

Licence No.: 2497 R
Licence Issued: February 19, 2001
Licence Revised: June 11, 2003

IN ACCORDANCE WITH THE MANITOBA ENVIRONMENT ACT (C.C.S.M. c. E125)
THIS LICENCE IS ISSUED PURSUANT TO SECTION 12(1) TO:

MANITOBA HYDRO; "the Licence"

for the construction and operation of the Development being the "Brandon Combustion Turbine Plant" comprised of a new building housing two combustion turbines in a simple cycle configuration that drive electric generators, with the facility rated at a total nominal capacity of 260 megawatts, located on Manitoba Hydro's property at the site of their existing coal burning thermal generating plant at 3305 Victoria Avenue in the City of Brandon as shown in Appendix 'A' attached to this Licence, and incorporating ancillary activities, being:

- the re-alignment of some transmission lines located on their property; and
- the installation of an additional natural gas pipeline to their property;

in accordance with the Environment Act Proposal dated September 28, 2000, the additional clarification submitted December 18, 2000, a revision request submitted by the Manitoba Hydro on May 6, 2003, and subject to the following specifications, limits, terms and conditions:

DEFINITIONS

In this Licence:

"**accredited laboratory**" means an analytical facility accredited by the Standard Council of Canada (SCC), or accredited by another accrediting agency recognized by Manitoba Conservation to be equivalent to the SCC, or be able to demonstrate, upon request, that it has the quality assurance/quality control (QA/QC) procedures in place equivalent to accreditation based on the international standard ISO/IEC 17025, or otherwise approved by the Director;

"**affected area**" means a geographical area, excluding the property of the Development;

"**approved**" means approved by the Minister in writing;

"**backfilled data**" means stack emissions data artificially derived from parametric sources, such as load data and fuel-sulphur content correlations, that have previously been determined for the relevant CEM system in the course of its most recent certification;

"**CEM system**" means continuous emission monitoring system, which is comprised of common components and discrete independent components;

"**CO**" means carbon monoxide;

"**CO₂**" means carbon dioxide;

"**combustion turbine**" means an engine which operates according to the Brayton thermodynamic cycle, in which fuel is burned and the products of combustion at a high temperature are allowed to expand through a rotating power turbine thus producing a net amount of motive power;

"**common components**" means those components of the CEM system that are common to both combustion turbine units;

"**day**" means calendar day;

"**discrete independent components**" means those components of the CEM system that are exclusive of the common components;

"**Director**" means an employee of the department appointed as such by the Minister;

"**EPA**" means the Environmental Protection Agency of the United States;

"**F-factors**" means a ratio of the theoretical volume of gas generated for complete combustion of a given fuel, to the amount of heat produced by the fuel upon combustion;

"**fully functioning**" means all common components of the CEM system are operating within normal operating parameters;

"**GJ**" means gigajoule, (10⁹) Joules of energy;

"**Minister**" means the Minister of the Department of Conservation;

"**NO_x**" means oxides of nitrogen, and refers collectively to nitric oxide (NO) and nitrogen dioxide (NO₂) expressed as a nitrogen dioxide equivalent;

"**noise nuisance**" means a continuous or repeated noise, in an affected area, which is troublesome, annoying or disagreeable to a person:

- a. residing in an affected area;
- b. working in an affected area; or
- c. present at a location in an affected area which is normally open to the members of the public;

if the unwanted sound

- d. is the subject of at least 5 written complaints, received by the Director in a form satisfactory to the Director within a 90-day period, from 5 different persons falling within clauses (a), (b) or (c), who do not live in the same household; or
- e. is the subject of at least one written complaint, received by the Director in a form satisfactory to the Director, from a person falling within clauses (a), (b) or (c), and the Director is of the opinion that if the unwanted sound had occurred in a more densely populated area there would have been at least 5 written complaints received within a 90-day period from 5 different persons who do not live in the same household;

"**particulate matter**" means finely divided liquid or solid matter other than water droplets;

"**PM**" means particulate matter;

"**PM_{2.5}**" means particulate matter with a mean aerodynamic diameter equal to or less than 2.5 microns;

"**ppmv**" means parts per million on a volume basis;

"**sewage**" means sewage as defined in Manitoba Regulation 95/88R respecting private sewage disposal systems and privies, or any future amendments thereto;

"**SO₂**" means sulphur dioxide;

