



LETTER NO. L-31-01

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VIA E-MAIL

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October 25, 2001

Mr. Walter Kanigan
Ootischenia Water and Land Stewardship
Committee Action Group
1310 McPhee Road
Castlegar, B.C. V1N 4L9

Dear Mr. Kanigan:

Re: UtiliCorp Networks Canada (British Columbia) Ltd.
(Formerly known as West Kootenay Power Ltd.)
Complaint – Routing of 230 kV Transmission Lines through Ootischenia Area

This is in response to your complaint of May 7, 2001 on behalf of the Ootischenia Water and Land Stewardship Committee Action Group.

Your complaint formally requested the Commission to order WKP to cease and desist the work of the 230 kV System Development through the residential area of Ootischenia until the residents' and landowners' concerns are addressed and was based on concerns about adverse effects from high voltage transmission lines on human health.

The Commission has denied your complaint and your request to order WKP to cease and desist, for the reasons set forth in the attached Reasons for Decision.

Yours truly,

Original signed by:

Constance M. Smith
for: Robert J. Pellatt

RWR/cms
Attachment

cc: Mr. Robert H. Hobbs
Director, Regulatory and Government Affairs
UtiliCorp Networks Canada (British Columbia) Ltd.
Honourable Richard Neufeld, Minister
Ministry of Energy and Mines
Honourable Sandy Santori, Minister
Ministry of Management Services
MLA-West Kootenay-Boundary
Mr. Blair Suffredine, MLA-Nelson-Creston
540 Baker Street, Nelson, BC V1L 4H1
Mr. John O'Riordan, Deputy Minister
Ministry of Sustainable Resource Management

Ms. Carol A. McGowan, Secretary/Assistant Administrator
Regional District of Central Kootenay
Mr. Elmer Pellerine, Director,
Area J – Lower Arrow/Columbia
Box 468, Robson, BC V0G 1X0
Mr. John Voykin, Director, Area I
c/o Regional District of Central Kootenay
Mr. Hans Karow
Coalition to Reduce Electropollution
Mr. Derek Thompson, Deputy Minister
Ministry of Water, Land and Air Protection
Mr. John Cameron, Chair
Blueberry Creek Irrigation District
202A Beresford Avenue, Castlegar, BC V1N 4H2

OOTISCHENIA WATER AND LAND STEWARDSHIP
COMMITTEE ACTION GROUP
REGARDING WEST KOOTENAY POWER LTD.
230 KV SYSTEM DEVELOPMENT THROUGH THE RESIDENTIAL AREA OF OOTISCHENIA

REASONS FOR DECISION

1.0 INTRODUCTION

1.1 Background

On May 7, 2001, the Ootisohenia Water and Land Stewardship Committee Action Group (“the Committee”), on behalf of the residents of Ootisohenia, filed a complaint regarding the proposed siting of West Kootenay Power Ltd.’s (“WKP” [now UtiliCorp Networks Canada (British Columbia) Ltd.]) 230 kV transmission line through the Ootisohenia area. The Committee requested the Commission order WKP to cease and desist the work of the 230 kV transmission line through the residential area of Ootisohenia until the concerns of the residents and landowners are addressed. They further stated that, based on the body of research and existing evidence regarding adverse health effects from high voltage lines, they are opposed to the routing of the 230 kV transmission line through the residential area of Ootisohenia. They specifically cite concerns for the health of the residents by being exposed to elevated levels of aerosol pollutants and radon decay products as a result of corona ions being produced by the 230 kV transmission line. Their submission also identifies general concerns regarding the effect of power frequency electromagnetic fields on the production of cancer in humans. Their submission included a petition signed by many area residents and scientific papers by Professor Denis Henshaw and others, which postulated that corona ions created by high voltage transmission lines attract pollutant aerosols and deposit them on humans in the vicinity. Other attachments included papers describing the production of ions in electric fields and the deposition of charged particles in human airways.

On June 15, 2001, WKP submitted a response to this complaint, which included a report from Exponent, Inc., authored by Dr. William Bailey. Dr. Bailey’s report was not supportive of the conclusion by Professor Henshaw regarding increased aerosol exposure causing cancer, nor did he draw the same conclusions regarding the effect of extremely low frequency electromagnetic (“ELF EM”) fields on health.

Professor Henshaw wrote to the Commission, on July 5, 2001, in rebuttal to Dr. Bailey’s report, and followed up on July 18, 2001 with a letter to the Commission supplying additional information with regard to findings of the California Health Department.

The Committee submitted a rebuttal to WKP’s response on August 3, 2001, and Mr. H. Karow submitted a rebuttal to WKP’s response dated August 31, 2001.

2.0 DISCUSSION

This discussion is directed to two issues raised by the Committee:

1. General concerns regarding the effect of ELF EM fields on health and the specific concerns regarding ELF EM fields association with childhood leukemia.
2. Specific concerns regarding the hypothesis that corona ions from high voltage transmission lines increase aerosol and radon exposure for humans.

