



Ottawa, Friday, December 20, 1991

Appeal No. 2374

IN THE MATTER OF an application heard between  
May 28, 1991, and July 31, 1991, under section 59 of the  
*Excise Tax Act*, R.S.C., 1970, c. E-13, as amended.

**BETWEEN**

**HYDRO-QUÉBEC**

**Applicant**

**AND**

**THE MINISTER OF NATIONAL REVENUE**

**Respondent**

**DECISION OF THE TRIBUNAL**

The application is allowed in part. The Tribunal declares that, for the period between 1981 and 1984 inclusively, the articles listed in Appendix A of its reasons are entitled to an exemption of sales tax under subsection 29(1) and pursuant to paragraphs 1 (a), (l) and (o) of Part XIII of Schedule III to the *Excise Tax Act*.

Arthur B. Trudeau  
Arthur B. Trudeau  
Presiding Member

Kathleen E. Macmillan  
Kathleen E. Macmillan  
Member

W. Roy Hines  
W. Roy Hines  
Member

Robert J. Martin  
Robert J. Martin  
Secretary

**UNOFFICIAL SUMMARY**

**Appeal No. 2374**

**HYDRO-QUÉBEC**

**Applicant**

**and**

**THE MINISTER OF NATIONAL REVENUE**

**Respondent**

*Excise Tax Act - The applicant requests under section 59 of the Excise Tax Act (the Act) that articles purchased by it and used on its hydroelectric network be declared exempt from sales tax. The applicant argues that the articles are machinery and apparatus used primarily and directly in the production of electricity, parts thereof and articles used in the manufacture of the above-mentioned articles, and are therefore exempt from sales tax under subsection 29(1) and paragraphs 1(a), 1(l) and (o) of Part XIII of Schedule III to Act.*

**HELD:** *The application is allowed in part. The Tribunal concludes that the applicant's hydroelectric network is used to produce electricity, whether the electricity comes from its own generating stations or is purchased from an outside source. The Tribunal is also of the view that the words "primarily" and "directly" used in the exempting provision must be read in the context of a production process. Finally, the Tribunal finds that the articles listed in Appendix A of its reasons are apparatus within the meaning of the Act. Therefore, the Tribunal declares that these articles were used during the period from January 1, 1981, to February 16, 1984, directly in the production of electricity, and that after February 16, 1984, these articles were used primarily and directly in the production of electricity, in accordance with paragraph 1(a) of Part XIII of Schedule III of the Act as it read during that period. The other articles, that is, the parts and articles subject to exemption under paragraphs 1(l) and 1(o) of Part XIII of Schedule III, are entitled to exemption only in accordance with the Tribunal's findings as stated in these reasons.*

*Place of Hearing: Ottawa, Ontario*  
*Date of Hearings: From May 28 to May 31, 1991,*  
*From June 3 to June 7, 1991, and*  
*July 30 to July 31, 1991*  
*Date of Decision: December 20, 1991*

*Tribunal Members: Arthur B. Trudeau, Presiding Member*  
*Kathleen E. Macmillan, Member*  
*W. Roy Hines, Member*

*Counsel for the Tribunal: Gilles B. Legault*

*Clerk of the Tribunal: Nicole Pelletier*

*Appearances: Wilfrid Lefebvre and Jean-Pierre Chrétien, for the applicant*  
*Jean Halpin and Maurice Lalonde, for the respondent*

**Cases Cited:**

*Maritime Electric Company, Limited v. Minister of National Revenue*, 65 D.T.C. 282; *Hydro-Québec v. The Deputy Minister of National Revenue for Customs and Excise*, (1967) 4 T.B.R. 93, revd. by (1968) 4 T.B.R. 113 (Ex. C.), rest. by (1970) S.C.R. 30; *Gould Manufacturing of Canada Ltd. v. The Deputy Minister of National Revenue for Customs & Excise*, (1975) 6 T.B.R. 296; *Thunder Bay Hydro v. The Deputy Minister of National Revenue for Customs and Excise*, Tariff board, Appeal No. 1225, November 2, 1977; *The Royal Bank of Canada v. The Deputy Minister of National Revenue for Customs and Excise*, (1977-1979) 6 T.B.R. 519, affd. by [1979] C.T.C. 342 (F.C.A.), revd. by [1982] C.T.C. 183 (S.C.); *The Deputy Minister of National Revenue for Customs and Excise v. Amoco Canada Petroleum Company Ltd.*, 86 D.T.C. 6008; *Coca-Cola Ltd. v. Deputy Minister of National Revenue for Customs and Excise*, [1984] 1 F.C. 447; *Calgary Power Ltd. v. The Deputy Minister of National Revenue for Customs and Excise*, (1979) 6 T.B.R. 886.

**Other Sources Cited:**

*Le Grand Robert de la langue française*, Robert, Paul, Second Edition, p. 454.

Appeal No. 2374

**HYDRO-QUÉBEC**

**Applicant**

and

**THE MINISTER OF NATIONAL REVENUE**

**Respondent**

TRIBUNAL: ARTHUR B. TRUDEAU, Presiding Member  
KATHLEEN E. MACMILLAN, Member  
W. ROY HINES, Member

**REASONS FOR DECISION**

This decision pertains to an application under section 59 of the *Excise Tax Act*<sup>1</sup> (the Act) to have certain articles purchased and used by Hydro-Québec on its hydroelectric network declared exempt from sales tax.

FACTS

In the wake of a dispute between the parties, Hydro-Québec filed an application for a declaration with the Tariff Board on September 9, 1985. The application was continued by the Canadian International Trade Tribunal (the Tribunal) under the *Canadian International Trade Tribunal Act*.<sup>2</sup>

The articles in question were purchased by the applicant between 1981 and 1984 inclusively and were installed on its hydroelectric network. The Hydro-Québec network covers the entire province of Quebec and includes generating stations and all facilities up to the point where subscribers are connected. More specifically, the articles in question are located on the applicant's power lines, either at the top of towers and poles or underground. Towers and concrete poles are also covered by this application. However, the application does not apply to all the articles in question where they are installed in substations. Also excluded from this application are power and distribution transformers, synchronous and static condensers and wooden poles that were already exempted from sales tax for a variety of reasons during the period in question.

In view of the amount and the number of articles in issue, the parties notified the Tribunal at the beginning of the hearing that if the Tribunal's decision were favourable, an accounting audit of the articles in question would be conducted in the appropriate manner to determine the exact amount in issue.

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1. R.S.C., 1970, c. E-13, as amended.
  2. R.S.C., 1985, c. 47 (4th Supp.).

## INTERVENORS

A number of parties entered notices of their intention to intervene under subsection 59(2) of the Act. The intervenors are provincial or municipal public utilities and all expressed support for the applicant. However, only Saskatchewan Power Corporation, Nova Scotia Power Corporation and Ontario Hydro were represented at the hearing, and only the latter two submitted written arguments to the Tribunal.

## ISSUE

The issue is whether the articles purchased by the applicant during the period in question are exempt from sales tax under section 29 of the Act in light of the criteria for exemption set out in paragraphs 1(a), (l) and (o) of Part XIII of Schedule III to the Act. More specifically, the issues are whether the articles in question are: machinery or apparatus purchased by the applicant and used directly and (after February 16, 1984) primarily in the manufacture or production of goods; parts for such machinery or apparatus; or articles and materials for use in the manufacture of such machinery and apparatus.

To resolve these issues, the Tribunal must determine whether the articles in question are machinery and apparatus, parts thereof or articles and materials therefor, and whether the machinery and apparatus are used directly and primarily in the production of electricity.

## LEGISLATION

Except for paragraph 1(a) of Part XIII of Schedule III, which was amended retroactive to February 16, 1984, the provisions of the Act applicable to this case read as follows at January 1, 1981:

*27. (1) There shall be imposed, levied and collected a consumption or sales tax of nine per cent on the sale price of all goods*

*29. (1) The tax imposed by section 27 does not apply to the sale or importation of the articles mentioned in Schedule III.*

### *SCHEDULE III*

#### *PART XIII*

*1. All the following:*

*(a) machinery and apparatus sold to or imported by manufacturers or producers for use by them [primarily and] directly in*

*(i) the manufacture or production of goods,*

*...*

*(l) parts for goods described in paragraphs (a) to (k),*

*...*

*(o) articles and materials for use in the manufacture of goods described in paragraphs (a) to (n)...*

[commencement February 16, 1984, S.C. 1985, c. 3, ss. 36(1) and s. 48]

## EVIDENCE

The evidence consisted essentially of testimony by expert witnesses. Four expert reports were submitted before the hearing. During the hearing, the applicant called only one witness, Marc G. Thériault, an electrical-engineering consultant, who was authorized by the Tribunal to testify as an expert witness on the general operation of electricity-generating networks.

