

MODULE 3

THE CONVENTIONAL SIDE OF THE STATION

INTRODUCTION

MODULE OBJECTIVE

At the end of this module, you will be able to describe:

- A. How steam is produced, transferred to the turbine, condensed, and returned to the boilers;
- B. Operation of the generator;
- C. Major hazards on the conventional side.

The basic similarity between typical electric generating stations is the conversion of shaft mechanical power to electrical power in a generator. The major difference comes from the method used to produce the shaft mechanical power. Ontario Hydro uses four principle methods of obtaining this shaft power:

- hydraulic turbines;
- fossil fuel steam turbines;
- nuclear steam turbines;
- gas turbines.

This module covers nuclear steam turbines and the different systems involved in the energy conversions. Electric power production requires the transfer and conversion of heat energy to mechanical energy. This is achieved by two basic energy transport systems: the heat transport system and the steam/feedwater system. The first part is covered in Module 2. The following sections discuss the steam/feedwater cycle, the equipment involved, energy transfers, control, and auxiliary equipment required. The values of pressure, temperature, etc., quoted in the text refer to full power operation and are approximate. Real values differ slightly from station to station.

¹ Often referred to as the Secondary Heat Transport System.