

NUCLEAR TRAINING DEPARTMENT

COURSE 410

AN INTRODUCTION TO ONTARIO HYDRO
AND THE NUCLEAR OPERATIONS BRANCH

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Nuclear Training Department

COURSE 410

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**AN INTRODUCTION TO ONTARIO HYDRO'S
ORGANIZATION, OBJECTIVES AND PERFORMANCE**

OBJECTIVES

On completing this module, with reference to the lesson material, you will be able to:

1. Given the Corporate Direction Document, state the reasons why Ontario Hydro has Mission and Value Statements with illustrations of how these could affect:
 - those who work for Ontario Hydro,
 - the general public.
2. Given an organizational chart locate and state the branch and division in which you will be employed.
3. State the five main Key Effectiveness Areas (KEAs) of the Nuclear Operations Branch without reference to any documentation.
4. State the primary production role of Nuclear Operations Branch and list four other products that are also produced by the Branch.

HISTORY

What is now known as Ontario Hydro came into existence on May 14, 1906 when the Ontario Legislature passed a special act, "An Act to Provide for the Transmission of Electrical Power to Municipalities", which created a corporation known as "The Hydro Electric Power Commission of Ontario". In 1907 the original legislation was superseded by "The Power Commission Act". Over the years the corporation's powers, rights, and duties were altered and revised several times. In 1970 the revisions and changes were consolidated and updated into one document. In 1974 the name of the act was changed to "The Power Corporation Act" and the name of the corporation to "Ontario Hydro". The authoritative reference for Ontario Hydro is "The Power Corporation Act, Revised Statutes of Ontario 1970, Chapter 354, as Amended".

Amendments were made during the 1980s which extended responsibilities from the generation of electrical power to include the production and sale of steam, hot water, and other secondary products.

CORPORATE DIRECTION

To clearly define its role on a day-to-day basis Ontario Hydro, like most large corporations, has developed a set of guidelines, or objectives, to meet goals and methods of operation. These objectives are in place at all levels of the corporate organization from the Executive Office right down to individual sections within a department.

Your instructor will hand out the Corporate Direction reference card. This card has four main sections:

A Vision for Ontario Hydro

This is what we hope to be.

Mission

What we are charged to do or why we are here.

Values

Characteristics which we should internalize to accomplish our mission.

Guiding Principles

Directions that show how we should work, day by day, always focusing on our mission.

Let us look at the individual components in some detail.

Vision

The vision states that we should be a "World Class Energy Company". This means we should be amongst the best. We currently meet this criterion and we want to maintain it. We are one of the largest electrical utilities in North America in terms of energy delivered and capacity. Our rates are amongst the lowest in North America. Utilities from all over the world visit us to see how we do things and purchase our expertise to assist their operations.

We are an energy company. This means we deliver energy in the form of heat as well as electricity. One example is the industrial complex adjacent to the Bruce Nuclear Power Development Site on Lake Huron which is supplied with steam for heating purposes, as well as electricity.

We provide these services for the "prosperity of the people of Ontario", and we strive for "excellence in service to our customers". We are owned by our customers, so it is important that we put their collective requirements foremost.

Mission

A mission statement exists to state, in a fairly general but exact manner, "Why we are here". This mission statement, developed for Ontario Hydro as an entity is expressed as follows:

Our continuing purpose at Ontario Hydro is to contribute to the enhancement of the quality of life of the people of Ontario by serving their energy needs:

- Electricity is essential to our quality of daily life and to the continued prosperity of the people of Ontario.
- Ontario Hydro will meet this need reliably, economically, and with sensitivity.
- We will continue to bring competent people and appropriate technology to bear on the supply, use and conservation of electricity.

- We will use our special knowledge, skills, facilities and by-products for the benefit of our customers and the people of Ontario.

Values

Having stated the Mission, it is now important that some Values be applied to help us interpret and accomplish this goal. As a Crown Corporation, whose existence relies upon serving the needs of the people for energy, our customers must be satisfied or:

- 1) the maximum benefits to energy customers as a whole may not be realized,
- 2) certain action or inaction could affect the provincial economy, environment or public safety.

