

# **TRANSMISSION**

## **SYSTEM OPERATIONS DIVISION**

### ***Vice-President of Operations***

Reporting to the President and Chief Executive Officer, the Vice-President of Operations, is responsible for the overall management, leadership and direction of the operating group to ensure Manitoba Hydro continues to improve the reliability and cost effectiveness of transmission services.

### ***Director of System Operations***

Reporting to the Vice-President of Operations, the Director of System Operations provides overall management and is responsible for the real-time operations and reliability and security of the power system, for the company's reliability standards compliance program, and for managing transmission services under the Manitoba Hydro Open Access Transmission and Interconnection Tariffs. The position is also responsible for maintaining strategic progress on industry de-regulation and change.

The division includes a telecommunications function to plan, design and maintain a utility telecom infrastructure necessary to operate the interconnected (with Ontario, Saskatchewan and U.S.A.) grid and a systems support function to support the computers, computerized controls, and protection and monitoring facilities for the Manitoba grid.

The division operates under strict Standards of Conduct consistent with North American marketplace rules.

**Note:** *The departments within the System Operations Division that have Transmission Function Employees are the System Control Department, the Transmission Services Department, the System Performance Department and the Control Center & Technical Systems Department.*

*Job Summaries for each of the employees identified as Transmission Function Employees are provided by department below.*

## **System Control Department**

### ***Department Manager***

Reporting to the Director of Transmission System Operations, the System Control Department Manager is responsible for the leadership and management of the System Control Department. Major responsibilities include the safe, reliable and efficient real-time operation of the Manitoba Hydro Bulk Electrical System, including all generation, transmission and sub-transmission facilities, HVDC and interconnection lines as well as the operation of the former Central District Control Centre ("CDCC") area of responsibility. Management and control of capital and operating budgets is a prime responsibility.

### ***Administrative Representative***

Under the general supervision of the System Control Department Manager, the Administrative Representative will provide high level administrative support to department staff, including performing a

variety of complex assignments and duties which require relevant experience, independent thinking and judgment as it pertains to office and control room staff. This will involve the collection of information and making interpretations of decisions which affect departmental activities or programs.

### ***System Training Reliability Officer***

Under the general guidance of the System Control Department Manager, the System Training Reliability Officer will develop and deliver training to meet the operational and reliability requirements of Manitoba Hydro. The System Training Reliability Officer is responsible for ensuring the program to certify and maintain the North American Electric Reliability Corporation ("NERC") certification of System Operators is in place and is responsible for delivery and administration of operator training that conforms to the NERC Continuing Education Hours ("CEH") program according to NERC standards. The System Training Reliability Officer will participate as a team member in assisting with training sessions and simulations for System Restoration, Powerflow, System Operator Switching Stages testing and other department training.

### ***Operations Coordinator***

Under the direction of the System Control Department Manager, the Operations Coordinator is responsible for supervising, monitoring, coordinating and operating the Manitoba Hydro Bulk Electrical System in the Central District area of responsibility in a safe, efficient and reliable manner. The Operations Coordinator has line authority over the Distribution System Operators and functional authority over District Operators and Apparatus Maintenance staff for those functions necessary to operate the system.

### ***Reliability Standards Engineer***

Under the direction of the System Control Department Manager, the Reliability Standards Engineer will lead the System Control Department's participation in the corporate North American Electric Reliability Corporation ("NERC") Reliability Compliance Program and ensure that departmental policies, procedures and instructions are consistent with the NERC and the Midwest Reliability Organization ("MRO") standards.

### ***Generation Reliability Engineer***

Under the direction of the System Control Department Manager, the Generation Reliability Engineer is responsible for the planning horizon up to next day cost minimized generation outage coordination and generation security analyses to ensure that the generation system is prepared for reliable and optimal operations for the operating day. Reliable system operations include the ability to respond to unplanned events in accordance with Manitoba Hydro, Midwest Reliability Organization ("MRO") and North American Electric Reliability Corporation ("NERC") Standards for operational planning.