2.1 Extremely Low Frequency Electromagnetic Fields

The Commission has received submissions regarding the effects of ELF EM fields at every transmission line hearing since 1989 when the Commission first reviewed detailed evidence about the effects of ELF EM fields on human health. During the two most recent hearings for the WKP rebuild of Line No. 44 from Oliver to Osoyoos in 1998 and the Kootenay 230 kV System Development hearings in February and March of 2000, the Commission also reviewed submissions on this topic. The Commission's conclusions from both hearings were that although there is a large body of conflicting evidence, the preponderance of findings from scientific forums is that there is no conclusive evidence to support the position that ELF EM fields are a health hazard. However, the Commission, in the Line No. 44 Decision, did agree that strategies of prudent avoidance¹ and low cost attenuation for ELF EM field exposure continued to be appropriate where possible.

Since those hearings there have been some additional papers published, most notably by Ahlbom and by Greenland. Both studies pooled previous analyses on childhood leukemia and concluded that there is a statistical association of childhood leukemia with ELF EM fields above three to four milligauss. On June 27, 2001, the International Agency for Research on Cancer ("IARC") also agreed that ELF EM fields should be classified as category "2B Possible Carcinogen".

From articles in the EMF Health and Safety Digest issue of July/June 1998 and corroborated by the Microwave News article dated July/August 2001 attached to Mr. Karow's rebuttal, it is notable that in 1998 the National Institute of Environmental Health Scientists ("NIEHS"), based on a majority of panel scientists, also classified ELF EM fields as Possible Carcinogens 2B. According to the same articles Classification 2B categorizes a possible effect but bias, chance, and confounding cannot be ruled out. Examples of possible carcinogens 2B include chloroform, lead, coffee, saccharine, pickled vegetables, and styrene (there are 236 agents in this category). In a NIEHS press release dated June 15, 1999, the NIEHS commented that the data supporting this categorization was weak and that the risks were small. The release goes on to state that, "...laboratory studies and investigations of basic biological function do not support these epidemiological associations, ..." and that, "Virtually all of the laboratory evidence in animals and humans and most of the mechanistic studies in cells fail to support a causal [cause and effect] relationship." In addition, the release

1 A June 1989 report by scientists from Carnegie Mellon University to the U.S. Congressional Office of Technological Assessment espouses "prudent avoidance" practices that can be taken by everyone. These are practical measures to limit exposure such as long-term avoidance to low-level fields and avoidance of appliances that produce high electromagnetic fields.

states that there is inadequate evidence to support the claim that depression can be linked to ELF EM fields. The press release also states that, “Research continues on some “lingering concerns”... and efforts to reduce exposure should continue.” The Microwave News article attached to Mr. Karow’s rebuttal, reports that the IARC concluded that evidence for excess cancer risks of all other kinds in children and adults as a result of the exposure to ELF electric and magnetic fields was considered inadequate. This observation is corroborated in a NIEHS press release of June 24, 1998, which contains the comment that, “There is inadequate evidence, ... for carcinogenicity to adults of residential exposure to extremely low frequency magnetic fields.” The press release also comments that, “... the panel found the data linking children’s cancer other than leukemia to be inadequate.”

According to Dr. Bailey’s report, in 1999 McBride et al. of the B.C. Cancer Registry, in one of the largest studies in Canada, reported no association could be found between electromagnetic field exposure and childhood leukemia.

During the Line No. 44 hearing in 1998 Mr. Richard Gallagher (epidemiologist with the B.C. Cancer Agency) testified that, in his opinion, there will be studies over the next few years which will show equivocal results, i.e., very slightly positive or very slightly negative, and that if there is found to be an effect in the future it is apt to be small (reference Line No. 44 Decision, p. 16).

During the Kootenay 230 kV System Development hearing the Commission heard evidence that ELF EM field levels would be reduced over present levels and therefore met the test of prudent avoidance and low cost attenuation. From information sent to Mr. Karow on June 20, 2001 and to the Commission on July 25, 2001, WKP showed a proposed option which places the line position near the east edge of the right-of-way. WKP indicated that this option would reduce the overall levels of electromagnetic fields; however, there will be one section of line in the Ootischenia community where some properties will be exposed to higher levels of electromagnetic fields. These properties are along a three kilometer section on the east side of the right-of-way in south Ootischenia. The EM field levels at the edge of the east side of the right-of-way will increase from approximately 23 milligauss to 42 milligauss. These values were computed based on maximum loading conditions and, therefore, would occur on an intermittent basis for a portion of the year.

Information from the June 20, 2001 reply to Mr. Karow and the July 25, 2001 reply to the Commission, indicated that if the new line was located near the middle of the right-of-way, the EM field levels would be reduced from 12 milligauss to approximately 10 milligauss at the east edge of the right-of-way. This information however has been replaced by more accurate studies as indicated in the replies to the Commission and Mr. Karow.