The respondent called three expert witnesses. Marc Samson, a civil engineer, testified as an expert on how electricity is produced at electricity-generating stations, and in particular on turbine generators. Maurice Brisson, an electrical engineer, testified as an expert on hydroelectric networks, and in particular on the planning and design of these networks. Lastly, the respondent called another electrical engineer, Jacques R. Lapierre, who testified on the technology used to transmit and distribute electrical power.

The parties also used a model of a hydroelectric network and an electrical circuit, in addition to submitting over 140 exhibits of various types.

### How electricity is produced

In his testimony, Mr. Thériault explained the process of energy conversion that takes place at a hydroelectric generating station. In this process, kinetic energy, which is defined as the energy of a moving mass, such as a waterfall, is converted into mechanical energy when the water falls on a turbine, and then into electrical energy when the turbine activates an alternating current (A.C.) generator. The force of the falling water makes the turbine turn. The generator consists of two main components, a rotor which is connected to the turbine by a shaft and a stator, a fixed part within which the rotor turns both being mounted on the top of the turbine. When the rotor turns, its electromagnets cut the electrical fields of the stator. A voltage is thus induced in each of the metal wires. A current is created only when the lines are connected and the circuit is closed as the witness will later explain.

The output of every generator is connected by electrical cables to a step-up transformer. This transformer converts the current (or amperage) and the voltage to levels suitable for long-range power lines. The electricity goes into this transformer from the generator at a level of 13,800 volts and comes out at 735,000 volts. Close to the point where the electricity will be consumed, it goes through a step-down transformer, which reduces it to 25,000 volts. Near individual residences or other final points of utilization or consumption, it goes through one last transformer which steps it down to 120 or 240 volts. Electricity supplied to industrial customers can be at higher voltages if required.

Electrical power is measured in watts and is calculated by multiplying the voltage by the current (watt = volt X amp). When electrical power is related to a unit of time, such as an hour, the unit of measurement is the kilowatt hour. Kilowatt hours are what Hydro-Québec sells, and it is the consumption of kilowatt hours that is recorded on customers' meters. The invoices that Hydro-Québec's customers receive show their consumption of electricity in kilowatt hours.

Mr. Thériault stated that resistance is the main phenomenon associated with the production of electricity. In fact, resistance occurs wherever there are wires conducting electricity, because all conducting wires are made of metal (copper or aluminum), and metal inherently resists the movement of electrons. According to the witness, the only economical way to overcome resistance is to increase the voltage, because if the amperage were increased instead, heavier equipment would be required. In Hydro-Québec's transmission network, very long lines are required, because the generating stations are far from the sites of energy consumption. Because the longer the line, the higher the resistance, Hydro-Québec's network includes lines with very high voltages, up to 735,000 volts.

Although the respondent's witnesses agreed with the basic thrust of Mr. Thériault's testimony, they pointed out certain distinctions and made certain clarifications. Mr. Brisson, who testified on electrical power networks, stated that the decision regarding the voltage at which the electricity leaves the generating station depends not only on how far it is to be transmitted, but also on how much power is to be transmitted, or in other words, on the load. In addition, resistance is not the only cause of losses. The network itself consumes a certain amount of power. Mr. Brisson believed that in total, the electrical equipment in Hydro-Québec's network accounts for 40 percent of the losses in the network. Mr. Lapierre, who testified on the transmission and distribution of electrical energy, also stated that electricity is consumed throughout the circuit. According to Mr. Lapierre, the network itself is one of the largest consumers of energy. To reduce this consumption, which does not bring in any revenue, the applicant raises the voltage.

Mr. Thériault also explained that electricity is present everywhere in the network simultaneously, because it is consumed the instant it is produced. According to Mr. Thériault, this phenomenon takes about two micro-seconds, which is why he referred to it as an "instantaneous process." However, according to Mr. Brisson, the process is not instantaneous, since the reaction time can be measured with scientific instruments. For electricity to travel from Churchill Falls to Montréal, a distance of about 1,000 km, it takes one-fourth of a cycle (one cycle equal one-sixtieth of a second). Moreover, according to this witness, whenever a major event occurs on the network such as a load being switched on or off, a transitory phenomenon occurs. As the turbine-generator and the water-intake system take time to react (at least three to four seconds), it is the inertia in the network that meets the power demand during this time.

Mr. Lapierre shared Mr. Brisson's belief that the process of producing electricity requires a transition time in the order of one-fifth of a cycle. To illustrate his point of view, Mr. Lapierre mentioned that at hydroelectric generating stations, whenever turbines slow down, the water intakes open. Even with very modern, highly sophisticated equipment, the reaction time is in the order of 3 seconds. Twenty years ago, it might have been as much as 10 or 15 seconds. This reaction time, he said, occurs in all natural physical phenomena, and is not unique to electricity. Consequently, electricity is not produced and consumed instantaneously.

Although the witnesses differed on whether electricity is produced and consumed instantaneously, they all agreed that alternating current electricity cannot be stored.

Regarding the nature of the applicant's operations, Mr. Thériault explained that Hydro-Québec converts one form of energy into another and sells this latter form. When asked whether Hydro-Québec was also a consumer of electricity, Mr. Thériault replied that it was, and that it consumes electricity at its generating stations as well as at its corporate headquarters. Asked if the corporation might also be a transporter of electricity, Mr. Thériault said that he would rather speak in terms of transferring electricity. He also conceded that on some occasions Hydro-Québec purchased electricity from Ontario, the United States, private companies and from Churchill Falls, in which it is a partial shareholder, and that in such cases Hydro-Québec acted strictly as a "transporter." Mr. Thériault initially said that these purchases represented approximately 5 percent of Hydro-Québec's production, but subsequently increased this figure to 6 percent.

The witness also testified that no one could determine the exact source of the electricity supplied to a given residence or building. Hydro-Québec's network is an integrated system, in which 84 generating stations, including Churchill Falls, are interconnected. According to him, the flow of electricity could be explained by using a diagram with arrows, but that this would not reflect what was

really happening because of the cyclical nature of A.C. electricity. Using a drawing of the main generating stations in Quebec, including Churchill Falls for the purposes of this case (exhibit B-1), the most he would agree to was that if energy were consumed in Montréal and if the source of this electricity was Churchill Falls, then the direction of this energy was north to south. Mr. Brisson and Mr. Lapierre stated in their testimony that although current and voltage are cyclical phenomena, energy nevertheless has a direction.

Asked to comment on a Hydro-Québec publication (exhibit B-10.1 and 10.2) describing Hydro-Québec's activities to the general public in terms of production and transmission phases, Mr. Thériault explained that in his opinion the corporation divides its network into production, transmission, and distribution activities for reasons related to management, technology, and training. Distribution activities are further divided into overhead and underground distribution. Distinguishing the concept of transmission that was also used in another Hydro-Québec publication (exhibit B-12), the witness indicated that he too would use this term to describe large power lines in an understandable fashion that people could visualize.

#### Electrical quality parameters

Mr. Thériault reviewed what he calls the quality parameters for electricity.

One of these is voltage stability. First, Mr. Thériault explained that the low-voltage lines servicing residences provide electricity at 120 or 240 volts, because these voltages are required by residential customers to operate electrical appliances. Small industrial firms, on the other hand, will use 600-volt power lines, because the motors they use require this voltage. Large factories may require 25,000 volts or even more. Voltage stability is governed by the Canadian Standards Association (CSA), specifically by standard C235 (exhibit A-47), which sets out the maximum voltage fluctuations permitted, in order to protect appliances and other electrical devices from damage by high voltage. According to this witness, a sudden jump in voltage can cause fires, and a drop in voltage may result from sudden increase in demand. In this connection, Mr. Thériault described various devices that are installed throughout the network to ensure a "clean" or stable supply of electricity. Sometimes these devices are mounted on the power lines themselves, but they may also be installed at substations. These devices include capacitors, condensers, reactors, and lightning arresters.

Another parameter that Hydro-Québec must adhere to, said Mr. Thériault, is a frequency of 60 hertz with a sine-wave form because of the design of motors in domestic appliances and industrial equipment. Initially, the frequency is controlled at the generating station. However, undesirable harmonics (frequencies other than 60 hertz) are caused by the network and by the consumption patterns of certain customers, such as the Montréal subway and large aluminum production facilities. Hydro-Québec must counteract the effects of these consumption patterns with capacitors and reactors installed throughout the network.

Overvoltage is another problem associated with electricity. Voltage surges can occur extremely rapidly and can damage distribution panels, cause short circuits, and start fires. Overvoltages are sometimes caused by the customers themselves. Lightning arresters and reactors are devices that counter overvoltages and are installed throughout the Hydro-Québec network.

According to Mr. Thériault, Hydro-Québec's power lines, and more specifically the height of towers, are designed to minimize interference in air waves. The higher the voltage on a power line, the stronger the electrical field, and in turn this results in greater interference. According to Mr. Brisson, the only reason that power lines are elevated is to protect people from electrocution, and this is



prescribed by a CSA standard. It has nothing to do with interference, said Mr. Brisson, because interference is related not to vertical distance, but rather to a combination of vertical distance and horizontal distance, or the distance between the power line and the customer.