"**solid waste**" means solid waste as defined in Manitoba Regulation 150/91 respecting waste disposal grounds, or any future amendments thereto;

"**SPM**" means suspended particulate matter;

"**Standard Methods for the Examination of Water and Wastewater**" means the most recent edition of Standard Methods for the Examination of Water and Wastewater published jointly by the American Public Health Association, the American Waterworks Association and the Water Environment Federation;

"**valid data**" means data not corrupted by any error, improper calibration or malfunction of discrete independent components used to generate the data, or by the improper application of applicable United States EPA or Environment Canada's EPS published protocols for emission data collection through the use of CEM systems, and excludes under-range and over-range data relative to the upper and lower range sensitivity settings of the respective CEM unit as well as CEM calibration and span hour data;

"**VOCs**" means volatile organic compounds; and

"**40CFR75**" means the part of the United States Government Code of Federal Regulations that pertains to CEM.

GENERAL SPECIFICATIONS

This Section of the Licence contains requirements intended to provide guidance to the Licencee in implementing practices to ensure that the environment is maintained in such a manner as to sustain a high quality of life, including social and economic development, recreation and leisure for present and future Manitobans.

1. Notwithstanding any of the following limits, terms and conditions specified in this Licence, the Licencee shall, upon the request of the Director:
 - a. sample, monitor, analyze and/or investigate specific areas of concern regarding any segment, component or aspect of pollutant storage, containment, handling, treatment, and disposal or emission systems, for such pollutants or ambient quality, aquatic toxicity, leachate characteristics and discharge or emission rates, for such duration and at such frequencies as may be specified;
 - b. determine the environmental impact associated with the release of any pollutant(s) from the Development; or
 - c. provide the Director, within such time as may be specified, with such reports, drawings, specifications, analytical data, descriptions of sampling and analytical procedures being used, bioassay data, flow rate measurements and such other information as may from time to time be requested.
2. The Licencee shall, unless otherwise specified in this Licence:
 - a. carry out all preservations and analyses of liquid samples in accordance with the methods prescribed in the Standard Methods for the Examination of Water and Wastewater or in accordance with equivalent preservation and analytical methodologies acceptable to the Director; and
 - b. ensure that all analytical determinations are undertaken by an accredited laboratory.
3. The Licencee shall:
 - a. carry out all stack sampling and ambient air sampling in accordance with protocols, procedures and type of equipment acceptable to the Director;
 - b. ensure that any stack sampling and ambient air sampling is undertaken by persons qualified in this field; and
 - c. ensure that those analytical determinations, which are not determined by means of a certified CEM system, are undertaken by an accredited laboratory.
4. The Licencee shall report all the information requested through the provisions of this Licence in a manner and form acceptable to the Director.

SPECIFICATIONS, LIMITS, TERMS AND CONDITIONS

Respecting Construction

5. The Licencee shall ensure that the underground fuel pipelines extending between the diesel fuel tanks site and the combustion turbine plant are provided with an outer secondary containment pipe and a fuel leakage detection and recovery system, each being satisfactory to the Director.
6. The Licencee shall ensure that each of the two stacks from the combustion turbine units are designed and constructed to conform to:
 - a. the design specifications of Environment Canada's 1993 Report EPS 1/PG/7, and any current amendment thereto; and
 - b. the departmental Guideline No. 97-05 (Guideline for Stack Sampling Facilities);

and that the sampling port and sample conditioning system for the CEM systems are adequately sized to accommodate additional CEM systems as may from time to time be required.

Respecting Water Use

7. The Licencee shall not commence any activities of additional water withdrawal from the Assiniboine River for the Development, above and beyond such amounts as are presently authorized by an existing Water Rights Licence, until so authorized by way of a new or varied Water Rights Licence issued under The Water Rights Act.

Respecting Sewage

8. The Licencee shall ensure that:
 - a. all sewage generated at the Development is directed into an on-site sewage holding tank;
 - b. the design, construction and use of the on-site sewage holding tank complies with the requirements of Manitoba Regulation 95/88R, or any future amendment thereto, respecting private sewage disposal systems and privies; and
 - c. any sewage and septage withdrawn from the on-site sewage holding tank is disposed of in accordance with the requirements of Manitoba Regulation 95/88R, or any future amendment thereto.