Customer satisfaction must therefore be the number one priority.

We live in a world where economic and technological factors can change rapidly. As a corporation we must show the flexibility and possess the expertise to address changing situations rapidly.

At what price is our product to be sold? We are in a virtual monopoly situation in Ontario. Do we charge as much as the market will stand, ie., purely "bottom line" management? Our product price will in turn affect many, if not all, of the products manufactured in Ontario; therefore, reasonable pricing is a must. In fact, Ontario Hydro's mandate is to supply power at cost.

We are also a Public Corporation. We must operate in a manner which is respected by the Ontario general public. This is a difficult goal to achieve. Public Corporations are an easy and frequent target for criticism both justified and otherwise.

How are we to function internally as a Corporation? What should be the relationship between different parts of the organization and different levels of staff (all of whom are employees of the Corporation). Mutual respect for each other's position is vital. The competence of all employees must be recognized and their freedom to operate must not be unduly restricted within predefined limits. This presumes that, in turn, they should be held accountable for their results.

Guiding Principles

All these points are further developed as Guiding Principles in the Corporate produced handout. You must remember that the Guiding Principles are to be interpreted as to how they support the Mission and Values. Your instructor will discuss some of them with you.

CORPORATE STRUCTURE

At this stage we should look at the overall organizational chart (Figure 1) for the Corporation, and in particular note the position of the Nuclear Operations Branch, of which you are members, in the corporation.