## **Program Development**

### ***System Control Training Coordinator***

Under the general guidance of the System Control Department Manager, the System Control Training Coordinator is responsible for the development, evaluation, revision and implementation of training and certification programs required to operate the Manitoba Hydro Bulk Electrical System safely, efficiently and reliably. This includes the System Operator Training program and ongoing shift staff training and certification, development of realistic simulation training utilizing the Power System Simulator and

coordination of the development of the Energy Management System (“EMS”) and advanced tools and applications to improve system reliability and efficiency.

### ***System Shift Supervisor Generation/Network/Transmission***

Under the direction of the System Control Training Coordinator, the Generation/ Network/ Transmission System Shift Supervisor is responsible for supervising and coordinating the real-time operation of the Manitoba Hydro Bulk Electrical System and Interconnections in a safe, efficient and reliable manner. The Generation/Network/Transmission System Shift Supervisor has functional authority over District Operators, Apparatus Maintenance staff, Construction Foremen and Station Operators for those functions necessary to operate the system.

### ***System Restoration Reliability Officer***

Under the general guidance of the System Control Training Coordinator, the System Restoration Reliability Officer is responsible for the validation and implementation of System Restoration and other emergency preparedness and response plans for the Bulk Electric System. The System Restoration Reliability Officer coordinates emergency plans with operating groups in other departments and divisions to ensure effectiveness of implementation and compliance with Manitoba Hydro and North American Electric Reliability Corporation (“NERC”) standards as well as best utility practices for emergency preparedness and response.

### ***System Control Training Coordinator***

Under the general guidance of the System Control Training Coordinator, the System Control Training Coordinator will develop and deliver training to meet the operational and reliability requirements of Manitoba Hydro. The System Control Training Coordinator is responsible for ensuring the program to certify and maintain the North American Electric Reliability Corporation’s (“NERC’s”) certification of System Operators is in place and is responsible for delivery and administration of operator training that conforms to the NERC Continuing Education Hours (“CEH”) program according to NERC standards. The System Control Training Coordinator will participate as a team member in assisting with training sessions and simulations for System Restoration, Powerflow, System Operator Switching Stages testing and other department training.

## **Emergency Operations**

### ***Emergency Operations Specialist***

Under the general guidance of the System Control Department Manager, the Emergency Operations Specialist is responsible for the development, evaluation, revision and implementation of emergency preparedness and response plans for the Bulk Electrical System. This includes responsibility for the Manitoba Hydro System Restoration Plan, emergency operating procedures, System Control Centre (“SCC”) evacuation procedures, Backup Control Centre operating procedures and the System Control Emergency Operation Centre response plan. The Emergency Operations Specialist is responsible for ensuring Manitoba Hydro plans are coordinated and comply with Manitoba Hydro and North American Electric Reliability Corporation (“NERC”) policies and standards and are consistent with best utility practices.

## **Network Resources Management**

### ***Network Resources Management Supervisor***

Under the direction of the System Control Department Manager, the Network Resources Management Supervisor is responsible for operations planning functions for the transmission system. The Network Resources Management Supervisor is also responsible for the coordination of transmission assets in planned outages, developing and issuing the operating plans to manage the transmission resources such that commissioning, testing and facility outages occur in a safe, reliable and economic manner and to achieve the business goals of the Division related to frequency of planned outages, their cost and reliability impacts, and to always be in compliance with applicable North American Electric Reliability Corporation ("NERC") standards and Midcontinent Independent System Operator ("MISO") Business Practices for outage planning. The Network Resources Management Supervisor is responsible for coordinating the planned outages with adjacent transmission operators and for developing system posturing plans to ensure reliable and economic operations are maintained during planned outages. The Network Resources Management Supervisor uses a number of specialized tools to perform his role, mainly utilizing powerflow and contingency analysis, to assure the reliability of the overall system.

### ***Network Reliability Officer***

Under the direction of the Network Resources Management Supervisor, the Network Reliability Officer is responsible for operations planning functions for the transmission system. The Network Reliability Officer is also responsible for the coordination of transmission assets in planned outages, developing and issuing the operating plans to manage the transmission resources such that commissioning, testing and facility outages occur in a safe, reliable and economic manner and to achieve the business goals of the Division related to frequency of planned outages, their cost and reliability impacts, and to always be in compliance with applicable North American Electric Reliability Corporation ("NERC") standards and Midcontinent Independent System Operator ("MISO") Business Practices for outage planning. The Network Reliability Officer is responsible for coordinating the planned outages with adjacent transmission operators and for developing system posturing plans to ensure reliable and economic operations are maintained during planned outages. The Network Reliability Officer uses a number of specialized tools to perform his role, mainly utilizing powerflow and contingency analysis, to assure the reliability of the overall system.