Respecting Wastewater Handling

9. The Licencee shall, except in the case of a spill of a dangerous good or a hazardous waste having occurred within the combustion turbine plant:
 - a. direct all oily (but not chemically contaminated) wastewater streams generated within the combustion turbine plant into an onsite underground storage tank for periodic pump-out and transfer to the existing Brandon Generating Station Unit No. 5

- oil/wastewater separator unit for treatment and subsequent release to the Assiniboine River via the licenced station drain outfall; and
- b. direct all chemically contaminated wastewater streams generated within the combustion turbine plant into an onsite underground storage tank for periodic removal and disposal into a wastewater treatment facility licenced under The Environment Act.

10. The Licencee shall not release to the Assiniboine River any surface runoff water from the property associated with the Development if the runoff water is, or is likely to be, polluted from sources originating from, or associated with activities relating to, the Development.

Respecting Air Emissions

11. Unless otherwise specified by the Minister in or through the provisions of this Licence, the Licencee shall:

- a. adhere to the protocols and performance specifications outlined in Environment Canada's 1993 Report EPS 1/PG/7, or any future amendment thereto, respecting the installation, the certification of performance, the quality assurance and quality control program, the calculation of emission rates by F-factors, and the determination of mass emission or loading rates, associated with the CEM system on the stack of each combustion turbine unit;
- b. ensure that any CEM system used in monitoring the emissions from the stacks of the combustion turbine units is capable of meeting applicable initial certification and recertification requirements of EPA 40CFR75, as specified in 75.20, and Appendices A, B and C of EPA 40CFR75 wherein the term "Administrator" shall be deemed to mean Director for the purposes of this Licence; and
- c. ensure that a quality assurance and quality control program, satisfactory to the Director, and applicable to each CEM system, is submitted to the Director at least 60 days in advance of commencing the operation of any CEM system.

12. The Licencee shall:

- a. ensure that a CEM system for NO_x, CO and CO₂ is:
 - i. installed on the stack of each combustion turbine unit before the respective combustion turbine unit is placed into operation; and
 - ii. certified for performance by a qualified third party within 30 days of having placed the respective combustion turbine unit into operation;
- b. submit a copy of the signed and dated certificate of certification to the Director within seven days of any CEM system having been certified or re-certified for performance;
- c. continually maintain each CEM system in a fully functioning and calibrated condition satisfactory to the Director;
- d. ensure that each CEM system is fully functioning for at least 90% of the operational time of the respective combustion turbine unit; and
- e. ensure that whereupon a CEM system has been replaced or overhauled, the affected CEM system is re-certified for performance by a qualified third party within 30 days of its installation or overhaul.

13. The Licencee shall restrict the air emissions released from each combustion turbine stack to the extent that:

- a. while operating a combustion turbine unit using natural gas as the combustion fuel:
 - i. the emission rate of NO_x from the respective stack of that turbine unit does not exceed 71 kilograms per hour;
 - ii. the concentration of CO emitted from the respective stack of that turbine unit does not exceed 50 ppmv at 15 percent oxygen and on a dry volume basis, while the combustion turbine unit is being operated at a power output level exceeding 100 megawatts;
- or
- b. while operating a combustion turbine unit using diesel fuel:
 - i. the emission rate of NO_x from the respective stack of that turbine unit does not exceed 124 kilograms per hour;
 - ii. the concentration of CO emitted from the respective stack of that turbine unit does not exceed 50 ppmv at 15 percent oxygen and on a dry volume basis, while the combustion turbine unit is being operated within a power output range of 100 to 145 megawatts;
 - iii. the emission rate of SO₂ from the respective stack does not exceed 800 grams per GJ of output power produced by the turbine unit;

whereby the limits expressed in Sub-clauses 13(a) and 13(b) of this Licence are based on the average of valid data (and backfilled data when applicable) consisting of hourly average determinations made by the respective CEM system during the combustion period(s) of the combustion turbine unit on the day of operation, except that in the case where manual stack sampling is undertaken to determine the SO₂ emission rate, the SO₂ limit expressed in Sub-clause 13(b)(iii) of this Licence is based on the average value (expressed as grams of SO₂ per GJ) of three valid replicate tests carried out over a time frame satisfactory to the Director.

