Q. Re p. B-19, provide copies of any and all documents wherein Department of Environment recommends monitoring fine particulate fallout.

A. The recommendation to include monitoring of fine particulate is found in a letter (attached) dated March 31, 1999 from D. Maddocks, Director, Pollution Prevention Division, Department of Environment.

Subsequent to that letter, Hydro has had a number of meetings with the Department of Environment at which this was discussed further. Excerpts from the minutes of these meetings are also attached.

GOVERNMENT OF
NEWFOUNDLAND AND LABRADOR

Department of Environment and Labour
Pollution Prevention Division

716.021

March 31, 1999

Mr. David Kiell
Director, Environmental Services & Properties
Newfoundland & Labrador Hydro
500 Columbus Drive
St. John's, NF
A1B 4K7

Dear Mr. Kiell:

Re: Holyrood Generating Station Continuous Emissions and Particulate Monitoring

The submission entitled *Holyrood Generating Station Continuous Emissions Monitoring and Particulate Monitoring 1998-06XX* has been reviewed by the Department, and we are pleased to provide the following comments:

Continuous Emissions Monitoring (CEM)

A review of the information provided concerning continuous emission monitoring indicates some operational and environmental benefits to its use. We would encourage Hydro to consider this but we do not view this as a requirement at this time.

However, I would request that the report be completed and submitted in a final version for our files so that this issue can be closed for the present.

Particulate Monitoring (PM)

We are satisfied with the TSP program operated by Hydro for the past number of years and are pleased to note the effort that has gone into this program and consequently the good results that have come out.

However, at this time, concerns nationally and provincially are more appropriately focussed on the health impacts of fine particulate. We would therefore recommend that the program be reconfigured to monitor fine particulate.

A suggested program would involve:

Green Acres: PM10, PM 2.5, TSP
Indian Pond: PM10, Pm 2.5
Butter Pot: PM 2.5
Lawrence Pond: PM 2.5

Monitoring can be modified TSP, dichot or TEOMs.

This would be considered a minimum recommended level for a new program. PM 10 at Butter Pot and Lawrence Pond could be added.

As always, we are available to discuss this or other items.

Sincerely yours,

Derrick Maddocks, P.Eng.
Director
Pollution Prevention Division

cc J. Nauoke.

HYDRO

File #: 000.01.18/NDOEL

INTER-OFFICE MEMORANDUM

DATE: 11 December 2000
TO: D.W. Reeves; T. LeDrew
CC: T.D. Collett; G.M. Dlugosch; F.L. Ricketts
FROM: D.J. Kiell
SUBJECT: **Meeting with NDOEL – 6 December 2000**

Location: Confederation Building
Date: 6 December 2000
Present: Ken Dominie
Derrick Maddocks
Dave Reeves
Terry LeDrew
Dave Kiell

Particulate

KD asked about plans with respect to monitoring of particulate matter emissions from the Holyrood Generating Station (HGS). TL indicated that new particulate monitoring equipment for each of the five monitoring locations has been included in the 2004 budget. The equipment will measure PM_{10}.

KD followed up by asking why would this be left until 2004, and why would $PM_{2.5}$ not be used, since that is the standard recommended to industry by CCME. DM indicated that from his experience, the cost differential is minimal. Furthermore, upgrading of the monitors can be spread over a number of years, which will help moderate the cost burden.

TL indicated that Hydro was planning on instituting pollution prevention measures (CEM and particulate screens) before enhancing existing monitoring equipment. CEMs will assist operators in reducing emissions by providing real-time data on unit operation. The screens will extract particulate before it enters the effluent stream. TL explained that PM_{10} was recommended by Cantox in order to replicate their 1999 study.

TL went on to inform KD and DM that:

1. monitors were installed in the stack to monitor effluent opacity;
2. M_gO, a fuel additive, is currently being used, and appears to be reducing particulate emissions; and
3. trials are planned to evaluate the use of a combustion catalyst, which would also reduce particulate emissions.

It became clear that NDOEL wants a clearer understanding of what is being undertaken at HGS in this regard, but reaffirmed their belief that monitoring at $PM_{2.5}$ sooner than 2004 would be desirable.

Draft Notes of the Meeting
Between
Department of Environment and Hydro

May 08, 2002

1. **Present**

Dave Reeves (DR); Jim Haynes (JH); Dave Kiell (DK); Ken Dominie (KD); Derrick Maddocks (DM)

2. **Agenda**

As circulated

3. **General**

KD noted discussion was needed to provide focus on the direction rather than details.