### ***Projects Reliability Officer***

Under the general direction of the Network Resources Management Supervisor, the Projects Reliability Officer is responsible for operations planning functions for the transmission system. The Projects Reliability Officer is also responsible for the coordination of transmission assets in planned outages, developing and issuing the operating plans to manage the transmission resources such that commissioning, testing, and facility outages occur in a safe, reliable and economic manner and to achieve the business goals of the Division related to frequency of planned outages, their cost and reliability impacts, and to always be in compliance with applicable North American Electric Reliability Corporation ("NERC") standards and Midcontinent Independent System Operator ("MISO") Business Practices for outage planning. The Projects Reliability Officer is responsible for coordinating the planned outages with adjacent transmission operators and for developing system posturing plans to ensure reliable and economic operations are maintained during planned outages. The Projects Reliability Officer uses a number of specialized tools to perform his role, mainly utilizing powerflow and contingency analysis to assure the reliability of the overall system.

### ***Generation Reliability Officer***

Under the general direction of the Network Resources Management Supervisor, the Generation Reliability Officer is responsible for the planning horizon up to next day generation outage coordination and

generation security analysis to ensure the generation system is prepared for reliable and optimal operations in the operating day. Reliable system operations include the ability to respond to unplanned events in accordance with Manitoba Hydro, Midwest Reliability Organization (“MRO”) and North American Electric Reliability Corporation (“NERC”) standards for operational planning.

### ***Engineer-in-Training [AKA: System Reliability Engineer]***

Under the direction and supervision of the Network Resources Management Supervisor, the System Reliability Engineer will provide engineering support in establishing and implementing plans for the reliable and economic operation of Manitoba Hydro’s transmission, sub-transmission, and generation assets. Reliable system operations include the ability to respond to unplanned events in accordance with Manitoba Hydro, Midwest Reliability Organization (“MRO”) and North American Electric Reliability Corporation (“NERC”) standards for operational planning, along with coordination with neighbouring utilities and Independent System Operators (“ISOs”)/Regional Transmission Organizations (“RTOs”).

### ***System Operator***

Under the direction of the Network Resources Management Supervisor, the System Operator is responsible for the safe, stable and reliable operation of all generation, transmission and sub-transmission equipment 24 kV and above that forms the Manitoba Hydro Bulk Electrical System. The System Operator must be qualified to make real-time decisions during normal and emergency operating conditions to ensure the reliability of the Bulk Electric System. The System Operator will comply with Midcontinent Independent System Operator Reliability Coordinator (MISO) Reliability Directives. The System Operator has "functional" authority over District Operators, Area Maintenance staff, Construction Foremen as well as Generating and HVDC Station Operators for the functions necessary to operate the Bulk Electric System.

### ***System Shift Supervisor Generation/Network/Transmission***

Under the direction of the Network Resources Management Supervisor, the Generation/Network/Transmission System Shift Supervisor is responsible for supervising and coordinating the real-time operation of the Manitoba Hydro Bulk Electrical System and Interconnections in a safe, efficient and reliable manner. The Generation/Network/Transmission System Shift Supervisor has functional authority over District Operators, Apparatus Maintenance staff, Construction Foremen and Station Operators for those functions necessary to operate the system.

### ***Professional Engineer [AKA: System Reliability Engineer]***

Under the direction and supervision of the Network Resources Management Supervisor, the System Reliability Engineer will provide engineering support in establishing and implementing plans for the reliable and economic operation of Manitoba Hydro’s transmission, sub-transmission, and generation assets. Reliable system operations include the ability to respond to unplanned events in accordance with Manitoba Hydro, Midwest Reliability Organization (“MRO”) and North American Electric Reliability Corporation (“NERC”) standards for operational planning, along with coordination with neighbouring utilities and Independent System Operators (“ISOs”)/Regional Transmission Organizations (“RTOs”).