14. In the circumstance where ambient air quality monitoring data determined from within the area of influence of the Development indicates that one or more of Manitoba's "Ambient Air Quality Guidelines" is being exceeded, or the PM_{2.5} is registering at levels in excess of 30 micrograms per cubic metre (averaged over a 24-hour period), and the Minister is satisfied that the Development is the cause or a significant contributor to the prevailing ambient air quality condition, the Licencee shall undertake such mitigation measures as may be specified by the Minister to improve the ambient air quality condition.

15. The Licencee shall not cause or permit a noise nuisance to be created as a result of the construction, operation or alteration of the Development, and shall take such steps as the Director may require to eliminate or mitigate a noise nuisance.

Respecting Solid Wastes

16. The Licencee shall not deposit any solid waste from the Development into the environment except into a waste disposal ground operating under the authority of a permit issued pursuant to Manitoba Regulation 150/91, or any future amendment thereto.

Respecting Dangerous Goods or Hazardous Wastes

17. The Licencee shall comply with all the applicable requirements of:

- a. the more stringent requirements of the "National Fire Code of Canada 1995" and Manitoba Regulation 97/88R or any future amendment thereto, respecting the storage and handling of gasoline and associated products; and
- b. The Manitoba Dangerous Goods Handling and Transportation Act, and regulations issued thereunder, respecting the handling, transport, storage and disposal of any dangerous goods brought onto or generated at the Development.

18. The Licencee shall ensure that used oil and hydraulic fluids removed from on-site machinery and vehicles are collected, transported and stored in secure, properly labeled and non-leaking containers until recycled, and if the containers are temporarily stored on site, that the storage area is constructed with a base and containment dikes fully lined on the interior with an impermeable liner or is otherwise constructed with equivalent containment provisions satisfactory to the Director.

Respecting Monitoring, Record Keeping and Reporting

19. The Licencee shall, upon and after either or both of the combustion turbine units has been commissioned into use, monitor and record on each day of each year:

- a. the duration (hours and minutes) during which each combustion turbine unit is operated using natural gas;
- b. the duration (hours and minutes) during which each combustion turbine unit is operated using diesel fuel;
- c. the total daily quantity and type of fuel used by each combustion turbine unit; and

d. the total megawatt-hours generated by each combustion turbine unit.

20. The Licencee shall, upon and after either or both of the combustion turbine units have been commissioned into use:

- a. monitor the air emissions being released through the stack of each combustion turbine:
 - i. continuously for NO_x emission rates (as kilograms of NO_x per hour and as grams of NO_x per GJ of power output), CO (as ppmv) and CO₂ (as ppmv);
 - ii. at such times and for such duration as may be requested in writing by the Director, and using a method satisfactory to the Director, for SO₂ emission rates (as grams of SO₂ per GJ of power output) under conditions of use of diesel fuel by either combustion turbine unit; and
 - iii. at such times and for such duration as may be requested in writing by the Director, and using methods and units satisfactory to the Director, for any or all of PM, PM_{2.5}, total or specific VOCs, metals, and such other pollutant(s) as may be identified by the Director, whether burning natural gas or diesel fuel;
- b. ensure that if the total valid data recorded by a certified CEM system on any day of operation of either of the combustion turbine units accounts for less than 100% of the operational time of the respective combustion turbine unit, that the missing data for the balance of the operating time is backfilled in accordance with Environment Canada's 1993 report EPS 1/PG/7 or such alternate manner as is acceptable to the Director;
- c. ensure that if the total recorded valid data in any month of any year by either certified CEM system accounts for less than 80% of the total operational time of the respective combustion turbine unit, the Director is notified of the situation, the source of the problem and the proposed course of action to remedy the situation;
- d. record all of the electronic monitoring data (at 5 minute resolution) generated pursuant to Sub-clause 20(a) of this Licence and retain the data in electronic form for a minimum of seven years; and
- e. submit to the Director such electronic monitoring data or hard copy information on the data compiled and recorded pursuant to Sub-clause 20(d) of this Licence, if and when requested by the Director.

