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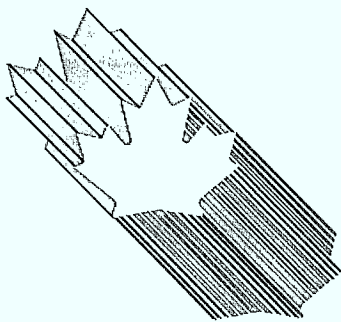


Industry, Science and
Technology Canada

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**Oil and Gas Field
Equipment**

Canada



I N D U S T R Y

P R O F I L E

OIL AND GAS FIELD EQUIPMENT

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FOREWORD

In a rapidly changing global trade environment, the international competitiveness of Canadian industry is the key to survival and growth. This Industry Profile is one of a series of papers which assess, in a summary form, the current competitiveness of Canada's industrial sectors, taking into account technological and other key factors, and changes anticipated under the Canada-U.S. Free Trade Agreement. Industry participants were consulted in the preparation of the papers.

The series is being published as steps are being taken to create the new Department of Industry, Science and Technology from the consolidation of the Department of Regional Industrial Expansion and the Ministry of State for Science and Technology. It is my intention that the series will be updated on a regular basis and continue to be a product of the new department. I sincerely hope that these profiles will be informative to those interested in Canadian industrial development and serve as a basis for discussion of industrial trends, prospects and strategic directions.

Minister

1. Structure and Performance

Structure

The manufacturers of oil and gas field equipment in Canada produce a wide variety of machinery and components used in the exploration, drilling and servicing of oil and gas wells, and in the production and processing of oil and gas. The industry encompasses manufacturers of geophysical prospecting equipment, drilling rigs and ancillary tools, pumping, cementing and well-fracturing units, as well as dehydrators, separators, treaters and other field processing components. It also includes drilling and processing equipment on offshore platforms, but does not include the platforms or sub-sea equipment. In addition, manufacturers supply custom-made equipment, such as drilling rigs and field processing units, plus a wide range of standard products and high-volume production items. Proven dependability and readily available servicing of oil and gas equipment are of key importance to purchasers and users.

In 1986, the industry was composed of approximately 225 small to medium-sized establishments employing about 4000 people, including many skilled workers and professionals. In addition, there is a significant amount of subcontracting of component parts and assemblies to small, local machine shops. Many pieces of equipment are considered to be "critical" in that a breakdown of a single component can stop an entire drilling or servicing operation, which may result in costly downtime or repair activities. For this reason, most drilling contractors and oil and gas companies buy equipment with a record of reliability. Accordingly, manufacturers are constantly carrying on development and testing to improve their products.

The industry draws upon a wide variety of sources for its supply of basic steel, castings, forgings, pumps, engines, vehicle chassis and instrumentation. Its principal markets are oil field supply houses (distributors), service and drilling rig contractors and oil and gas companies. In addition to firms manufacturing for sale to the industry, there are some service companies which manufacture primarily for their own consumption.

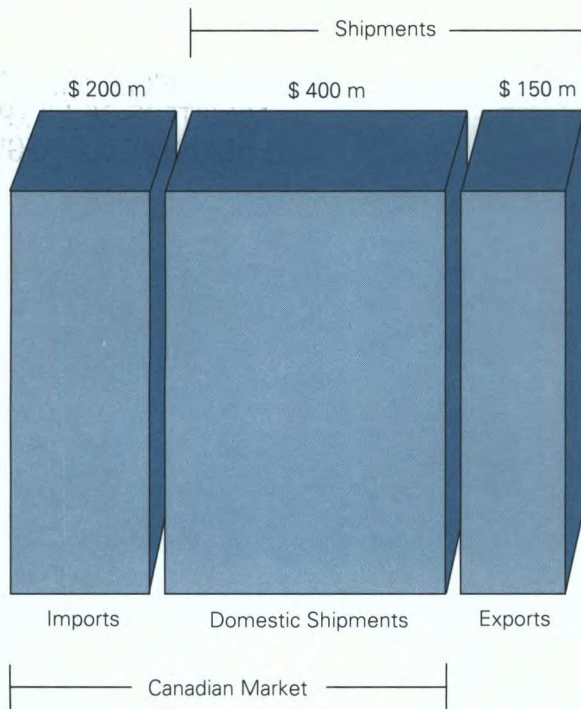
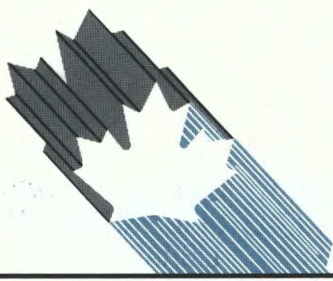
The health of the oil and gas equipment manufacturing industry in Canada is directly linked to that of the petroleum industry, which is highly cyclical. Twenty years ago there was practically no Canadian production capability in oil and gas equipment. However, during the 1970s the domestic market experienced rapid growth and Canadian capability to manufacture and market oil and gas equipment increased substantially. Shipments peaked in 1981, followed by a significant downturn in demand for equipment resulting from reduced exploration and development activity for oil and gas. The industry has recovered somewhat from the low levels of activity during 1982-83 but has not yet reached the high levels of 1981. In 1986, the industry exported about 27 percent of its production and supplied approximately 67 percent of the Canadian market.

