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August 12, 2003

J. Trent Hreno  
Chairman, Technical Advisory Committee  
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123 Main St, Suite 160  
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**Subject: EIS for the Wuskwatim Generation and Transmissions Projects – Health  
Canada comments on EMFs**

Dear Mr Hreno,

As promised in our letter of June 30, 2003, officials from Health Canada have reviewed the EIS for the Wuskwatim Generation Project and the Wuskwatim Transmission Project. Our experts were not available to review the information on the health concerns related to Electric and Magnetic Fields (EMFs) in time to meet the deadline of the Province and the Technical Advisory Committee. However, we have now completed our review of information pertaining to EMFs, and hope that our comments can be taken into consideration and that our questions can be answered.

For ease of discussion, we have separated our comments by our review of the EMF workshop report and the summary document on electrical fields.

**Comments on: “Wuskwatim G.S. Project - Summary: Various Electrical Effects  
Attributed to Transmission Lines: H72W, H73W, H74R and B7W”**

General: We have a number of questions and comments with respect to this document.

1. The document should have included the name(s) of the author(s) and reviewer(s) as well as the date. Also, pages and figures should be numbered throughout Appendices A and B for ease of reference.

2. There are several similar errors that are consistent throughout the document (see Specific next page).
3. What criteria were used to determine/establish the width of a transmission line right-of-way (ROW)? Do CEA and Manitoba Hydro have any voluntary standards for electric and magnetic fields at the edges of ROW? If so, what are they? This information should be included in the document.
4. We have no experience with the MHEF program, which was used to perform calculations with respect to high voltage transmission lines. As such, we are unable to comment on the calculated values of electric and magnetic fields listed in the tables. While these values are well below the science-based exposure guidelines recommended by some national and international organizations, how are they compared to those from similar existing 230-kV transmission lines?
5. Have the calculations obtained from the MHEF program been verified by actual field measurements in the past? If so, how accurate are they?
6. When the actual (eventual) design parameters of the proposed 230 kV transmission line are known, will the calculations be performed again?
7. In any case, it is our opinion that the calculated values of electric and magnetic fields should be verified by actual field measurements after the construction of the proposed transmission line.
8. We understand that the proposed transmission line will go through a number of communities. Will fences be installed near the line to deter public access to the corridor? If not, will there be any parking lots or sport facilities under the line? It is known that perceptible currents or nuisance shocks can be experienced by persons or animals in a transmission line electric field. These conditions may occur if the electric field is 2 kV/m or greater.

Specific:

9. Errors in Tables 2, 3, 4, 5 and 6. Numbers in columns 3 and 4 should be swapped.
10. Appendix A. For better understanding of the text, the structure dimensions should be given in all the graphics.
11. Appendix B. Errors relating to the legend. The text described in the legend box (e.g.  $\pm 15$  m) should correspond to the distances marked on the curve (e.g.  $\pm 21.71$  m or  $\pm 46.71$  m, wherever applicable).

## Comments on “Workshop Report: Review of Electric and Magnetic Fields (EMFs), March 2001”

### General:

12. Most of the scientific reports referred to in Section 4.4.2 were epidemiological studies that investigated an association between power-frequency EMFs and cancer. The presentation appeared to lack an overview of laboratory studies with biological cells, animals and human volunteers. The overview should have also covered the effects caused by induced and contact currents that flow through the human body when exposed to EMFs.
13. The consensus statement on the human health effects of extremely low frequency (ELF) EMFs, as outlined in Section 5.2, was based on the position statement issued in 1998 by the Federal Provincial Territorial Radiation Protection Committee (FPTRPC). The two statements are in agreement with Health Canada’s position on ELF EMFs ([www.hc-sc.gc.ca/english/iyh/environment/magnetic.html](http://www.hc-sc.gc.ca/english/iyh/environment/magnetic.html)). In other words, there is no conclusive scientific evidence of any harm caused by ELF EMF exposures at levels normally found in our living and working environments.

### Specific:

14. Section 4.5, page 4-6. The last item “the guideline that recommends a limit of 4.16 kV/m and 83.3  $\mu$ T...(ICNIRP 1998)” should be clarified that these exposure limits are applicable for power-frequency EMFs at 60 Hz.
15. Section 4.6.1, page 4-7. A reference should be given for the IEE (Institute of Electrical Engineers) draft guideline document. To our knowledge, the IEE has never issued EMF exposure guidelines, but the IEEE (Institute of Electrical and Electronics Engineers) at that time had a draft standard for safety levels with respect to human exposure to electromagnetic fields, 0 to 3 kHz (C95.6), which has recently been published.
16. Section 4.6.2, third paragraph. Besides the BC Hydro, the Hydro One Networks in Ontario also provides EMF measurement services at no cost to their direct customers as well as to individuals and organizations whose property is adjacent to a Hydro One distribution and transmission facility. This information might not be available before the workshop. Nevertheless, Manitoba Hydro should consider providing a similar service to their customers.
17. Section 5, page 5-2, item 4, the term “power and frequency fields” does not make sense. It should have been “power frequency fields.”

We thank you for allowing us the opportunity to participate in this EA review. Please note that Maria Ooi is away on leave, and I am the interim contact person for Manitoba projects. If you have any questions, do not hesitate to contact me at (613) 948-2875.

Sincerely yours,

Carolyn Dunn  
EA Officer

c.c    Beverley Ross, DFO  
       Dan McNaughton, CEAA  
       Helen Ptaznik, HC