Lightning is a natural phenomenon that can cause considerable overvoltages on the network. According to Mr. Thériault, lightning can generate 5 to 10 million volts. When lightning strikes, a lightning arrester acts like a valve and lets the lightning travel down to the ground without causing an overvoltage and without going through the power lines to the distribution panels in buildings. Mr. Thériault said that there are lightning arresters on every transformer on Hydro-Québec's lines. In addition, overhead ground wires are installed at the top of the towers in the network. They are fixed directly to the tower and because of the conductivity of the tower, the lightning is discharged directly to the ground.

Hydro-Québec must also reduce the risk of electrical shocks and electrocution to a minimum. To do this, it installs grounding devices in generating stations and substations as well as on power lines. To provide proper grounding, metal rods are set in the ground and connected to the neutral wire on the network. According to Mr. Thériault, these grounding devices prevent numerous problems and accidents that might be caused by electricity.

The last quality parameter that Mr. Thériault mentioned was continuity of service, which is required for all Hydro-Québec customers and users of electricity. Continuity of service requires that Hydro-Québec maintain high-quality electrical power throughout the network and minimize the risk of power outages. In this sense, the witness expressed the view that all the apparatus installed in the network are essential for ensuring continuity of service.

When the respondent's counsel cross-examined him about the quality of the product at the generating station, Mr. Thériault described a pure sine wave with a frequency of 60 hertz, with no harmonics, and stable voltage. The witness denied that the electricity produced at the station was of any better quality than that received by customers, provided that all the equipment for correcting problems is installed.

Mr. Samson denied that there was any such thing as gross, net, clean, good or bad quality kilowatt hours. He added that the kilowatt hours calculated at the station are the same kind as the ones at his own home. Mr. Brisson had never heard the expressions "concentrated energy" and "clean energy." According to him, kilowatts are the same no matter where they are measured in the network, because they express the same capacity to do work. The last witness, Mr. Lapierre, had never heard of the concept of product quality. He had heard of the concepts of "clean" and "dirty" electricity, but in relation to quality of service rather than product quality.

#### The components of an electrical circuit

In his testimony, Mr. Thériault stated that an A.C. circuit consists of three components: a source, a line, and a load. When connected together, these components allow an electrical current to flow. The source, said Mr. Thériault, is a generating station, regardless of whether it operates on kinetic, thermal, or atomic energy or on diesel fuel. The source produces only voltage, it is the origin of the electromotive force that pushes or excites the electrons in the atoms in the metal conductor, or in other words, that makes them move from one atom to another. The electric line is defined in the International Electrotechnical Commission (IEC) dictionary as:

*... a set of conductors, insulators and accessories for transmitting electrical energy between two points of a network...*<sup>3</sup>

Finally, the load is the appliance or machine that consumes electrical energy. Without a load, said Mr. Thériault, no electricity is produced.

In his report, Mr. Thériault stressed the essential role of the line, stating that it is an "intrinsic component of the process of generating electrical energy, because in its absence, the desired product can no longer be produced, even if the two other components (voltage and time) are present." (translation) In cross-examination by respondent's counsel, Mr. Thériault reiterated his opinion that a line of some sort is necessary even when someone wants to access electricity directly from the generator's terminals at the power station; without the three components of an electrical circuit, there is no electricity. The same is true when the circuit is "open," or when the electrical lines are disconnected. Because all three of these elements are required, electricity therefore cannot be said to be produced at the generating station. Mr. Thériault demonstrated this fact using a model of a hydroelectric network (exhibit A-9). The witness concluded by stating his opinion that the lines are used "primarily" and "directly" for the production of electricity, citing the definitions these words are given in the usual dictionaries.

Under cross-examination, Mr. Thériault acknowledged that sometimes, when customers are not placing any load on the line, the line itself becomes a load (in this case he was discussing a line 300 km long). In such cases, he said, current, and not just voltage, is generated at the power station. The line is then playing two roles at once, acting as both line and load. However, he pointed out, a load cannot function on its own in the absence of a line.

Mr. Thériault was also asked how he could reconcile the statement that a line is necessary for the production of electricity with the statement that the line causes losses of electricity. Mr. Thériault denied that the line produced electricity, but stressed that it was necessary for the production of electricity. He explained that in this process, which he compared to a production line, there are losses, just as there are in any plant. In this case, the losses are caused by resistance. But in addition, he said, there are also losses at the generator in the power station.

Respondent's counsel asked Mr. Thériault whether the need for these three components didn't make the customers themselves producers of electricity, because they ultimately represent the load, and the load is one of the elements necessary to produce electricity. Mr. Thériault replied that it did not, stating that it is Hydro-Québec that produces the voltage and, by way of the circuit, the current.

Mr. Samson disagreed with Mr. Thériault. Mr. Samson believed that energy can be "converted", as opposed to "produced", without there necessarily being a source, a line, and a load. Under cross-examination by counsel for the applicant, Mr. Samson stated that a source and a load were sufficient because, in his opinion, a load can be connected to the terminals of a generator at a power station with no line intervening. When re-examined, however, he added that the generator's terminals themselves constituted conductors.

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3. IEC Multilingual Dictionary of Electricity, International Electrotechnical Commission, Geneva, 1983, p. 671.

Under cross-examination, Mr. Samson's testimony was placed in doubt when counsel for the applicant referred to the book by Professor Wildi,<sup>4</sup> of which long excerpts appeared verbatim in Mr. Samson's report. Referring to the concept of the power demand or demand for electricity that is associated with a load, the witness admitted that Professor Wildi used the power of the turbine ( $P_t$ ) and the power of the load ( $P_c$ ) to explain this concept, whereas Mr. Samson, although basing his explanation on Wildi's book, had used the power of the generator ( $P_a$ ) instead of the power of the load,  $P_c$ . The witness hesitated at first, then acknowledged that in explaining power demand, in particular in Annexe 5 of his report, he had meant to associate  $P_a$  with the generator. But, he admitted that the discussion was in fact about the power required by the load. He made a point of adding that in his opinion, this related to the power at the output of the generator's terminals.

Mr. Brisson explained that before an electrical network is built, the designers try to forecast demand: i.e., consumption of electricity in kilowatt hours. Additional studies are then done on growth sectors in the economy. Only after this can the planners determine production requirements, that is the number and types of generating stations that are needed. Then, taking potential production sites and consumption requirements into account, the optimal production conditions are determined. Mr. Brisson indicated that designing the transmission network was the last step. Ranking the planning steps in order of importance, he said that determining the consumption or load came first, defining the generating facilities (or sources) came next, and defining the required transmission network came last and depended on the means of production chosen. The size of the transmission network was ultimately determined by the strategy used in selecting generating facilities, and specifically in determining their geographic location. Taken together, the witness said, all these things constituted an electrical circuit.

However, Mr. Brisson expressed the belief that an electrical circuit can exist when a load is connected directly to the terminals of a generator. But, when discussing a company in Buckingham, Quebec, that connected its equipment to the terminals of its own generator, he stated that they did so by means of cables. He distinguished these cables from power transmission lines, referring to them as connecting cables. He stated that only a load and a source were being used in this case, although he acknowledged that the cables were in fact conductors. The witness also cited the case of the city of Buckingham itself, which is connected directly to the generator's terminals at the privately owned Dufferin power station. Although he did not go into details, Mr. Brisson mentioned that current transformers were mounted directly on the connecting terminals. The witness also referred to the Canadian International Paper (CIP) plant at La Tuque, which, he said, when it belonged to Shawinigan Light and Power, was connected directly to the terminals of a generator. The witness said that some large cities such as Toronto (with Toronto Hydro) and Ottawa (with Ottawa Hydro) do the same thing. In his report, Mr. Brisson mentioned that there are other plants that consume large amount of electricity located near generating stations. In his words, they consume electricity directly from the terminals of the station's generator without going through a transmission network. Cross-examination of Mr. Brisson revealed, however, that these plants were located a few miles from the generating stations and that in some cases there were towers carrying the wires between the plant and the station. Mr. Brisson then answered that this part of his report could be explained by the fact that the plant and the station were located in the same area and so did not require the use of a transmission network, which, in his opinion, exists only to cover distances of 100 km or more.

Mr. Brisson also believed that a transmission line can produce current and constitute a load by itself. The higher the voltage on a line, the more it acts like a capacitor connected onto the network. Consequently, it generates current. Mr. Brisson said that on some occasions, Hydro-Québec had to

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4. *Électrotechnique*, Wildi, Théodore, Les Presses de l'Université Laval, Québec, 1978.

shut down some lines at night because the load was so low that they were behaving like large capacitors. The witness also revealed that the lines were responsible for 10 percent of the losses in the network and that accordingly they constituted a load for the generating station. According to Mr. Brisson, because the line itself constitutes a load, the conditions for creating an electrical circuit are met.

