moulds of the desired diameter. The cast billets may be used as feed stock to rolling mills. For special orders small diameter billets may be cast and machined for direct use as fuel elements.

Chalk River have been supplied with fuel elements from both the forging and casting route.

V. Service Operations

Process Control Department

This department is responsible for all sampling and for process studies conducted on refinery operations.

All plant samples are collected and prepared for analysis in the process control laboratories. This department also maintains records of all results and reports these to those concerned. Sampling methods and the frequency of sampling also come under its jurisdiction.

The department has a technical staff of three engineers who, in addition to exercising routine process control functions, also carry out detailed process studies whenever and wherever technical difficulties arise in the refinery's operations.

Analytical Laboratory

The analytical laboratories with a staff of six chemists and over 20 technicians carry out all routine and special analyses for the operation of the refinery. A wide variety of analytical procedures are used and equipment is available for the precision analysis required for nuclear work.

Analytical research and some fundamental research are also carried on by this department.

Engineering and Maintenance

All routine maintenance of the refinery equipment is the responsibility of the engineering department. A force of about 40 tradesmen including electricians, carpenters, welders, pipe fitters, machinists, millwrights, painters, sheet metal workers and instrument mechanics carry out this work.

In addition, the engineering department with a staff of three engineers, designs, lays out and installs all process equipment changes or alterations.

Utilities

Domestic water is obtained from the town of Port Hope. However, the majority of water used in processing is for cooling purposes and this is pumped from lake Ontario by means of deep well pumps at the rate of 750 gallons per minute.

Electricity is supplied by the Port Hope Hydro Electric Power Commission through two sub-stations, one with a primary voltage of 44.0 KV and the other with a primary voltage of 4.2 KV. The total capacity of the two substations is 3450 KVA. The standard voltage used (other than lighting and light equipment where 220/110 volts is used) is 550 V.

The process and heating steam requirements amount to approximately 40,000 pounds per hour during cold weather months. In July 1960 the power house was converted from coal fired to natural gas-coal combination, with gas being supplied from the Lakeland Gas Company pipeline. The gas contract is on an "interruptable basis" and a small stock of coal is maintained for use during gas interruptions.