Ontario Hydro Corporate Organization

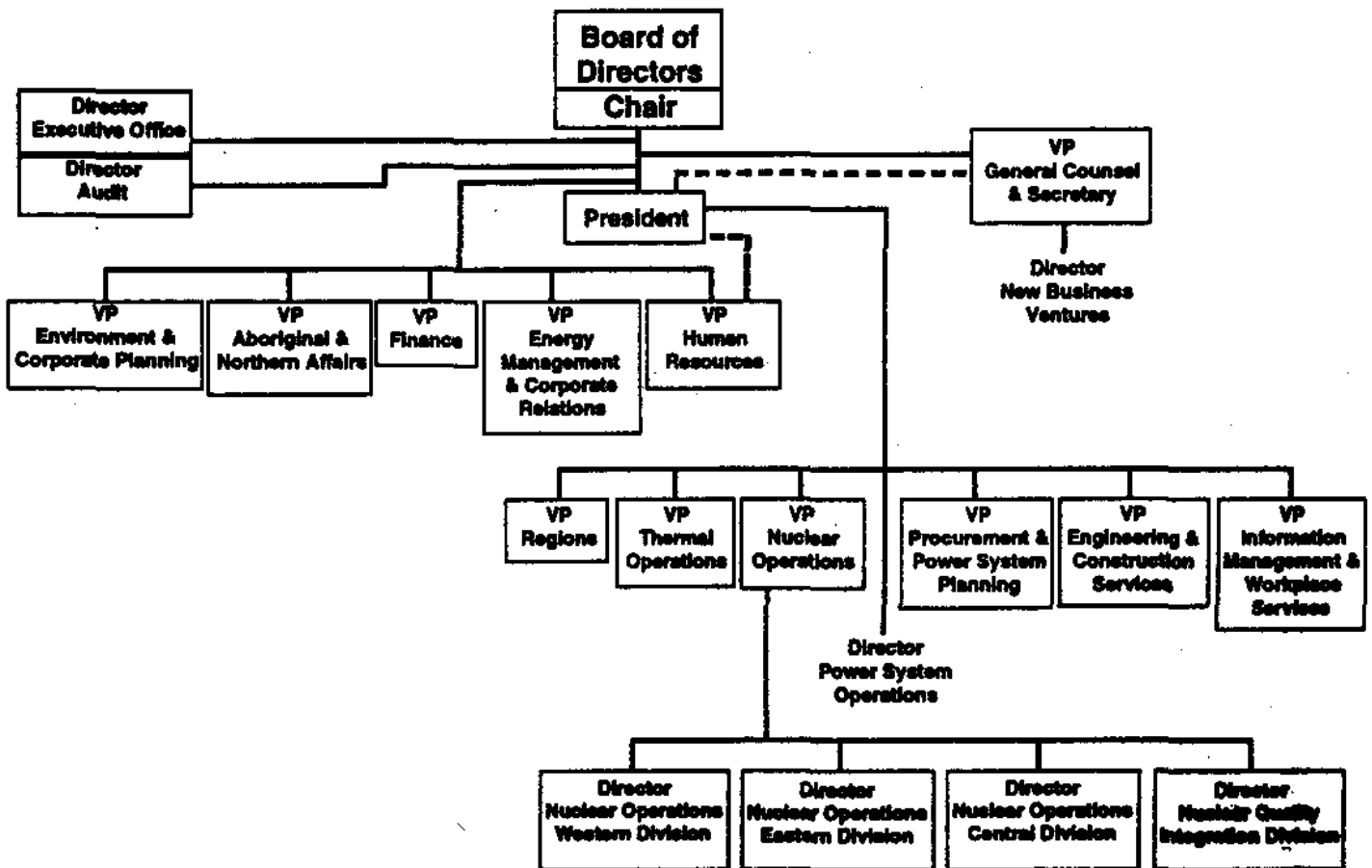


Figure 1

NUCLEAR OPERATIONS BRANCH - ROLES AND OBJECTIVES

As a part of Ontario Hydro, Nuclear Operations Branch is bound by the overall objectives and goals of the corporation, but it has refined these objectives to suit its own role. The objective of Nuclear Operations Branch is:

To produce electricity at the lowest long-term Total Unit Energy Cost consistent with achieving objectives in the areas of worker safety, public safety, reliability and environmental protection.

Achievement of this objective is measured by further defining 5 Key Effectiveness Areas (KEA's), setting objectives, goals and targets within these KEA's, monitoring progress and taking corrective action. Typically, the 5 main KEA's are:

- 1) Worker Safety,
- 2) Public Safety,
- 3) Environmental Protection,
- 4) Product Quality and Reliability and
- 5) Product Cost.

All of these KEA's can have their origins traced back to the Corporate Mission Statement.

Production Roles of Nuclear Operations Branch

The primary role of the Nuclear Operations Branch is:

- TO PRODUCE ELECTRICITY (ENERGY) WITH NUCLEAR FUEL

Because we use CANDU nuclear reactors to accomplish this, and because heavy water required for the CANDU has not been readily or economically available from sources outside the Branch, a second role of Nuclear Operations Branch is:

- TO PRODUCE HEAVY WATER

During the process of producing electricity and heavy water, the following are also produced and marketed:

- THERMAL ENERGY (STEAM)
- COBALT 60
- TRITIUM

KEY EFFECTIVENESS AREA PERFORMANCE

We have looked at the KEAs under which Nuclear Operations Branch operates. At this point it would be a good idea to see how the branch has performed over the years relative to these KEAs. Your instructor will review current performance in the following areas:

Public Safety

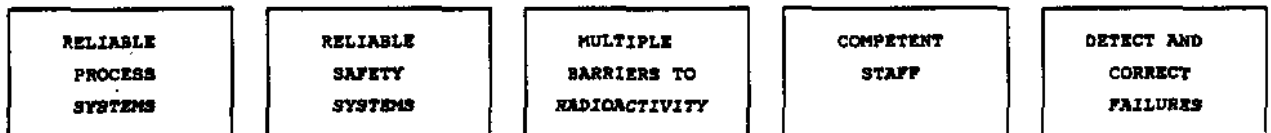
Nuclear Operations Branch's objective in the KEA of public safety is "to prevent injury to members of the public by operation of the Branch's facilities or by actions of Branch staff."

