somebody discovers it, sort of thing. But for the most part, most of the information is subject to discussion and submission. They may or may not reply if they have a particular detail that, on a report that's submitted, on occasion it's submitted in writing, on occasion it's discussed at points. The overall operation of the facilities, where Certificates of Approval are in place in the

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past, they have been long term. With the Department of Environment, they have recently moved to much shorter term Certificates of Approval. So that gives them the option then of, I guess, having empowerment to require changes where they see the need. But in the past they have had, most of the Certificates of Approval that had been issued for facilities that have been operational for some time, had no expiry date to them, so when something new came up, it was subject to discussion and subject to the Minister then determining the need for re-issuance of a Certificate of Approval or not, on the basis of the information, the new information. So right now, the Certificate of Approval, new one that we have, has an expiry date to it, so we would expect that there will be a more formal review of the operation of facilities, such as Holyrood, at the coming of the expiration of the--within a year of expiration of that we are required to indicate to them whether we want to continue operation or not, and if we want to continue operation, then seek approval for a new Certificate of

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Approval, which could have implications to it down the road. So it has, in the past, been less formal than that, I think it's reasonable to say and more discussions and more transfer of information and discussion of information.

Q. And my final question, I think, also arises from sort of the same discussion you were having with the Board Chair on this and we're talking about as these things change over time and what I would like to refer you to, if you could briefly describe any sense of improvement or whether it remains static or whatever, in relation to Hydro's perception of the accuracy and the reliability of the modelling. I mean, is it the same now as it was back when it started in the 90's or is it better and are the approaches that we take, are they different? I'm just curious if you could give some indication of that and how you feel about it at the present, in 2006?

(1:45 p.m.)

A. I think it's fair to say that the models themselves have improved, that they have captured new empirical information that has been applied in the calculations and

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alogarithms that are there. They are much more viable in terms of the breadth of a situation that may occur, as I say, in particular, Holyrood, there's the complex terrain that surrounds the plant and there is the land water interface where you've got a coastal facility. The CALPUFF modelling is a new modelling set that's intended to address those concerns or those factors in more detail than had been done in the past. The approach in the past, as well, had been one of gaussain dispersion of the pollutant, so you take it and then over time it should express itself in all dimensions in the same format until affected by wind shears or whatever. The new meterological approach to this as wind fields, they're called, and so the effect takes an emission and carries it for a period of time and then the next emission is carried for a period of time, separate--by a separate wind field that will affect it in a particular way, and with the meterological condition of the time of the release and what comes after that. So they have tried to approach the alogarithms in much more detail based on new empirical

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data and empirical information that has come up and been available to them. The models have changed and since '95, the approach to modelling has changed too. The data that we apply in terms of emission rates is more finely determined than it was then. It was based on, to some extent, originally on emission factors because we're only entering into the stack testing program at that stage. The stack tests have improved in terms of their accuracy as well, I think, although the methodologies and protocols are standardized, the implementation of those has become much better, and so that data is better. The approach to then inputting that into the model has been more fine tuned as well and much less general and much more specific to individual time periods. So I think it's fair to say that our modelling has improved and our expectation is and the Department of Environment's expectation is that that's more accurate, that shows more accuracy as well.

Q. Those are all my questions. Thank you, Mr. Ricketts. Thank you, Chair.

CHAIRMAN:

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Q. Thank you, Mr. Young. I thank you very much, Mr. Ricketts for your testimony. I found it to be quite complete in your efforts to answer and I guess thank you for your co-operation. It's been probably a long morning for you, given that we're going on 2:00 now. Thank you very much, I appreciate it.

A. You're welcome.

CHAIRMAN:

Q. I guess we're scheduled, Ms. Newman, for 9:00 with Mr. Haynes on Monday morning?

MS. NEWMAN:

Q. Yes.

CHAIRMAN:

Q. Okay, so we'll see you then. Have a good weekend, thanks very much.

Upon concluding at 1:47 p.m.

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CERTIFICATE

I, Judy Moss, hereby certify that the foregoing is a true and correct transcript of an application by NL Hydro for Approval of Recovery of Costs of 1% Sulphur Fuel through the Rate Stabilization Plan, heard on the 5th day of May, A.D., 2006 before the Board of Commissioners of the Public Utilities Board, St. John's, Newfoundland and Labrador and was transcribed by me to the best of my ability by means of a sound apparatus.

Dated at St. John's, Newfoundland and Labrador this 5th day of May, A.D., 2006

Judy Moss