

design Idromeccanica line compressors to supply service stations in the North American and international markets. Auto conversion centres have also been established by CNG Fuel Systems in Vancouver, Calgary and Toronto.

The first North American public fuelling station for natural gas was opened in Calgary in September 1982, followed by a second in October in Vancouver and more recently a number have opened in Toronto.

The introduction of natural gas fuelling stations is relatively simple, since existing pipeline distribution facilities can deliver natural gas to the service station. This allows for economical handling (no trucking needed) and considerable savings to the customer.

In addition to the new programs announced by the federal government, provincial governments in British Columbia, Alberta and Ontario are also offering incentives to support the use of compressed natural gas.

Energy-saving houses planned

The Housing and Urban Development Association of Canada (HUDAC) has entered into an agreement with the federal government that will assist in the construction of up to 300 super energy-efficient houses across Canada during 1983.

The agreement with HUDAC is part of the federal government's super energy-efficient home program which has a \$6-million budget for training builders in the techniques of constructing and marketing super energy-efficient houses, called the R-2000 home. Builders selected to construct an R-2000 home will receive a contribution of \$6 500 to help offset costs associated with participating in the demonstration program. Each home will be open to the public following construction and will be monitored for energy performance for an additional two-year period.

As part of the agreement signed HUDAC will co-ordinate the building and demonstration of the R-2000 homes, identify appropriate sites, recommend builders and implement builder training and education activities. The federal government through Energy, Mines and Resources, the Canada Mortgage and Housing Corporation and the National Research Council will provide assistance and direction to the program through an advisory committee.

Canada's outstanding new maps of the world's oceans

The intensive search for deep sea mineral deposits and much of the activity occurring on or below the world's oceans would probably be haphazard, or possibly non-existent, without the aid of accurate maps and charts.

For this reason, the Canadian government took on the task of compiling and producing the fifth edition of the General Bathymetric Chart of the Oceans (GEBCO), which is a new atlas of the oceans of the world. (Bathymetry is the science of deep sea sounding or measurement.)

During mid-1982, the Canadian Hydrographic Service (CHS), a branch of the federal Department of Fisheries and Oceans, published the eighteenth and final sheet of GEBCO. The series of charts is the culmination of eight years' work by CHS and hydrographers and oceanographers throughout the world. CHS produced it for the International Hydrographic Oceanographic Commission of the United Nations Educational, Scientific and Cultural Organization.

These charts of the floor of the oceans, which are the major source of reference for oceanographers, provide invaluable information for maritime countries seeking to establish offshore limits to regulate petroleum development and other submarine resources.

Excellent examples

The Canadian maps are regarded as outstanding examples of the art and science

of cartography. While the guidelines for the fifth edition of GEBCO stated that the main objective was "accuracy, not elegance", the new charts are both accurate and elegant. Sixteen of them, covering most of the world, are on a scale of 1:10 000 000 — one centimetre representing 100 kilometres on the earth's surface.

When in 1974, nations contributing to GEBCO (some 90 maritime countries) agreed that a new edition of the charts was essential, Canada volunteered to produce the first four. The CHS cartographers performed their work so well that they were asked to produce the following 14 to complete the series.

For the next ten to 15 years, or until the next edition is published, the Canadian-produced charts will be the principal guide for the establishment of offshore boundaries. They will be important references for United Nations arbitrators in analyzing and adjudicating law of the sea disputes. Geophysical and marine scientists as well as those in other disciplines, will find the authoritative graphic representation of trenches, ridges, sea-mounts and continental shelves of the sea floor of inestimable value in their studies.

The first edition of GEBCO was published in 1904, the second between 1912 and 1930 and production of the third was interrupted by the Second World War. That edition was declared finished in 1955, although three polar sheets appeared in 1968-69. Only two new sheets ap-



Director-General, Canadian Hydrographic Service, Stephen MacPhee (left) and geographer in charge of the GEBCO project David Monahan discuss the new fifth edition.