Canada



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**Imports, Exports and Domestic Shipments
1986***

* *ISTC estimates*

In 1986, shipments were estimated at \$550 million of which some \$150 million, or 27 percent, were exports. The United States accounted for about 20 percent of Canada's exports, while the Soviet Union, south Asia and the People's Republic of China (P.R.C.) currently account for some 65 percent, and South America, the Middle East and Africa for another 15 percent. Imports amounted to approximately \$200 million in 1986 and captured about 33 percent of the domestic market. About 95 percent of these imports were from the United States, Canada's biggest competitor in both domestic and export markets. In addition to the United States, competition in international markets comes mainly from the United Kingdom, France and Italy.

About 40 percent of the companies in this industry are foreign owned, mostly subsidiaries of U.S. manufacturers, and they account for approximately 55 percent of total domestic shipments.

In the domestic market, more than 70 percent of oil and gas field equipment is sold to service drilling contractors and oil companies through supply houses. With few exceptions, the major supply houses in Canada are subsidiaries of supply houses in the United States. These, in turn, are frequently integrated with major manufacturers of oil drilling equipment.

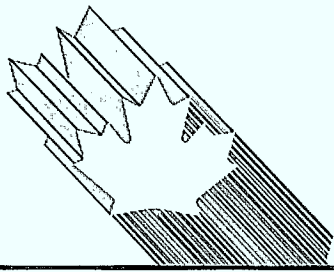
Most supply houses regard their Canadian operations as extensions of the U.S. market and tend to centralize purchasing policies at their head offices in the United States. As a result, a Canadian manufacturer wishing to market a product in Canada often must obtain the approval of the U.S. parent of the supply house. This practice, which affects both drilling contractors and the major oil companies, makes it difficult for many small Canadian firms to overcome established buyers' preferences for well-known equipment of U.S. origin. The remainder of sales not handled by supply houses (less than 30 percent) are made to original equipment manufacturers or directly to the oil companies.

In general, the supply houses are reluctant to carry products made by competing firms; nevertheless, they are occasionally asked to do so by drillers who have particular preferences. However, most drilling contractors and oil companies purchase well-known brand names.

Performance

Many of the Canadian-owned companies had their origin as service and repair shops before taking advantage of a niche in the market to commence manufacturing. Some of these companies have since developed excellent technologies and, as a result, during the recessionary period of the early 1980s, they were able to enter overseas export markets where they achieved considerable success. However, many of these companies are inadequately financed and vulnerable to economic downturns.

In the past two to three years, there has been substantial worldwide overcapacity in oil and gas equipment and competition in export markets has been fierce. In particular, there has been greatly increased competition from U.S. firms which have substantial amounts of idle new and used equipment in addition to their considerable excess manufacturing capacity.



Most of the companies in Canada which survived the economic downturn of the early 1980s have undergone considerable internal rationalization. Total employment has decreased from 9000 in 1981 to about 4000 in 1986. During the past three years there have been a number of mergers and acquisitions in the Canadian industry, the majority of which were undertaken by foreign-owned firms, mostly American.