## **Operations Coordinator B**

### ***Operations Coordinator***

Under the general direction of the System Control Department Manager, the Operations Coordinator is responsible for supporting the operation of the Bulk Electrical System. Due to the shift nature of the System Control Centre and the requirement for staff to remain in the Control Centre to address

emergencies, this position is responsible for sharing the duties of the six (6) crews and for providing a constant contact for issues that require escalation or meetings with parties external to the System Control Centre.

## **System Operation Officers**

### ***Senior Power System Officer***

Under the general direction of the System Control Department Manager, the Senior Power System Officer is responsible for managing the real-time operation of the Manitoba Hydro Bulk Electrical System in a safe, reliable and efficient manner. The Senior Power System Officer is required to act as the final authority in making real-time decisions relative to the operation of the bulk power supply system in Manitoba and its Interconnections.

### ***System Operator***

Under the direction of the Senior Power System Officer, the System Operator is responsible for the safe, stable and reliable operation of all generation, transmission and sub-transmission equipment 24 kV and above that forms the Manitoba Hydro Bulk Electric System. The System Operator must be qualified to make real-time decisions during normal and emergency operating conditions to ensure the reliability of the Bulk Electric System. The System Operator will comply with Midcontinent Independent System Reliability Coordinator (MISO) Reliability Directives. The System Operator has "functional" authority over District Operators, Area Maintenance staff, Construction Foremen as well as Generating and HVDC Station Operators for the functions necessary to operate the system.

### ***System Operator Trainee***

Under the direction of the Senior Power System Officer, the System Operator Trainee will, as part of a four year training program, perform duties with the objective of becoming a fully qualified System Operator. The training program will include theoretical and practical training in accordance with corporate policy, including certification as a North American Electric Reliability Corporation ("NERC") System Operator.

### ***System Shift Supervisor Generation/Network/Transmission***

Under the direction of the Senior Power System Officer, the Generation/Network/Transmission System Shift Supervisor is responsible for supervising and coordinating the real-time operation of the Manitoba Hydro Bulk Electrical System and Interconnections in a safe, efficient and reliable manner. The Generation/Network/Transmission System Shift Supervisor has functional authority over District Operators, Apparatus Maintenance staff, Construction Foremen and Station Operators for those functions necessary to operate the system.

### ***Distribution System Shift Supervisor***

Under the direction of the Senior Power System Officer, the Distribution System Shift Supervisor is responsible for supervising, monitoring, coordinating and operating the Manitoba Hydro Bulk Electrical

System in the Central District area of responsibility in a safe, efficient and reliable manner. The Distribution System Shift Supervisor has line authority over the Distribution System Operators and functional authority over District Operators and Apparatus Maintenance staff for those functions necessary to operate the system.

## **Operations Coordinator A**

### ***Operations Coordinator***

Under the general direction of the System Control Department Manager, the Operations Coordinator is responsible for supporting the operation of the Bulk Power Transmission System. Due to the shift nature of the System Control Centre and the requirement for staff to remain in the System Control Centre to address emergencies, this position is responsible for sharing the supervisory duties of the six (6) crews and for providing constant contact for issues that require escalation or meetings with parties external to the System Control Centre.

## **Transmission Services and Compliance Department**

### ***Department Manager***

Reporting to the Director of Transmission System Operations, the Transmission Services and Compliance Department Manager leads a specialized department which develops strategy and business plans for efficient, safe, reliable, and regulatory compliant utilization of the transmission system that promotes revenue enhancement. The Department Manager manages the business use of the company's high voltage transmission assets, including compliance to Reliability Standards, and facilitates existing and new transmission service requests. The Department Manager directs and participates in the development of and revisions to the Manitoba Hydro Open Access Transmission Tariff ("OATT"), and coordinates with the Midcontinent Independent System Operator ("MISO") OATT. The Department Manager directs and participates in the development of and revisions to Manitoba Hydro transmission interconnection agreements, operating agreements, joint-ownership agreements and facility agreements, and associated regulatory filings. The Department Manager oversees updating Manitoba Hydro's Open Access Same-time Information System ("OASIS") and ensures OASIS compliance; and directs the administration of transmission-related agreements, including the development of rates and charges for transmission service under the OATT. The Department Manager represents the company's interest in regional transmission-related forums such as MISO Transmission Owners, and monitors regulatory filings for potential impacts to Manitoba Hydro.