Mr. Lapierre, for his part, criticized the theory of a closed circuit that emerged in Mr. Thériault's testimony. To make his point, he used exhibit B-49, entitled *Chaîne et maillons* (Chain and links), which represented the Hydro-Québec network starting at the generating station. The chain includes the generator, the transmission network, the customers' service lines, and the customers' loads, but the last link is the ground, which is used in some networks to return the current. Interpreting the closed circuit theory, the witness said that if each of these links is necessary for the production of electricity, then all the links produce electricity, including the ground, which is absurd. The witness nevertheless could not cite any case where this last link is used in Quebec.

Thus, according to Mr. Lapierre, the entire network is a load, and only the generating station produces electricity. The witness also used a model (exhibit B-50) to demonstrate his reasoning. In his opinion, the problems caused by harmonics, voltage fluctuations, overvoltages, and so on are problems of transmission and distribution, and not of production, which has already taken place at the generating station. When the product is manufactured by the generator, it is a finished, usable, and immutable product.

#### The apparatus for which exemption is being requested

For Mr. Thériault, the concept of instantaneous production of electricity requires that all the apparatus on the line operate at the same time, except for certain passive apparatus that operate only when needed.

Hydro-Québec's expert witness reviewed the list of apparatus for which an exemption from sales tax has been requested (exhibit A-28, entitled *Pièces, appareils, machines inclus dans la demande d'exemption* [Parts, apparatus and machinery included in the request for exemption]):

Conductor (or, when the conductor is insulated, electrical cable): unlike the electrical insulated cables used in underground tunnels, aerial wires are bare. However, because of the height, the conductor between the last transformer and a residence is also an insulated cable. The function of this article is to carry the current to the customers. The kinds of electrical conductors used for very high voltage lines and at power stations consist of many small conductors, actually strands composed of several aluminum wires wound around a steel core;

Overhead Ground Wire on Towers: wire installed at the top of towers to protect against lightning;

Recloser Relay: used to reclose circuits automatically, for example, following a short circuit; if the problem is eliminated, the recloser relay opens and recloses the line within one second;

Circuit Breaker: used to detect faults in the lines when there are no recloser relays, to prevent overloading the lines, to keep transformers from burning out when they are overloaded, to open circuits quickly when there is a short circuit, and to prevent drops in voltage. Circuit breakers are located at substations or in underground conduits as stated in exhibit A-28;

Fuse Carrier: porcelain fixtures containing fuses;

Fuse: used to protect the transformer, or more specifically the wires between the transformer and the customer's utility pole, as well as the wires leading to the customer's main breaker switch;

Grounding Wire and Rod: the grounding wire travels along a pole and is connected to a galvanized steel rod that is 1/2 inch in diameter and 8 feet long and is placed in the ground;

Breaker or Disconnecter: used to isolate a line or a machine for purposes of operations or maintenance;

Lightning Arrester: installed at substations or on utility poles in municipal electrical networks. In this case it is installed right next to the transformer and is made of porcelain, and contains a disk and a spark gap;

Insulator: used to insulate a bare conductor from a metal part to prevent short circuits. Insulators can be installed in series. According to the witness, all types of insulators are regarded as apparatus, except for insulators on guy wires;

Grading Ring: placed at the end of a series of insulators on a power line. Its function is to prevent electrical-field peaks. During cross-examination, Mr. Thériault specified that the grading ring does not touch the tower;

Damper: mechanical device used to prevent wires from swaying under certain weather conditions, such as wind;

Current or Voltage Transformers and Metering Apparatus: used to reduce the current or voltage level to allow it to be measured easily and safely by various types of metering apparatus. They are different from power, distribution, or instrument transformers;

Capacitor: consists of two metal plates immersed in an insulating fluid; used to reduce or eliminate harmonics, to decrease phase displacement, and to stabilize voltage in electricity supplied to customers;

Counterweight: there are two types of counterweights. The first type is essentially a mechanical part, actually a mass consisting of one or more disks, generally hanging from a clip, and used to limit swaying movements. The other type of counterweight has a grounding function; it consists of a buried conductor that provides an electrical connection between several or all of the towers or poles supporting an overhead line and the ground, reducing the ground resistance of these supports;

Cable Terminal: device that may be either prefabricated or built on the spot and installed at the end of a cable to provide an electrical connection with the overhead lines. It is usually found along utility poles near large consumers of electricity. Mr. Brisson added that cable terminals are not used on towers;

Tower (pylône): there are various types of towers. Some of them are anchored by guy wires, depending on their size. The most common type of tower is composed of several parts, main uprights and crossbeams held together by steel bolts and is normally erected on the spot and

installed on a concrete base. According to the witness, the electrical purpose of a tower is to act as a conductor when lightning arresters are activated or when a short circuit occurs. During his cross-examination, Mr. Thériault explained that towers are designed by civil engineers specialized in structural engineering who are assisted by electrical engineers.

When asked by respondent's counsel to explain how towers were essential for the production of electricity, the witness answered that towers did not produce electricity, but were essential for its production, because the wires have to be supported and separated from one another so they do not touch, because if they did they would cause short circuits, activate protective devices such as circuit breakers, and thus cause production of electricity to cease.

In Mr. Brisson's opinion, however, a tower has no "intentional" electrical function. The tower's role of grounding a lightning strike is similar to the role of the copper wire mounted on a wooden pole. The tower serves as a lightning arrester. Under cross-examination, Mr. Brisson specified that although the tower acts as a conductor of lightning, it does not act as a conductor of electricity. The tower itself is grounded to ensure this function. In addition, he did not believe that a tower played a role in protecting the public from the conductors. He believed that this function would be performed by insulators instead.

He also explained that structural engineers design towers. The involvement of electrical engineers is only in defining the distance requirements and the spacing between the conductors and in determining the required number of insulators;

Spacer: there are various types of spacers. A spacer is basically a mechanical assembly containing springs, dampers, and metal parts, except for preformed spacers (exhibit A-3, item 55), which are installed between two wires at intervals of a specified number of metres, to prevent the wires from touching;

Concrete Pole: some poles are made of wood and come in various heights and diameters, while others are made of concrete. The pole supports the power lines and a variety of electrical equipment, including conductors, transformers, insulators, lightning arresters, fuse carriers, a grounding wire, a switch, if necessary, capacitors, and, finally, various types of connectors whose function is to make an electrical connection between joining wires. The witness also stated that poles are a certain height to prevent electrocution, because overhead power lines are bare. Pole constitutes apparatus when it is installed in the network. Under cross-examination, the witness stated that in Canada poles are used only to carry medium-tension wires;

In Mr. Brisson's view, both wooden and concrete poles are simply supports, functionally speaking;

Guy: metal wires or rods anchored in the ground for the purpose of stabilizing a pole or tower;

Switch: used to open a line and, in particular, to resupply a portion of customers when a repair has to be done on the network;

Cross Arm: according to the evidence submitted, a cross arm can be made of wood or metal and is mounted crosswise at the top of a pole where it holds the insulators.

Connecting Cable: referred to at this point in the French original as "*câble de branchement*" but as "*câble de raccordement*" in applicant's exhibit A-23, connecting cables are used to connect customer's equipment to underground networks;

Items Found in Underground Conduits: these items include cables and switches, in some cases circuit breakers, insulated connectors, fuses, and cable supports;

Items Found in Control Boxes: located above underground networks, control boxes contain measuring and control devices such as voltmeters and computers, as well as cable terminals.

The Tribunal notes here that neither in the evidence nor in the arguments was there any discussion of conduits, even although exhibit A-28 requests that they be exempted as apparatus used in underground networks.

To provide a better understanding of the Hydro-Québec network as a whole, Mr. Thériault in his testimony also explained the role of several other pieces of equipment used in this network that have received tax exemption status.

Shunt reactors, for example, are coils of electrical wire with a base consisting of a metal box and an upper portion consisting of a porcelain fixture with a grading ring around the bottom. Series reactors are used to limit short circuits so that the current does not increase infinitely. These reactors are also placed between two capacitors to limit the speed at which the first capacitor discharges to the second. Connected between line and ground, they are installed at the ends of power lines to prevent very large voltage fluctuations.

Hydro-Québec also uses two types of condensers. Synchronous condensers, according to Mr. Thériault, are like motors, and they can serve either as capacitors or reactors, depending on the requirements of the network. Fixed condensers perform essentially the same functions, but respond faster because, unlike synchronous condensers, they contain no moving parts.

Lastly, bus bars, large and rigid pieces of copper or aluminum, are used in substations in place of heavy wires. They are separated from the ground by vertical insulators.

During cross-examination, Mr. Thériault was asked whether underground cables could be used instead of overhead lines, and if they could, then which of the pieces of equipment mentioned above could be dispensed with. First, the witness referred to the intrinsic limit that cables impose on voltage levels. He said that cables cannot handle voltages any higher than 250,000 to 300,000 volts. Then he said that the insulation required for these cables would increase their cost 15 to 20 times more than that of bare wires on poles and towers. He mentioned that the use of underground cables would eliminate the need for spacers, overhead ground wires, dampers, probably for counterweights, and lastly, for guys.