The most recent fall in world prices, which started in 1982 and reached a low in August 1986 (less than US\$10/bbl), had a serious impact on exploration, development and production activity and, consequently, on manufacturers of oil and gas field equipment. Drilling activity, the barometer for the industry, dropped to record lows in mid-1986. Expenditures on exploration and production were reduced and many unprofitable wells shut in. As a result, several Canadian manufacturers laid off a significant number of employees or commenced work-sharing programs as employment declined to about 4000. There was, however, an increase in activity in late 1986 in response to a program of drilling incentives introduced by the Alberta government.

Overall, the industry operated at 40 percent capacity in 1986, with approximately 27 percent of its total output dedicated to export markets. There has been a noticeable increase in manufacturing activity in 1987, and it is estimated that the industry was operating at about 50 percent capacity at mid-year, with employment increasing to approximately 5000.

2. Strengths and Weaknesses

Structural Factors

The participation of Canadian manufacturers in the oil and gas equipment market has been in the areas of exploration, drilling and well-servicing equipment, as well as in providing repair and maintenance services.

The key elements essential to a strong and internationally competitive industry are: product reliability and available after-sales servicing, competitive manufacturing costs, state-of-the-art technology, continuing R&D and a sound financial structure.

The industry is strong in the areas of technology, product quality and after-sales service, particularly in specialized equipment developed to accommodate Canada's climatic and topographical conditions and its resource characteristics. Reliability of equipment is especially important to the industry's clientele as a breakdown of a single component can often stop an entire drilling operation and result in costly downtime.

The slowdown in the oil and gas industry, which started in 1982, resulted in a significant rationalization in equipment manufacturing. As a result of cost reductions and automation, most firms have become more efficient. However, the industry's wage rates, material and overhead costs are higher than those of its U.S. competitors. In general, the industry does not benefit from the same economies of scale as do many of its international competitors which have world-scale facilities.

About 40 percent of the oil and gas field equipment manufacturers are foreign owned and, accordingly, do very little research and development (R&D) in Canada. Many of these firms in the past have had access to the technology of their parent companies but, since the recession of 1982, this access has been restricted because of difficult business circumstances facing the parent companies.

Some Canadian-developed equipment, designed especially for heavy oil, sour gas applications and sulphur production, is well suited for export to other nations which have similar reserves, such as India, the P.R.C. and the Soviet Union.

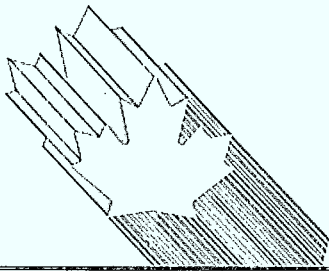
Many firms are relatively small, undercapitalized and still carrying heavy debt loads incurred during the early 1980s. Consequently, they often lack the resources to carry out extensive research and export promotional programs. Their financial vulnerability in times of an industry downturn is the principal weakness of the Canadian oil and gas field equipment manufacturing industry.

Trade-related Factors

Almost all imports of oil and gas field equipment to Canada are from the United States, and most of it (approximately 70 percent in terms of dollar value) enters Canada duty-free under "end-use" tariff items. Dutiable equipment is subject to Most Favoured Nation (MFN) rates varying from 2.8 percent to 9.2 percent, depending upon the products. Canadian equipment exported to the United States is dutiable at rates varying from 2.8 percent to 8.5 percent. European Community (E.C.) tariff rates for oil and gas equipment range from 2.9 percent to 4.6 percent.

State-owned oil companies, such as those of France, Italy, Brazil and Mexico, all have policies favouring their domestic equipment manufacturers. The United Kingdom and Norway also have mechanisms in place which favour domestic producers. On the other hand, trade barriers in other countries, such as the P.R.C., Soviet Union and India, have not been major impediments to Canadian exports.

Canada, through the Canada Oil and Gas Lands Administration (COGLA), has the mandate to promote the "full and fair access" by Canadians to the benefits from the development of hydrocarbon resources. Generally, provinces encourage the purchase of equipment from local sources. In addition, under the Atlantic Accord, Newfoundland has a formal mechanism for the preference of procurement of goods and services for the oil and gas industry produced within the province.