The Department Manager also coordinates the activities of the Corporate NERC Reliability Compliance Program, including coordination between the various internal compliance stakeholders and external entities, and provides quality assurance in the corporation's interaction with the North American Electric Reliability Corporation ("NERC") and the Midwest Reliability Organization ("MRO"). The Department Manager is responsible for coordinating its reliability compliance staff, who are the primary conduit through which standards and requirement owners obtain relevant compliance information necessary to maintain compliance to the standards. The Department Manager is responsible for the implementation of both NERC Reliability Standards and NERC CIP Cyber Security Standards for Manitoba Hydro.

As a key member of the Transmission System Operations Division, the Department Manager of the Transmission Services and Compliance Department will contribute to the development and implementation of the Divisional Strategic Plan, promote the Corporate Operating Principles, and provide leadership and direction to departmental staff.

## **Tariff Administration**

### ***Tariff and Rates Administration Officer***

Under the general direction of the Transmission Services and Compliance Department Manager, the Tariff and Rates Administration Officer is responsible for leading the Tariff Administration Section of the Transmission Services and Compliance Department. The Tariff and Rates Administration Officer is responsible for providing detailed pricing and financial analysis to support the administration of the Open Access Transmission Tariff ("OATT") and the Open Access Interconnection Tariff ("OAIT"). The Tariff and Rates Administration Officer will have significant involvement in ensuring processes are in place to ensure cost recovery in the tariff processes and in revising the rates on an annual basis for the service schedules found in the OATT. The Tariff and Rates Administration Officer will lead the development of and revisions to Manitoba Hydro transmission interconnection agreements, operating agreements and facility agreements, and associated regulatory filings. The Tariff and Rates Administration Officer will facilitate the administration of the company's interest in regional transmission-related forums.

### ***Technical Officer [AKA: Tariff Administration Officer]***

Under the general direction of the Tariff and Rates Administration Officer, the Tariff Administration Officer will provide administration, co-ordination, technical, and implementation support for Manitoba Hydro's Open Access Transmission Tariff ("OATT") and Open Access Interconnection Tariff ("OAIT"). The Tariff Administration Officer will become a leader in providing non-discriminatory tariff services to customers within and external to the corporation. The Tariff Administration Officer will also lead the effort to ensure that a cooperative relationship exists between Transmission Services and its tariff customers.

### ***Tariff Administration and Rates Engineer***

Under the general direction of the Tariff and Rates Administration Officer, the Tariff Administration and Rates Engineer is responsible for creating the contractual arrangements; developing strategic initiatives; and creating policies, practices and business practices. The Tariff Administration and Rates Engineer will manage the activities that arise, so that Manitoba Hydro is positioned to be able to maximize its potential business opportunities as a result of open access transmission environments. As such, the Tariff Administration and Rates Engineer will develop and manage contractual requirements with the Midcontinent Independent System Operator ("MISO") and others to maximize open access benefit potential. The Tariff Administration and Rates Engineer is responsible for the creation, development and maintenance of the open access transmission contracts such as the transmission tariff, the generation tariff, the load interconnection tariff, and seams operating agreements. The Tariff Administration and Rates Engineer will initiate required actions to position Manitoba Hydro's operations to conform, to the extent practical, to the applicable requirements of those external operating organizations (including USA regulatory order requirements). The Tariff Administration and Rates Engineer will assist the Tariff and Rates Administration Officer in managing the relationship and strategic activities between Manitoba Hydro, MISO, the Federal Energy Regulatory Commission ("FERC") and the National Energy Board ("NEB") as well as others associated with open-access transmission operating items.



When required by law, or otherwise deemed in Manitoba Hydro's business or strategic interests, the Tariff Administration and Rates Engineer will develop strategies and initiate responses to regulatory orders issued by NEB and FERC. The Tariff Administration and Rates Engineer will consider a long-term outlook, so that the corporation is appropriately positioned to maximize open access transmission opportunities into the future. The Tariff Administration and Rates Engineer will organize and lead corporate resources to respond appropriately to thrusts of these external organizations in a timely manner. This includes managing or assisting in developing and revising of contracts with those organizations, making regulatory filings to FERC and NEB, engaging in settlement negotiations, and revising the interconnection agreements and associated documents. The Tariff Administration and Rates Engineer will develop Open Access Transmission Tariff documents, connection requirements, rates, and manage interconnection and connection requirements.