Mr. Brisson explained that overhead lines were used essentially for reasons of cost and that underground cables were available in order to handle up to 400,000 volts. Mr. Brisson cited several North American cities, such as Montréal, as well as European cities, where 220,000-volt cables are used.

When asked whether, based on his experience, the articles mentioned above constituted "machinery" or "apparatus," Mr. Brisson answered that none of the equipment installed on towers (exhibit A-28) met this description, because in his opinion they constituted supplies or accessories for power lines. But, he added that the switches, fuse carriers, lightning arresters, disconnectors, capacitors, recloser relays, fuses and circuit breakers used on wooden and concrete poles and in underground networks are usually considered apparatus in suppliers' catalogues. Although

exhibit A-28 does not indicate the type of control apparatus, the types found in underground conduits are also apparatus, according to Mr. Brisson. The witness expressed the opinion that frequency convertors, grounding reactors, and automatic breakers are also apparatus. According to the witness, however, none of this apparatus is used primarily and directly in the production of electricity. Electricity, he maintained, is produced at the terminals of the generator.

### APPLICANT'S ARGUMENTS

The legal arguments made by counsel for the applicant were based on eight findings of fact which they claimed the Tribunal can make based on the evidence before it. These findings of fact are:

1. the articles in dispute are, taken in isolation, a set of parts intended for a specific use;
2. the applicant sells a finished product that is measured in kilowatt hours and must meet specific requirements;
3. the articles in question are required for the production and sale of this product;
4. the production of electrical energy requires three elements: a source, a line and a load;
5. electrical energy is a unique product in that it is not storable;
6. the production and consumption of electrical energy occur simultaneously and cannot be dissociated;
7. power lines serve two purposes: they are an essential component in the production of electrical energy, and they allow the energy to be transported;
8. distribution and power transformers raise or lower the voltage and current, transforming the product for sale and use.

Regarding the question of the production of electrical energy, counsel argued on the basis of conclusions 2 and 4 through 8 above that the Tribunal must find that the articles in dispute were used directly and primarily in the production of electricity. According to the Federal Court decision in *The Queen v. Stuart House Canada Limited*,<sup>5</sup> production occurs when the product is finished. The articles in dispute are absolutely necessary to ensure the sale and use of the product.

Prior to February 16, 1984, "direct" use was the only criterion applicable to the use of apparatus for purposes of the exemption under paragraph 1(a) of Part XIII of Schedule III. Citing a number of previous decisions, including those in *Irving Oil Limited, Foster Wheeler Limited and Canaport Limited v. The Provincial Secretary of the Province of New Brunswick*,<sup>6</sup> *Coca-Cola Ltd. v. Deputy Minister of National Revenue for Customs and Excise*<sup>7</sup> and *Petro-Canada Inc. v. The Deputy Minister of National Revenue for Customs and Excise*,<sup>8</sup> counsel argued that articles are used directly in production irrespective of the percentage of use that may be ascribed to the process of manufacture as opposed to other processes such as storage and distribution. In short, use may be direct, even although it is not exclusive, if the "apparatus" used is as essential as the other apparatus or machinery used directly in the production process concerned.

Counsel further argued that there was ample case law to support a broad interpretation of the word "directly." Such an interpretation would make it possible to recognize a direct link where there is a functional link between machinery or apparatus and the manufacturing process (*The Consumers' Gas*

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5. [1976] 2 F.C. 421.

6. [1980] S.C.R. 787, at p. 796.

7. [1984] 1 F.C. 447.

8. 9 C.E.R. 121.



*Company and others v. The Deputy Minister of National Revenue for Customs and Excise*,<sup>9</sup> *His Majesty the King v. Vandeweghe Limited*,<sup>10</sup> *Calgary Power Ltd. v. The Deputy Minister of National Revenue for Customs and Excise*<sup>11</sup>).

Regarding the criterion of primary use arising from the amendment of paragraph 1(a) of Part XIII of Schedule III which added the word "primarily" in 1984, counsel stated that the criterion is met in this case because without power lines, there could be no electricity. Specifically, they argued that the power line is as essential in the production of electricity as the turbine and the generator.

Counsel for the applicant then put forward an alternate position based on *The Deputy Minister of National Revenue for Customs and Excise v. Amoco Canada Petroleum Company Ltd.*<sup>12</sup> and the decisions in *Quebec Hydro-Electric Commission v. The Deputy Minister of National Revenue for Customs and Excise*,<sup>13</sup> *City of Saint-Laurent v. Quebec Hydro-Electric Commission*<sup>14</sup> and *Amerada Minerals Corporation of Canada Ltd. v. The Deputy Minister of National Revenue for Customs and Excise*.<sup>15</sup> The applicant drew an analogy between the present case and the decision in *Amoco*, where the Tariff Board recognized that a pipeline between two production plants constitutes an apparatus used directly in the manufacture of gas. The applicant then cited the decisions in *Amerada*, *City of Saint-Laurent* and *Quebec Hydro-Electric Commission*, where electrical transformers were deemed to be production centres. Counsel argued that the decision in *Amoco* applies to the present case on the grounds of the analogy between the use of a pipeline in the process of producing gas and the use of power lines in the process of producing electricity.

As to the second issue, which relates to the definition of the articles in question, counsel for the applicant argued that they are all apparatus within the meaning of the Act as confirmed by jurisprudence, dictionaries and the evidence. Counsel suggested to the Tribunal that the definition adopted by their own expert witness, namely that apparatus means a set of parts arranged to function together, is consistent with, if not stricter than, the definition adopted by the courts. Further, the criterion of function found in some definitions is also met because, as the evidence showed, the articles in dispute are all key to one or more of the parameters applicable to the quality of the product. Counsel also argued that the courts have interpreted the word "apparatus" broadly so as to meet the objective of Parliament. This interpretation was the basis on which the Federal Court of Appeal in *Coca-Cola* and the Supreme Court in *Irving Oil* ruled that cases and hand carriers for soft drink bottles and oil storage tanks respectively were apparatus used directly in production.

Counsel added that some of the articles in dispute have already been deemed apparatus. Cable, wire and insulators, spacer dampers and resetters respectively were declared apparatus in *Thunder Bay Hydro v. The Deputy Minister of National Revenue for Customs and Excise*,<sup>16</sup> *Gould Manufacturing of Canada Ltd. v. The Deputy Minister of National Revenue for Customs & Excise*<sup>17</sup> and *Great Lakes*

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9. [1976] 2 S.C.R. 640.

10. [1934] S.C.R. 244.

11. (1979) 6 T.B.R. 886.

12. 86 D.T.C. 6008.

13. [1970] S.C.R. 30.

14. [1978] 2 S.C.R. 529.

15. (1984) 9 T.B.R. 106.

16. Tariff Board, Appeal No. 1225, November 2, 1977.

17. (1975) 6 T.B.R. 296.

*Power Company Limited v. Deputy Minister of National Revenue for Customs and Excise.*<sup>18</sup> The applicant also argued that parts that are used in manufacturing apparatus to a degree that allows the apparatus to be used for a specific application are exempt under paragraph 1(l). In *Great Lakes Power*, the Tariff Board ruled that the steel parts manufactured for use in erecting an electrical tower were parts of the tower within the meaning of the old provision that has now been replaced by paragraph 1(l).

Counsel for the applicant also made arguments on the basis of Memorandum ET 809, entitled Transformers and Ancillary Equipment. Although it pertains first to transformers, Memorandum ET 809 refers to transformer accessories, which are among the articles in dispute, as machinery or apparatus within the meaning of paragraph 1(a) of Part XIII of Schedule III to the Act. Counsel added that 73 percent of the articles similar to those in dispute, but which Hydro-Québec used with transformers during the period in question were declared exempt under an administrative agreement<sup>19</sup> arising from the application of the Memorandum. Counsel for the applicant therefore argued that there was no doubt as to whether articles defined in this manner were apparatus.

Counsel concluded by arguing that a 1987 amendment to the Act removed the exemption from sales tax in respect of the purchase of transformers and articles for use in the transmission or distribution of electricity. This, counsel said, shows that the articles in dispute were exempt from sales tax during the period in which they were purchased, because otherwise there would have been no amendment.

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18. (1983-1986) 3 T.B.R. 84.

19. The Tribunal learned during the hearing that the Department of National Revenue had agreed to exempt 73 percent of articles similar to those in dispute when located in substations because apparatus in substations are related to transformers. In addition, 73 percent of these articles were determined to be located in substations rather than on power lines, in the case of Hydro-Québec.