The Canadian Market Opportunities Program (CMOP) is an industry program initiated by the federal government, and represents petroleum industry suppliers, buyers, contractors, consultants and associations. It is aimed at increasing the participation of Canadian firms in petroleum activities and encouraging the development of domestic sources of supply for goods and services not currently available from Canadian sources.

Under the Canada-U.S. Free Trade Agreement (FTA), tariffs will be phased out over a five-year period to facilitate a gradual adjustment for those general-purpose oil and gas field equipment manufacturers that continue to enjoy tariff protection in the Canadian market.

Technological Factors

Much of the oilfield equipment produced today is of a conventional design, not subject to sudden technological change. Nevertheless, significant technological advances have been made in recent years by Canadian firms, not only in applied electronics, but also in such areas as slant-hole drilling rigs, continuous sucker rods and production choke valves.

Some Canadian manufacturers use modern computer-numerically-controlled (CNC) machinery, and computer-aided-design (CAD) equipment in their manufacturing operations. There is considerable scope for upgrading through further automation.

A promising area for future product development is in the field of drilling technologies using robotics, computerized equipment, control systems and advanced telemetry. These applications will make field production more efficient and economical, and will enhance employee safety.

Other Factors

The low value of the Canadian dollar in comparison to that of the United States in recent years has helped to offset generally higher labour costs in Canada. Should the value of the Canadian dollar increase substantially against the U.S. dollar, Canada's competitive position in both the export and domestic markets could be seriously impaired.

Some of the major oil and gas companies operating in Canada have formal purchasing policies to encourage the development of the Canadian industry and to give preference to domestic suppliers who are competitive and whose products carry a high Canadian content. However, some others tend to have a preference for the purchase of U.S.-manufactured equipment, which presents a major barrier to market entry for manufacturers in Canada.

There are no government programs directed specifically at the oil and gas equipment manufacturing industry. However, the industry does benefit indirectly from the following programs and policies intended to stimulate the industry in general.

COGLA, through its policies and federal-provincial accords, encourages the oil and gas industry to discover, develop and, ultimately, to produce oil and gas on the Canada Lands. Four accords were signed with the energy-producing provinces and territories which will result in stimulating job creation and energy self-sufficiency. These are: the Western Accord (with Saskatchewan, Alberta and British Columbia); the Atlantic Accord (with Newfoundland and Labrador); the Nova Scotia Accord; and the Northern Accord (with the territories).

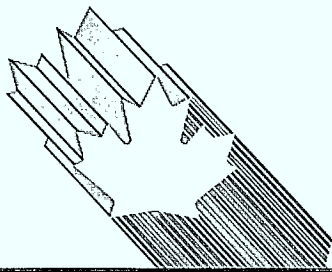
The federal Canadian Exploration and Development Incentive Program (CEDIP) has provided financial assistance for drilling, geophysical and geological programs.

Alberta has provided a royalty tax credit program applying to wells producing from Crown lands.

3. Evolving Environment

There will likely be little investment in plant expansion in the near future due to the depressed market demand for oil and gas equipment and industry overcapacity. This situation will probably persist for the next five years, in the view of industry analysts, as world oil prices are expected to remain soft. There could, however, be some investment in machine tools to modernize, and in new products for the exploitation of tar sands and heavy oil. Most of this investment is expected to be made in Alberta. It is anticipated that the recently announced \$5.2 billion Hibernia project, the \$4.1 billion OSLO project near Fort McMurray, and the \$3.2 billion Husky heavy oil upgrader in Lloydminster, will generate new opportunities for companies in Canada. Canadian industry should also be a major contender for the consumable goods and services to be bought after the purchase of the original equipment.

Drilling and exploration activity could improve substantially should world oil prices rise beyond US\$20/bbl. It is estimated that, at US\$20/bbl, cash flows to the oil and gas producers would increase significantly and subsequent industry investments would improve over the current low levels. Another factor, which could provide further stimulus to the industry in the future, is a strong and increasing demand for natural gas in the United States. The excess capacity, or "gas bubble", which has existed in the United States for several years, has diminished considerably and gas prices are generally expected to hold or increase.