2.2 Corona Ions

Professor Henshaw hypothesizes that charged ions produced by corona (partial discharges) from transmission lines could attach to cancer producing aerosols and create a higher ambient level of aerosols, which could be deposited in the lungs and thus affect human health. The Committee has also suggested that high levels of radon could become attached to these ions and pose an additional health hazard. Radon is classified as a known carcinogen by NIEHS. Papers published by Fewes, Henshaw et al. in 1999 purported to explain this mechanism.

Dr. Bailey criticized this hypothesis, noting that there is insufficient data to determine the amount of possible aerosol deposition on the lungs or if the charges produced are sufficient to cause the deposition to occur. Dr. Bailey also notes that the United Kingdom Childhood Cancer Study (2000) considered the corona ion theory and concluded that there was no evidence that proximity to electrical installations or the electromagnetic field levels they produce is associated with an increased risk of childhood leukemia or any other cancer.

In response to the fear of radon decay products being deposited on the skin of the residents in Ootischenia, Dr. Bailey commented that the conditions proposed by Fewes, Henshaw et al. to have an effect are not present in Ootischenia. He also comments that the electric field strength off the right-of-way is not sufficient to cause an increase in deposition of radon decay products.

3.0 COMMISSION CONCLUSIONS

The recent studies and positions adopted by the IARC and NIEHS are consistent with previous Commission observations that the evidence regarding ELF EM field effects continues to be inconclusive and is likely to demonstrate extremely low or no risks to health. In view of this lingering uncertainty however, and until science is able to provide more definitive evidence, the Commission is of the view that a strategy of prudent avoidance and low cost attenuation where possible is still appropriate.

The Commission notes that WKP is required to apply for approval of final line alignment, right-of-way acquisition plans, and updated cost estimates (Order No. G-10-00). WKP's submission should address the options and costs to reduce electromagnetic field exposure by positioning the line closer to the center of the right-of-way or relocating the line. The Commission determines that it is appropriate to examine the proposed alignment in terms of prudent avoidance and other impacts the proposed alignment may have on Ootischenia when WKP has submitted its final plans for approval.

The Commission notes that there is insufficient evidence to link possible health effects caused by aerosols or radon attached to charged ions produced by corona and the proximity of transmission lines. The Commission also notes that there is considerable disagreement among experts as to the plausibility of corona

ions actually causing an elevated risk. Furthermore, neither the NIEHS nor IARC have accepted that this mechanism causes an elevated risk.

Therefore, the Commission finds that there is insufficient evidence to conclude that corona ions from high voltage lines, and in particular from the 230 kV transmission line through Ootischenia, will cause elevated risks of adverse health effects.

The Commission, therefore, dismisses the complaint raised by the Ootischenia Water and Land Stewardship Committee Action Group.

While the complaint of the Committee focused on health risks from ELF EM fields and corona ions, the Commission recognizes that the Committee's objective is to see the power lines removed from Ootischenia for many reasons, including aesthetics and land use. In its Decision on the 230 kV transmission line, the Commission stated:

"The new 230 kV transmission line would have a significant beneficial impact relative to the existing eight 63 kV lines. WKP proposed to use single-pole structures with longer 100 to 150 meter intervals between poles to minimize the impact on local communities (Exhibit 3, Tab 2, p. 4). Adjacent residents, agriculture and aesthetics would all benefit. Wildlife and wildlife habitat have been affected by the existing development in the area, and would be expected to benefit from a narrower right-of-way and fewer poles. Very few new access roads or stream crossings would be needed." (Section 4.2.1, p. 31 June 5, 2000 Decision)

and

"Where there are no diversions, the present wide right-of-way required for the present lines offers latitude in the alignment of the new single line, as well as the potential for new land uses and public amenities that are compatible with the new line. WKP will be expected to take the interests of residents and landowners into consideration when it is determining the alignment and pole placements for the line." (Section 4.2.5, p. 35 June 5, 2000 Decision)

The Commission concluded that:

"The Commission determines that construction of a 230 kV transmission line is required between Brilliant and Warfield along the K3 route, subject to the filing of final line alignment, right-of-way acquisition plans and updated cost estimates. WKP is directed to proceed with project planning and development for the line." (Section 4.2.5, p. 35 June 5, 2000 Decision)

It remains the Commission's intention that no community is disadvantaged by the new transmission line compared to the existing lines, unless there are no practical, cost-effective ways to avoid or mitigate the disadvantage. The Commission, therefore, expects WKP to respond to the Commission's Decision when it files its recommended final line alignment. The filing should include specific routing options through Ootischenia, the costs, and an evaluation of their impacts on the residents, including electromagnetic field values at the right-of-way edge and at residences.