Our commitment to public safety is paramount. Our whole operating policy is directed to this end. We operate according to a philosophy known as DEFENCE IN DEPTH. This policy will be developed in greater depth later in your initial training. At this time only a brief overview will be given.

Ontario Hydro makes three basic assumptions before applying its defence in depth policy. They are:

- 1) Equipment will fail,
- 2) People will make mistakes,
- 3) Designs will have imperfections.

To address these assumptions, Ontario Hydro has chosen to build multiple layers of defence so that if something goes wrong there are backups available. There are 5 main layers of defence and within each layer there are additional layers. The 5 main layers or independent elements are as follows:



The development and discussion of Defence in Depth will be undertaken in Course 429, Introduction to Reactor Safety.

Environment

Our objective is "to prevent or mitigate any adverse effects the operation of the Branch's facilities may have on the environment."

Nuclear Operations Branch's obligation to environmental protection is primarily concerned with the control of radioactive emissions from Nuclear Generating Stations. Its performance has met the standards imposed by the Atomic Energy Control Board (AECB), with one exception in 1979-80 when the instantaneous limit for tritium concentration in the outfall at Pickering was exceeded. Typically, the emissions have been less than 1% of the limits allowed.

Nuclear Operations Branch is also concerned with protecting the environment from non-radioactive contaminants and has been shown to be responsive in enacting government initiatives in the Municipal Industrial Strategy for Abatement (MISA) program.

Individually, in their work groups and by following procedures, each employee is expected to practice the Reduce, Reuse and Recycle philosophy with consumed materials to lessen Nuclear Operations Branch's non-nuclear impact on the environment.

Reliability

In the 1970's and early 1980's, CANDU generating stations had an excellent performance record and a world wide reputation for reliability. Their capacity factors (an indication of the actual achieved output against the theoretical maximum) have been amongst the highest of all commercial reactors world wide. Typically CANDU reactors filled 5, or more, of the annual top ten ranking list. During the late 1980's the reliability of the Ontario Hydro CANDUs declined as did their place in world ranking. In 1990, the top Ontario Hydro Unit was Bruce Unit 7 which only ranked 27th in the world.

Obviously the reliability of our nuclear units in recent years has not been as high as we were once able to boast. The challenge for all of us over the next few years is to return our nuclear units back to the top of the world ranking and then after that aim to set the standards against which others in our industry are judged. This is a formidable task which will require the combined efforts and talents of everyone of us in the Branch. The philosophy of constantly getting better, known in the Nuclear Operations Branch as the Quality Improvement Process (QIP), is required for us to succeed.

You will be hearing more about QIP while you are here in training and later on when you report to your respective departments.

Product Cost

Although nuclear generated electrical power costings once compared very favourably with all other thermally produced electrical power in Ontario, with our lower reliability in recent years this is no longer true. With the large number of major outages scheduled throughout the 1990's and the high cost of rehabilitation of our units, returning product cost to its former position is going to be a challenge for all employees. Your instructor will cover the current situation with you.

Worker Safety

Nuclear Operations Branch has operated from the beginning of Ontario Hydro's nuclear program with excellent safety records. Up until very recently, there have been no work related fatalities and Nuclear Operations Branch has always met its yearly worker safety targets. Unfortunately, in 1990 there was one work related fatality when an individual lost his life in a traffic accident on a public highway while enroute for a work related meeting.

Worker Safety is, perhaps, the most important Key Effectiveness Area for Nuclear Operations Branch. Because of its' importance, it will be treated separately and in more detail in the next section of this course.

ASSIGNMENT

1. State the 4 main components of Corporate Direction.
2. a) Why does Ontario Hydro have a Corporate Direction document?

b) Give an example of how this effects each of:
 - 1) Ontario Hydro Workers,
 - ii) General Public.
3. State the Ontario Hydro Branch and Division in which you are employed.
4. List the five main Key Effectiveness Areas of Nuclear Operations Branch.
5. List five products of Nuclear Operations Branch.
6. State the five independent elements which are part of the "Defence in Depth" philosophy which is incorporated into design, operation and maintenance to protect the public.