4. **Holyrood Air Emissions**

DM & KD noted the need to reduce emissions. There were greater external pressures in this direction. Comparison with the reductions at the North Atlantic refinery were noted. While sulphur dioxide was a key pollutant, all pollutants needed to be addressed. The Department is looking for an 'agreement' on reductions.

DK spoke on the existing agreement. (This was originally signed as part of the acid rain reduction program in Eastern Canada). In 1989 Hydro exceeded 25,000 tonnes but because it was a low water year, Hydro was actually in compliance with the letter of agreement. In order to meet this limit, Hydro reduced their fuel specs from 2.8% to 2.2% sulphur. However they are now bumping up on the 25,000 tonnes even with the lower spec.

JH said that Hydro plans are based on a 1 to 1.5% annual demand increase. Hydro power is much cheaper than thermal. Granite Canal will reduce Holyrood's use in the short term starting in 2003 but Holyrood will still fill future load growth while other sources are built.

DM noted that the Holyrood issue with sulphur dioxide was an air quality issue as well as an acid rain issue.

DK spoke about improvements made as a result of using the lower sulphur bunker.

JH noted that Holyrood does not have a production target, it runs as needed to pick up the slack. While production was high in 2001, it was in response to a low inflow period.

KD asked if goals can be set.

JH stated that the new fuel contract is flexible. It is set at 2.2% but Hydro can order any sulphur contract with a premium on 28 days notice.

KD noted the need to show movement that people could understand. A cap fits this criteria.

DK asked what is most important: air quality or acid rain?

KD suggested a need to lower the cap while improving the winter numbers.

DR indicated this would mean a different management regime for Holyrood.

DK mused that perhaps the weather would cooperate and they could meet reduced levels without significant changes.

DM noted that even so Hydro needs to plan for next weather downturn.

JH said that improving fuel quality may be the best option if natural gas is expected within 10 years. This would be better than the capital cost of control equipment to be used for only a few years.

KD said Hydro needs a simple plan that can handle different management regimes.

DM suggested Hydro look at using fuel quality flexibility to reduce the variation perhaps using historical data.

JH asked about the need for NOx control.

DM suggested the need for monitoring first to determine if there is a problem and its extent.

There was discussion on air monitoring for fine particulate and NOx.

DR asked about the time frame for this monitoring.

DM suggested one site this year and 2 in each of the next 2 years.

KD suggested we meet again in 4 to 6 weeks to review progress.

HYDRO
THE POWER OF COMMITMENT

MINUTES OF THE MEETING BETWEEN HYDRO AND THE DEPARTMENT OF ENVIRONMENT 5 JULY 2002

1. Attendance

Present

- Dave Reeves (DR)
- Jim Haynes (JH)
- Dave Kiell (DK)
- Derrick Maddocks (DM)

Regrets

- Ken Dominie

2. Progress on Holyrood Air Emissions

JH distributed a draft brief entitled "SO_2 Emissions at Newfoundland and Labrador Hydro's Holyrood Generating Station", and highlighted the main points to facilitate discussion. A final copy of the brief is attached.

3. Establishment of Priorities

DM shared his perception of the air emissions priorities at Holyrood:

- monitoring of fine particulate;
- monitoring of ground level NOx; and
- compliance with SO_2 ground level regulations.

DM provided clarification on the third bullet.

While it is important to reduce the annual quantity of SO_2, this is a regional environmental issue related to acid rain, and is not regulated. As a result, DM suggested that DOE would be amenable to mechanisms, such as implementation of a 5-year rolling average, to accommodate the unique nature of the Holyrood Generating Station in Hydro's operation. DOE would like to see the

annual output from the Generating Station reduced over time, however, the rate of this reduction is flexible.

Ground level concentrations of the gas, however, have the potential to adversely impact upon the local environment and human health. Therefore, compliance with regulations pertaining to ground level concentrations should be the priority. Also, at Holyrood, actions taken to reduction of ground level concentrations of SO_2 would likely result in a lower quantity of SO_2 annual emission.

DK mentioned that full compliance with the ground level concentration regulations may not be possible. Experience has shown that atmospheric inversions can result in non-compliances even when the Generating Station is not being heavily used. DM acknowledged this. It was agreed that Hydro should model emissions to determine the impact sulphur contents in the fuel on the frequency of compliance. This data could then be used in the formulation of a compliance agreement.

4. Next Meeting

It was agreed that the next meeting would be in September 2002.

DK suggested that the agenda include discussion of both the Holyrood and diesel plant initiatives.