## RESPONDENT'S ARGUMENTS

Counsel for the respondent began by stating that the burden was on the applicant to prove that it meets the exemption criteria. If the applicant were to receive the benefit of the doubt in a given situation, the doubt would have to stem from an interpretation or application of the exemption; it could not stem from a lack of evidence or failings in the evidence on certain essential elements of the exemption. It was therefore up to the applicant to adduce evidence on each and every one of the elements of the exemption it wished to be granted. Counsel for the respondent then proceeded to identify in paragraph 1(a) of Part XIII of Schedule III the eight essential elements of the exemption, namely:

1. machinery and apparatus ...
2. sold or imported ...
3. by manufacturers or producers ...
4. for use by them ...
5. directly ...
6. and primarily ...
7. in the manufacture or production
8. of goods.

Regarding the first element, the respondent argued that none of the articles in dispute is a machine. As to the notion of apparatus, counsel for the respondent cited decisions which essentially reiterate the definitions found in the decisions cited by counsel for the applicant, which refer to a set of parts, instruments, devices or tools that perform a specific function, action or task. Having said this, counsel made a distinction, based on a decision by this Tribunal, between what may constitute an instrument or a device and what is instead a structure or a building (*Pillar Construction Ltd. v. The Minister of National Revenue*).<sup>20</sup>

Counsel for the respondent used the second exemption criterion as a basis for the claim that a determination as to whether articles are apparatus or machinery must be made at the time the articles are purchased or imported.

As to the third condition, counsel argued, citing the Federal Court of Appeal decision in *The Royal Bank of Canada v. The Deputy Minister of National Revenue for Customs and Excise*,<sup>21</sup> that the terms "producer" and "manufacturer" include the notion of permanence. In counsel's view, the evidence showed that the applicant does not always own the source, as in the case, for example, of the Churchill Falls generating station. Nor does the applicant own the load. In this case, as in instances where it imports electricity from outside, Hydro-Québec acts merely as a carrier. In these circumstances, then, the third condition is not met.

The fourth condition requires that the machinery and apparatus be used by Hydro-Québec. Taking to the extreme the applicant's argument that the production of electricity requires a source, a line and a load, counsel for the respondent concluded that the applicant is nothing more than a supplier of a service, making its infrastructure available to the consumer, while the consumer, since the owner of the load, is the one who completes the circuit, uses the goods and controls production.

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20. Canadian International Trade Tribunal, Appeal No. AP-89-122, October 25, 1990.

21. 79 D.T.C. 5263.

The fifth condition relates to the direct nature of the use of the machinery and apparatus in the production of goods. Since there is no definition in the Act, counsel for the respondent argued that the word "directly" must be taken in its normal grammatical sense. Counsel argued that many dictionaries define "directly," "*directement*" in the French version, in terms of "without deviation" and make a contrast with the secondary or intermediary nature of a given action. To support this claim, counsel referred to the Exchequer Court's decision in *Foundation-Comstock Joint Venture v. The Deputy Minister of National Revenue for Customs and Excise*,<sup>22</sup> which upheld a Tariff Board ruling that the use of an environmental control network in the production of electricity was only indirect. Counsel further argued, based on another Tariff Board decision (*I-XL Industries Ltd. v. The Deputy Minister of National Revenue for Customs and Excise*<sup>23</sup>) that the word "directly" implies that the use of the machinery or apparatus must be essential to the manufacturing process. This approach, counsel maintained, was used in other cases before this Tribunal notably, in *Esso Resources Canada Limited v. The Minister of National Revenue*<sup>24</sup>, in which it was ruled that there must be a close link or relationship between the machinery or apparatus used in the production of goods and the production process. Counsel for the respondent argued that the link or relationship between the machinery or apparatus and the production of electricity must therefore be determined and defined.

As to the requirement imposed by the 1984 amendment, which added the word "primarily," counsel for the respondent argued that Parliament introduced a new condition different from the one that existed previously. Drawing on the book *Interprétation des lois*<sup>25</sup> by Pierre-André Côté, counsel stated that the amendment was made deliberately to effect a change, not just to improve the wording of the section dealing with the exemption. Referring again to the normal grammatical meaning of the word, counsel stated that the machinery or apparatus must be an essential or vital element in the production of the goods.

As to the process of manufacture or production *per se*, counsel argued that the need to give new forms, qualities or properties to a material has been determined by the courts on numerous occasions (*Minister of National Revenue of the Dominion of Canada v. Dominion Shuttle Co. (Ltd.)*;<sup>26</sup> *Her Majesty the Queen v. York Marble, Tile and Terrazzo Ltd.*;<sup>27</sup> *Arthur A. Voice Construction Co. Ltd. v. The Minister of National Revenue*<sup>28</sup>). Counsel also cited in support of its argument *City of Sherbrooke v. the Deputy Minister of National Revenue for Customs and Excise*,<sup>29</sup> in which it was ruled that the process by which a municipality purifies water was not production. The argument was made that the moment at which the product is finished must be determined. Counsel for the respondent referred to the decision in *Maritime Electric Company, Limited v. Minister of National Revenue*,<sup>30</sup> also cited by the applicant, which established that electricity is produced between the stator and the rotor. They further distinguished this type of production from the process that occurs in a transformer as established by the Supreme Court in *City of Saint-Laurent*; the court, they stated, recognized that the production which occurs in a transformer is related to the transportation process. On the basis of these decisions, counsel also dismissed the analogy with a pipeline that the appellant

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22. (1970-1974) 5 T.B.R. 39.

23. (1974-1977) 6 T.B.R. 106.

24. Canadian International Trade Tribunal, Appeal No. 2964, December 4, 1989.

25. Les Éditions Yvon Blais Inc., 1982.

26. (1934) 72 S.C. 15.

27. [1968] C.T.C. 44.

28. Canadian International Trade Tribunal, Appeal No. Ap-89-133, October 24, 1990.

29. (1980-1981) 7 T.B.R. 386.

30. 65 D.T.C. 282.

tried to make in reference to the decision in *Amoco*. The pipeline between two plants actually contains an unfinished product that cannot be used; the electricity produced in a generating station can be used immediately by making a direct connection to the station. Alternatively the electricity could be transmitted with step-up transformers whose function is strictly to reduce losses.

Still on the subject of the seventh condition, that is, manufacture or production, counsel for the respondent argued that the test the applicant used is a test of sale, not production. Problems with voltage, harmonics and frequency must therefore be likened to the purification process in *City of Sherbrooke* because they pertain to the quality of a product that has already been produced.

Counsel for the respondent also based their argument on the *Hydro-Québec Act*,<sup>31</sup> which distinguishes between the production, transmission and distribution of energy. Counsel then pointed to the Federal Court of Appeal case involving the National Energy Board, where Hydro-Québec successfully made a distinction between production units and transportation units (*Attorney General of Quebec v. National Energy Board*).<sup>32</sup> Finally, the respondent made reference to a document published by the applicant (exhibit B-12) which discusses the transportation phase and the fact that the corporation is obliged to carry electricity on high- and very-high-voltage lines. This conclusion, namely that the applicant's product is finished before it is transported, is, counsel argued, consistent with the testimony of the expert witnesses called by the respondent.

Finally, regarding the eighth condition, counsel for the respondent called into question the concept of the sale of goods. Their argument was based on the evidence established by the applicant, in particular two claims in the testimony of its expert witness, namely that voltage alone cannot be sold, and that current leaves and returns to the source. By this reasoning, Hydro-Québec is not a producer of goods, but rather, for this segment of its operations, is merely a supplier of a service, giving its customers access to the electrical energy that flows through an electrical current.

As to the exemption for parts of the articles in dispute under paragraph 1(l) of Part XIII of Schedule III, the respondent recounted the criteria for analysis established by the case law, in particular that each case must be examined separately; that there must be a sufficient and unique link between the part and the apparatus; that the link must be a link to the apparatus itself and not an activity or process; and that the part must not be transformed after it is purchased or imported (*Deputy Minister of National Revenue for Customs and Excise v. Androck Inc.*;<sup>33</sup> *J.H. Ryder Machinery Co., Ltd. v. The Deputy Minister of National Revenue for Customs and Excise*;<sup>34</sup> *Pacific Petroleum Ltd. v. The Deputy Minister of National Revenue for Customs and Excise*;<sup>35</sup> *Anixter Canada Inc. v. The Deputy Minister of National Revenue for Customs and Excise*).<sup>36</sup>

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31. RSQ, c. H-5.

32. [1991] F.C.I. 605.

33. Federal Court of Appeal, Appeal No. A-1491-84, January 28, 1987.

34. (1937-1956) 1 T.B.R. 252.

35. Tariff Board, Appeal No. 1257, December 22, 1977.

36. (1986) 11 T.B.R. 495.

## REASONS

To put the issue in its proper context, the Tribunal believes it is necessary to first clarify the developments in case law of the notion of the production of electricity for purposes of application of the Act.