21. The Licencee shall, for each combustion turbine stack, upon and after the respective combustion turbine unit has been commissioned into use, determine and record:

- a. the daily average:
 - i. emission rate of NO_x (expressed as kilograms of NO_x per hour, and as grams of NO_x per GJ of power output);
 - ii. concentration of CO (expressed as ppmv at 15 percent oxygen and on a dry volume basis); and
 - iii. concentration of CO₂ (expressed as ppmv on a dry volume basis);

whereby these data are based on the average of only valid data collected pursuant to Sub-Clause 20(a) of this Licence, and of backfilled data when applicable, consisting of the respective hourly average determinations made by each CEM system during the combustion period(s) of the respective combustion turbine unit on the respective day of operation;

- b. the daily volumetric flow rate (expressed in cubic metres on a dry volume basis);
- c. the percent of time during which:

- i. the respective CEM system was fully functioning; and
- ii. valid data was recorded for each continuously monitored parameter;

relative to the duration of operation of each respective combustion turbine unit on the respective operating day;

- d. the sulphur content of the diesel fuel on those days that diesel fuel is burned;
- e. the total daily and total monthly mass emissions of NO_x, CO, CO₂, SO₂, total VOCs, and PM (each expressed in units most appropriate to their respective magnitudes) released to the atmosphere through each combustion turbine stack, whereby the emission rate factors for those parameters not being continuously monitored pursuant to this Licence may be sourced from the US EPA Document AP-42, or determined as per Environment Canada's 1993 report EPS 1/PG/7, unless otherwise determined through actual on-site stack sampling data; and
- f. the total daily and total monthly mass emissions of such other toxic compounds and greenhouse gases released to the atmosphere through each combustion turbine stack, as may be requested by the Director.

22. The Licencee shall submit to the Director monthly reports, in electronic and hard copy form, on the data compiled pursuant to Clauses 19 and 21 of this Licence, within 30 days of the end of the month during which the monthly data was collected.

23. The Licencee shall submit to the Director by March 1st of each year, an annual summary of the monthly data reported during each month in the preceding year.

24. The Licencee shall, if requested by the Director:

- a. submit a program satisfactory to the Director for undertaking an ambient air quality monitoring program in such a manner, at such stations, for such pollutants and for such duration of time as may be specified by the Director;
- b. carry out the ambient air quality monitoring program to the satisfaction of the Director; and
- c. submit the determined data (in electronic and hard copy form) along with an interpretation of the data to the Director within 60 days of the completion of each such ambient air quality monitoring program.

Contingency Plans and Emergency Response Plans

25. The Licencee shall, in the event that directional boring is not possible to use for the installation of the natural gas pipeline under the Assiniboine River, chose an alternative construction method approved by the Minister.

26. The Licencee shall:

- a. prior to setting the Development into operational use, submit to the Director, a proposed Emergency Response Plan satisfactory to the Director, consistent with the departmental "Industrial Emergency Response Planning Guide (MIAC, September, 1996)" to address contingency measures and emergency responses to such matters as spills of dangerous goods or hazardous wastes, fires and any other kind of foreseeable incident that can pose a potential risk to human health or the environment; and
- b. continually maintain the approved Emergency Response Plan in a current status for the duration of the Development.

Respecting Decommissioning

27. The Licencee shall at such future time as the Development is contemplated to be decommissioned and permanently closed:

- a. submit a Closure Plan to the Minister, for approval, respecting the measures proposed to be undertaken to address any potential environmental issues as may arise from the decommissioning of the site and the disbursement or disposal of liquid and solid wastes as may be associated with the Development at that time; and
- b. implement the approved Closure Plan to the satisfaction of the Minister.

REVIEW AND EVOCATION

A. Environment Act Licence 2497 is hereby rescinded.

- B. If, in the opinion of the Minister, the Licencee has exceeded or is exceeding or has or is failing to meet the specifications, limits, terms, or conditions set out in this Licence, the Minister may, temporarily or permanently, revoke this Licence.
- C. If the Licencee has not commenced construction of the Development within three years of the date of this Licence, the Licence is revoked.
- D. If, in the opinion of the Minister, new evidence warrants a change in the specifications, limits, terms or conditions of this Licence, the Minister may require the filing of a new proposal pursuant to Section 12 of The Environment Act.
- E. At such time as the Minister deems appropriate in order to ensure compliance with any *Manitoba Climate Change Action Plan* that may be approved pursuant to international or national climate change agreements or action plans, the Minister may make such revisions to this Licence as are required to ensure the aforementioned compliance. Any such revisions to the Licence will be subject of advance consultation between the Licencee and the Director.

"original signed by"
Steve Ashton
Minister
Environment Act

File: 4564.0

APPENDIX 'A'

(Site Plan of the Development)

To view Plan more clearly please print this page.