### ***Tariff and Regulatory Affairs Officer***

Under the general direction of the Tariff and Rates Administration Officer, the Tariff and Regulatory Affairs Officer will participate in the development of and revisions to Manitoba Hydro transmission interconnection agreements, operating agreements, joint-ownership agreements and facility agreements, and associated regulatory filings; facilitate the administration of the company's interest in regional transmission-related forums such as Midcontinent Independent System Operator ("MISO") Transmission Owners, and monitor regulatory filings for potential impacts to Manitoba Hydro. The Tariff and Regulatory Affairs Officer will participate in development of and implement strategy and business plans for efficient, safe, reliable, and regulatory compliant utilization of the transmission system that promotes revenue enhancement; participate in the development of and revisions to the Manitoba Hydro Open Access Transmission Tariff ("OATT"), and coordinate with the MISO OATT.

## **System Performance Department**

### ***Department Manager***

Reporting to the Director of Transmission System Operations, the System Performance Department Manager will be responsible for the leadership and management of a highly specialized system engineering department which ensures operational reliability and security of the Bulk Electrical System by conducting operating studies, providing protection and control settings, implementing and maintaining real-time applications for operating staff, and managing North American Electric Reliability Corporation/Midwest Reliability Organization ("NERC/MRO") reliability standards. As a key member of the Transmission System Operations Division, the System Performance Department Manager will contribute to the development and implementation of the Divisional Strategic Plan, promote the Corporate Operating Principles, and provide leadership and direction to department staff.

## **Integrated Network Performance**

### ***Integrated Network Performance Engineer***

Reporting to the System Performance Department Manager, the Integrated Network Performance Engineer will supervise and provide leadership to the Integrated Network Performance Section, made up of highly knowledgeable power system engineers and technologists. The main responsibility of this section is to perform day-ahead, seasonal, and temporary operating studies and to develop corresponding guidelines for the reliable operation of the Manitoba AC Network and the interconnected (Manitoba, Saskatchewan, Ontario and USA) AC Network under normal and abnormal system conditions.

### ***Planning and Operating Coordination Engineer***

Under the general direction of the Integrated Network Performance Engineer, the Planning and Operating Coordination Engineer will participate in all Transmission and Distribution projects addressing system enhancements (66kV to 500kV) from concept to implementation, in order to provide the operating perspective of proposed enhancements from the planning and design stages to the construction and implementation stages until new facilities are released to operator control.

## **Seasonal Studies**

### ***Transmission and Capability Engineer***

Under the direction of the Integrated Network Performance Engineer, the Transmission and Capability Engineer will provide technical support for all transmission capability related issues. This analysis will evaluate the electrical behaviour of the bulk power system and define limits of operation under normal and abnormal operating conditions. This support will include: working with the Principal Network Studies Engineer to develop operating guidelines, developing philosophies which will optimize transfer capability, and insuring those operating guidelines reflect the present posting philosophies.

### ***Technical Officer***

Under the general direction of the Integrated Network Performance Engineer, the Technical Officer will prepare, conduct and report on loadflow and transient stability studies used to evaluate the electrical behaviour of existing and planned interconnected power systems during normal and abnormal operating conditions. The Technical Officer will administer and ensure that the present and future design of the monitoring systems of the major electrical system during disturbances is adequate for the purposes of analysis and simulation. The assignments are various and will require individual representation on committees in the USA and involve frequent contact with engineers and technical specialists from other utilities as well as within Manitoba Hydro.

### ***Principal Network Studies Engineer***

Under the consultative direction of the Integrated Network Performance Engineer, the Principal Network Studies Engineer will provide engineering leadership to a highly qualified power system engineering unit. The Principal Network Studies Engineer will plan, conduct and direct computer and related studies of the interconnected system response to disturbances; will evaluate the behaviour of the Manitoba Hydro system and interconnected systems, including Saskatchewan, USA and Ontario interconnections; and will issue guidelines for the operation of the interconnected power system during both normal and abnormal operating conditions.