In 1965, in *Maritime Electric*, the applicant carried on the business of generating, transforming and distributing electrical energy in Charlottetown, Prince Edward Island. It also purchased electrical energy in New Brunswick and transformed and distributed it in Fredericton. The Tax Appeal Board was asked to determine whether the applicant could be granted a credit under the *Income Tax Act*<sup>37</sup> for "goods processed or manufactured." Basing itself on the way companies that produced electricity were handled in the *Excise Tax Act*,<sup>38</sup> the Board ruled that it was clear that Parliament meant to include companies that carried on the business of generating electricity and that electricity was therefore included in the word "goods." "One would think," the Board wrote, "that ordinary words like 'goods' and 'manufacturing' would mean the same thing in two revenue-producing statutes administered by the same department." The Board determined that all the activities in which the applicant was engaged were the manufacture of goods under the act. The Board also based its ruling on numerous American cases in which electricity was deemed to be goods produced by a manufacturer.

In 1967, in *Hydro-Québec v. The Deputy Minister of National Revenue for Customs and Excise*,<sup>39</sup> the Tariff Board ruled on an application from Hydro-Québec to have the transformers it purchased declared partially exempt from sales tax. On the subject of the activities engaged in by the applicant, the Tariff Board adopted the view taken by the Tax Appeal Board in *Maritime Electric*. Hydro-Québec was therefore considered a producer of electricity within the meaning of the *Excise Tax Act*.<sup>40</sup> The Board then ruled, based on the evidence, that transformers did more than simply transfer electricity and in fact transformed it. Analysing jurisprudence that had already included some transformation activities in production or manufacture within the meaning of that act, the Board determined that the transformation which occurred in the transformer allowed the electricity to be used by subscribers. This transformation was therefore an "integral part of the manufacturing or production process."

The Tariff Board's decision was overturned by the Exchequer Court<sup>41</sup> on the grounds that the change in voltage that occurs in a transformer does not, from a commercial standpoint, give new qualities or properties to electrical energy. The Exchequer Court's decision was subsequently reversed by the Supreme Court,<sup>42</sup> which focused primarily on the imprecise definition of the word "production" in the statute. The court found that nothing in that act required the Exchequer Court to interpret the word "production" so narrowly, especially since this interpretation proved in the appeal to the Supreme Court to be contrary to the evidence laid before the Tariff Board.

In 1975, in *Gould*, the Tariff Board was again asked to determine whether spacer dampers were used directly in the production of electricity. Spacer dampers are devices which separate power transmission lines and prevent them from touching. The Board ruled that its decision in

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37. R.S.C., 1952, c. 148.

38. R.S.C., 1952, c. 100.

39. (1967) 4 T.B.R. 93.

40. *Supra*, note 38.

41. (1968) 4 T.B.R. 113.

42. (1970) S.C.R. 30.

*Hydro-Québec*, namely that transformers are used in the production of electricity, even though it was upheld by the Supreme Court, was of no help to it in the case now before it because the issue at hand was whether power lines were in turn part of the production of electricity. The Board found that the primary function of power transmission lines, on which spacer dampers are installed, is to carry electricity over long distances. It likened power lines to a carrier which transports goods to customers rather than to a transporting apparatus on an assembly line. It therefore concluded that the power lines and, therefore the spacer dampers, did not enter directly into the production of electricity.

The same exemption provision was brought before the Board again two years later in *Thunder Bay*. The matter this time concerned cables, wires and insulators used between the point where the applicant purchased electricity from Ontario Hydro at a voltage between 12,000 and 25,000 volts and the last transformer located near the point of consumption. Counsel for the applicant argued that because their client, the City of Thunder Bay, used transformers to change the voltage of the electricity, it should be considered a manufacturer in accordance with the Board's decision in *Hydro-Québec* and the subsequent ruling by the Supreme Court. It was further argued that the cables, wires and insulators entered directly in the production of electricity because of the symbiosis between the transmission and transformation of electricity. The Board did not rule on whether the applicant was in fact a manufacturer, but did conclude that although the goods in issue were essential to the supply of electricity, they were not used directly in the production of electricity, but rather in transmission. In the Board's view, they were used only secondarily in production and were therefore not subject to the exemption.

Finally, in *The Royal Bank of Canada v. The Deputy Minister of National Revenue for Customs and Excise*,<sup>43</sup> the Tariff Board was asked to determine whether the emergency generators used in a building complex owned by the applicant, a Canadian chartered bank, were entitled to the exemption. Although the generators were used directly in the production of electricity, the Board ruled that the electricity was not produced for the purposes of section 27 of the Act, that is, to be delivered to a purchaser or a building tenant. Nor did the electricity remain the property of the applicant to be used by it in emergencies. The decision was brought before the Federal Court of Appeal, which ruled that the facts showed the bank was not a manufacturer of electricity within the meaning of the Act. Its production of electricity in emergencies was merely incidental and done on a small scale.<sup>44</sup> The Federal Court's decision was appealed to the Supreme Court, which ruled that the applicant's position in the particular case had to be considered as that of owner and operator of a commercial building. The court granted the exemption and added that the provision of such an emergency or back-up service was no more than a prudent step taken to complete a total electrical service.<sup>45</sup>

Based on the various decisions cited above, the Tribunal concludes that companies involved in the generation of electricity can be considered to be manufacturing or producing goods within the meaning of the Act. Further, the jurisprudence establishes that the transformation of electricity constitutes production or manufacturing within the meaning of the Act. However, the Tariff Board has, in a number of cases, made a distinction between the distribution or transmission of electricity and its production. The power transmission lines in *Gould* and the cables, wires and insulators in *Thunder Bay* were considered part of transportation and did not, according to the Board, enter directly in the process of producing electricity.

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43. (1977-1979) 6 T.B.R. 519.

44. [1979] C.T.C. 342.

45. [1982] C.T.C. 183.

This case is unique in that the Tribunal is asked to consider articles that span the applicant's entire hydroelectric network. Consequently, the evidence presented in this case concerning the functioning of the entire production process gives rise to a different analysis than that undertaken by the Tariff Board in its considerations of only facets of the process.

Moreover, in making its determination on the production process, the Tribunal did not ask whether it would be possible, hypothetically, to produce electricity in another manner or by employing different equipment. In other words, it did not take into account the way one producer produces goods compared to another. From this standpoint, the theoretical considerations raised on several occasions, both in the testimony of the expert witnesses called by the respondent and in the respondent's arguments were not considered relevant.

The evidence established to the Tribunal's satisfaction that the production of electricity requires a source, a line and a load. The testimony of the expert witness called by the applicant leaves no doubt in this regard, whereas the evidence to the contrary introduced by the respondent is simply not convincing.

Throughout his testimony, Mr. Thériault maintained that a conductor, no matter how small, must link the source and the load so that an electrical current is produced. In the Tribunal's opinion, the combination of these elements is the fundamental component of an electrical circuit. The applicant's network as it is connected to subscribers, whoever they may be, is essentially a gigantic electrical circuit. In the Tribunal's view, the testimony of the respondent's expert witnesses differs in many important respects, but raises a number of questions.

Mr. Samson holds the view that the terminals of a generator are themselves conductors, which amounts to the same thing for the Tribunal, since this in fact implies there is a conductor. In the examples given of sites where there are no conductors, Mr. Brisson referred sometimes to the presence of cables and at other times to the presence of power lines. In his report, he also focused on the case of consumers connected directly to a generating station without a transmission network. He explained under cross-examination that he did not believe a transmission network was required for distances of less than 100 km. It therefore appears that in most of the cases cited in support of his report, there was always some type of conductor or line.

Finally, the purpose of Mr. Lapierre's theory about the links of a chain was to demonstrate the shortcoming of the closed circuit theory, as each link was in some way a producer. In the opinion of the Tribunal, this approach does not stand up to scrutiny. For the Tribunal, it is not important whether the consumer, another link in the chain, is involved in the production process, because the true nature of such involvement lies in the demand for power, which is an element in the electrical circuit.

Furthermore, the fact that the power line and the electrical articles used on the network can behave as load and consume electricity, thereby creating losses in the applicant's production process, in no way alters the conclusion that the three elements are necessary. The fact that the line performs two separate functions in some circumstances does not mean that no load is required in order to have a closed circuit. In any event, the applicant does not operate a network without a load or consumers. The respondent's arguments in this respect are certainly interesting from a theoretical standpoint, but the evidence shows that the applicant sells its product and therefore that loads other than the one used at its facilities do exist.

Also, the Tribunal does not believe that the fact that three separate phases in the process of producing electricity can be identified is a conclusive argument against the closed circuit theory. The



existence of a generation phase, a transmission phase and a distribution phase in no way detracts from the unique nature of the production of electricity. The evidence shows that electricity cannot be stored and is produced and consumed almost instantaneously, which makes it unique. Transportation and distribution can then be described only figuratively. The Tribunal further doubts that the amendment to Part XIII of Schedule III of the Act that specifically excludes, from the Part XIII exemption, goods for use in the transmission or distribution of electricity other than those used at the generating station is of some consequence in this particular case. In so amending the Act, Parliament merely established in legislation the location where, beginning on the date of coming into force, the production of electricity was deemed to be carried out for the purposes of the Act.

As to the notion of purchasing electricity generated outside the network, the evidence showed that the applicant operates an integrated network with 84 interconnected generating stations. Further, it is impossible to distinguish the source of a particular supply of electricity. Purchased electricity is also transformed in the applicant's facilities, and we saw that transformers have been deemed by the Supreme Court to be sites in which production occurs. It is difficult in these circumstances to say that the applicant is not also engaged in production when it purchases electricity.

The Tribunal therefore concludes that the applicant's hydroelectric network is used to produce electricity, whether the electricity comes from its own generating stations or is purchased from an outside source. In *Maritime Electric*, even the electricity the applicant purchased from a third party was deemed to be part of its production activities.

The Tribunal must also consider whether the articles in dispute are machinery or apparatus or parts thereof. Based on its examination of the evidence pertaining to each of the articles in question, the Tribunal agrees with the opinion of witnesses appearing for both the applicant and respondent that the articles numbered 1 through 22, as well as the items in numbers 23 and 24 on Appendix A, fit the generally accepted definitions of the word apparatus, such as that given by *Le Grand Robert de la langue française*:

*...Assemblage de pièces ou d'organes réunis en un tout fonctionnel pour exécuter un travail, observer ou mesurer un phénomène...*<sup>46</sup>

[a collection of parts or instruments assembled into a functional unit to perform a task, or observe or measure a phenomenon].

The Tribunal notes, as well, that Excise Memorandum ET809, which deals with the exemption of goods related to power and distribution transformers, also identifies many of the articles at issue as apparatus.

However, the Tribunal does not accept that two of the articles for which the applicant sought exemption, guys and cross arms, fit the definition of apparatus. Since no evidence was provided with respect to underground conduits, the Tribunal can not make any evaluation with regard to these articles.

The remaining question facing the Tribunal is whether the articles considered to be apparatus are used primarily and directly in the production of electricity.

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46. *Le Grand Robert de la langue française*, Robert, Paul, Second Edition, p. 454.

The Federal Court and the Tariff Board dealt with this question in the *Coca Cola* case. In its decision, the Federal Court objected for various reasons to the Tariff Board's undue restriction on the meaning of the word "production." In order to define the word "production" in the same exemption provision as the one in dispute here, the Board had used the criteria from the *York Marble* decision. It thus held the view that bottled soft drinks received no new forms, qualities or properties when cases and hand carriers were used. In analyzing the type of production contemplated by the exemption provision, the Federal Court of Appeal referred instead to the concept of process. Hence, its ruling that the cases and hand carriers in which bottles were placed for purposes of bottling, storage and distribution should be considered as entering directly in the production process.

In the Tribunal's view, it is in this context, that is, the context of a production process, that the words "primarily" and "directly" must be interpreted.

The Federal Court of Appeal also gave a broad interpretation to the meaning of "directly" in the *Amoco* decision which dealt with whether a pipeline between two facilities was used directly in the production of liquid natural gas. The Federal Court concluded that to give a narrow interpretation to the word "directly" would lead to an arbitrary determination of the time at which production occurred which would be at odds with the intent of Parliament. The Court concluded that the word "directly" in this context did not mean immediately or without delay, but rather, without any other intervening medium.

It should be noted that the Federal Court decision in *Amoco* was made in December 1985, a time of transition because Parliament had just amended the exemption provision to add the words "primarily and" before the word "directly." The Tribunal believes, however, that the amendment did not alter the context surrounding the provision, even although it introduced an additional requirement. The words "primarily and directly" must therefore be interpreted broadly, taking into account the specific production process in each particular case.

Regarding the matter of direct use, power lines are, according to the Tribunal's findings, essential to the production of electricity. The decision in *Calgary Power* suggests that all parts that are essential to the proper operation of the apparatus used in a given production process are by virtue of that fact alone themselves used directly in production. The Tariff Board ruled in that case that two components of a cooling network essential to the operation of a condenser used directly in the production of electricity, namely a pumphouse and a water line, were used directly in the production process. In view of the Board's findings as to the place in which the production of electricity occurs, the Tribunal has no difficulty declaring that all of the articles in dispute used with above- or below-ground lines are essential if the applicant is to produce, deliver and sell almost instantaneously its final product, which must meet the specific requirements referred to in the evidence. These articles are ultimately used exclusively in the production process and thus are used directly in the production of electricity.

As to the criterion of primary use, the Tribunal notes that the articles in question have a primary function: to permit the production of electricity, as in the case of the towers, poles and conductors; to ensure that the production of electricity meets the specific requirements, as in the case of the capacitors; to ensure that the production process is not interrupted, as in the case of the circuit breakers and recloser relays; and to ensure that the apparatus used for the above purposes is maintained in working order, as in the case of dampers.

Towers and poles, for example, have few electrical properties. However, the applicant uses them to keep the conductors off the ground, because otherwise, as the evidence showed, it would be

impossible to produce electricity and sell it to subscribers without underground cables, themselves conductors essential to the production of electricity. The Tribunal reiterates that its task is not to determine whether the production methods used are the most practical, economic or normal. The fact that the applicant chose to use above-ground lines rather than underground cables or vice versa has no bearing on this case. If wires are used as a conductor, towers and poles are clearly essential and in this case are used primarily in the production of electricity. Although their main function is to support the wires and keep them off the ground, there is no question that they are used primarily in the production of electricity without restricting unduly the meaning of the word "primarily" as it must be interpreted in the context of the exemption provision. Since all the articles in dispute that are installed at the top of towers and poles or in underground conduits have specific functions in the process of producing electricity, the Tribunal considers that they are also used primarily in the production of electricity.

The Tribunal further believes that the process of producing electricity and the consumption of electricity create problems that must be resolved immediately or with minimum delay; this is in addition to the findings that all the articles whose role is to contribute to the production of electricity according to the required standards are used primarily and directly in the production of electricity. The same holds for accessories that assist, protect or ensure the proper functioning of these goods.

The Tribunal notes that in exhibit A-28, the applicant also requests exemption for the processing materials referred to in Part 1 of Appendix B to Memorandum ET 809. Under the Memorandum, processing materials are entitled to an exemption in accordance with section 2 of Part XIII of Schedule III to the Act. No evidence was laid before this Tribunal regarding these materials or the applicability of this other exemption provision to the present case. However, as this provision also refers to direct use, the Tribunal is of the view that these processing materials may be entitled to exemption where this is consistent with its findings regarding the direct use, and primary use as the case may be, of the articles in dispute in the production of electricity.

As to parts for the articles for which exemption is requested, the Tribunal finds that any parts of apparatus which are specifically meant to contribute to the function to be performed by the apparatus are exempt from sales tax under paragraph 1(*l*) of Part XIII of Schedule III. Accordingly, the Tribunal holds the view that guy wires and cross arms are parts of poles or, as the case may be, towers and are therefore subject to exemption as parts of apparatus used in production.

Finally, goods such as the bolts used in erecting towers are also declared exempt as articles for use in the manufacture of exempted apparatus, in accordance with paragraph 1(*o*) of Part XIII of Schedule III.

CONCLUSIONS

For the foregoing reasons, the Tribunal declares that the articles listed on Appendix A are apparatus and were used during the period from January 1, 1981, to February 16, 1984, directly in the production of electricity, and that after February 16, 1984, the goods were used primarily and directly in the production of electricity, in accordance with paragraph 1(a) of Part XIII of Schedule III of the Act as it read during the relevant period.

The other goods, that is, the parts and articles subject to exemption under paragraphs 1(l) and 1(o) of Part XIII of Schedule III, are entitled to exemption only in accordance with the Tribunal's findings as stated in these reasons, with the understanding that the cross arms and guy wires are included in these exempted goods.

Arthur B. Trudeau  
Arthur B. Trudeau  
Presiding Member

Kathleen E. Macmillan  
Kathleen E. Macmillan  
Member

W. Roy Hines  
W. Roy Hines  
Member

## Appendix A

### **APPARATUS (Paragraph 1(a) of Part XIII of Schedule III)**

1. Conductors
2. Electrical Cables
3. Overhead Ground Wires
4. Recloser Relays
5. Circuit Breakers
6. Fuse Carriers
7. Fuses
8. Grounding Wires and Rods
9. Breakers or Disconnectors
10. Lightning Arresters
11. Insulators
12. Grading Rings
13. Dampers
14. Current or Voltage Transformers and Metering Apparatus
15. Capacitors
16. Counterweights
17. Cable Terminals
18. Towers
19. Spacers
20. Concrete Poles
21. Switches
22. Connecting Cables
23. Articles Found in Underground Conduits (excluding the conduits themselves)
24. Articles Found in Control Boxes

### **PARTS (Paragraph (l) of Part XIII of Schedule III)**

Guys

Cross Arms

Any element that is specifically meant to contribute to the function to be performed by the apparatus

### **ARTICLES (Paragraph 1(o) of Part XIII of Schedule III)**

Bolts Used in Erecting Towers

All the articles and materials for use in the manufacture of the above-mentioned goods