## **Day Ahead Studies**

### ***Principal Network Studies Engineer***

Under the general direction of the Integrated Network Performance Engineer, the Principal Network Studies Engineer will plan, conduct and direct computer and related studies of the interconnected system response to disturbances. The Principal Network Studies Engineer will evaluate the behaviour of the Manitoba Hydro system and interconnected systems and issue guidelines for the operation of the interconnected power system during both normal and abnormal operating conditions.

### ***Network Studies Engineer***

Under the general direction of the Integrated Network Performance Engineer, the Network Studies Engineer will conduct and report on computer studies to analyze actual power system response. This analysis will evaluate the electrical behaviour of the bulk power system and define limits of operation under normal and abnormal operating conditions. The Network Studies Engineer will be in a leadership role on some projects as well as a support role in projects led by a Principal Network Studies Engineer.

### ***Engineer-in-Training [AKA: Network Studies Engineer]***

Under the general direction of the Integrated Network Performance Engineer, the Network Studies Engineer will perform transient and steady state studies as required for the seasonal, current day and next day operating time horizons. This analysis will evaluate the electrical behaviour of the bulk power system and define limits of operation under normal and abnormal operating conditions, ensuring compliance with North American Electric Reliability Corporation ("NERC") Reliability Standards, Midcontinent Independent System Operator ("MISO") and Manitoba Hydro Operating Procedures. The Network Studies Engineer will participate in projects led by a Principal Network Studies Engineer.

### ***Professional Engineer [AKA: Network Studies Engineer]***

Under the general direction of the Integrated Network Performance Engineer, the Network Studies Engineer will conduct and report on computer studies to analyze actual power system response. The initial focus of this position will be to conduct operating studies for the Riel Complex. This analysis will evaluate the electrical behaviour of the bulk power system and define limits of operation under normal and abnormal operating conditions. The Network Studies Engineer will be in a support role in projects led by a Principal Network Studies Engineer.

### ***Network Studies Engineer***

Under the general direction of the Integrated Network Performance Engineer, the Network Studies Engineer will conduct and report on computer studies to analyze actual power system response. This analysis will evaluate the electrical behaviour of the bulk power system and define limits of operation under normal and abnormal operating conditions. The Network Studies Engineer will be in a leadership role on some projects as well as a support role in projects led by a Principal Network Studies Engineer.

## **Control Center & Technical Systems Department**

### ***Department Manager***

Reporting to the Director of System Operations, the Control Center & Technical Systems Department Manager is responsible for the management of the Control Center & Technical Systems Department. Major responsibilities include the maintenance of the Energy Management System/Supervisory Control and Data Acquisition ("EMS/SCADA") and associated hardware and software systems, the maintenance of the Dovercourt facility, the maintenance of system protection programs, the management of technical training programs, and the operational management of technical service groups located at the Waverly Service Centre. Management and control of capital and operating budgets is a prime responsibility.

## **Application Support and Change Management**

### ***Application Support and Change Management Supervisor***

Under the direction and supervision of the System Support Department Manager, the Application Support and Change Management Supervisor will supervise a section charged with the responsibility of achieving the User's needs for monitoring, control and decision support for system operations and for the development of the operational programs of the Energy Management System/Supervisory Control and Data Acquisition ("EMS/SCADA") system and to harness the capability of these and other software systems to support in achieving operational excellence. The Application Support and Change Management Supervisor is responsible for the lead role in the justification, development, implementation and on-going operation of all department related support programs.

### ***Technical Officer***

Under the general direction of the Applications Support and Change Management Supervisor and in consultation with staff from the System Control, the System Performance and the Transmission Services Departments, the Technical Officer will coordinate the activities associated with the Energy Management System/Supervisory Control and Data Acquisition ("EMS/SCADA") system and related aspects of the System Control Centre's operation due to plant additions and changes internal to the System Control Centre. The Technical Officer will provide specialized technical expertise to the System Control and the Transmission Services Departments.

### ***Technical Assistant***

Under the general direction of the Applications Support and Change Management Supervisor and in close consultation with the staff in the System Control, the System Performance and the Transmission Services Departments, the Technical Assistant will implement the activities associated with the ongoing maintenance and development of the Energy Management System/Supervisory Control and Data Acquisition ("EMS/SCADA") system and other related and associated support programs and decision support programs.

\*Available in accessible formats upon request.