A major industrial development opportunity for the Canadian oil and gas field equipment manufacturers lies in overseas markets in India, the P.R.C. and the Soviet Union where there is a growing interest in Canadian-developed technologies for sour gas and heavy oil treatment.

Many firms, which would like to enter or expand in exploration drilling and well servicing equipment, have stated that the most feasible means of expanding the product line manufactured in Canada is through technology transfer with established manufacturers in the United States and Europe.

Additional opportunities for strengthening the Canadian oil and gas field equipment industry also lie in rationalizing the North American production and in product mandating by multinational companies.

The industry in Canada has developed with virtually no tariff protection. As a result, manufacturing is mainly done to satisfy the specialized needs of Canada's climatic and topographic conditions and its resource characteristics, or to support the service needs of drilling contractors and supply houses. The FTA is not expected to affect those Canadian firms which have developed custom-designed equipment for the domestic and export markets.

There is, however, a small amount of Canadian production of more general-purpose oil field equipment that currently enjoys tariff protection in the Canadian market (9.2 percent) against major U.S. competitors. These products include pump jacks, power tongs, collars, subs, scrapers, centralizers and scratchers. Some of these standard, higher-volume products will come under increased import pressure with the removal of remaining tariffs.

The potential impact of the FTA would be felt almost exclusively in Alberta by a very small number of manufacturers. In view of current marketing practices and the relatively small scale of Canadian producers, it is considered that reduction of tariffs by the United States under the FTA would not likely lead to increased exports to the United States.

4. Competitiveness Assessment

The industry generally does not enjoy the efficiencies of long production runs. However, this factor has been largely offset by the relative value of the Canadian dollar compared to the U.S. dollar. Should the Canadian dollar increase substantially in value, Canadian manufacturers will find their ability to compete in both domestic and export markets reduced accordingly.

Some companies have found a niche in the market with specialized equipment and application technology developed to meet Canada's climatic and topographical conditions and its resource characteristics. These companies have been successful in selling their products in both the U.S. and overseas markets where countries have similar geography and climate. Canadian firms are recognized as world leaders in sour gas and heavy oil technology.

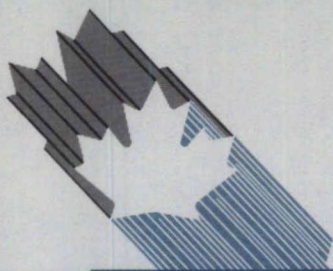
The most promising firms are those which have the experience and technology to develop and exploit a specialized market niche, as well as those producing small, custom-designed process plants where there are short production runs. Companies producing standard, mass-produced equipment competing against firms with greater economies of scale will undoubtedly experience difficulty.

Under the FTA, tariffs will be phased out over a five-year period. However, since imports from the United States for most of these products do not attract duty, it is unlikely there will be a significant impact because of the FTA.

For further information concerning the subject matter contained in this profile, contact:

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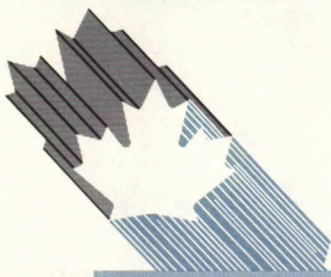
PRINCIPAL STATISTICS SIC(s) COVERED: Excerpt of 3192 (1980)* ITC

	1973	1981	1982	1983	1984	1985	1986	1985**	1986**
Establishments	N/A	N/A	N/A	N/A	N/A	N/A	N/A	300	225
Employment	N/A	9 000	N/A	N/A	N/A	N/A	N/A	5 500	4 000
Shipments (\$ millions)	20	525	472	277	344	394	414	650	550

TRADE STATISTICS

	1973	1981	1982	1983	1984	1985	1986	1985**	1986**			
Exports (\$ millions)	8	112	115	46	50	55	59	200	150			
Domestic shipments (\$ millions)	12	413	357	231	294	339	355	450	400			
Imports (\$ millions)	33	451	409	292	269	378	213	450	200			
Canadian market (\$ millions)	45	864	766	523	563	717	568	900	600			
Exports as % of shipments	40	21	24	17	15	14	14	31	27			
Imports as % of domestic market	73	52	53	56	48	53	38	50	33			
Source of imports (% of total value)								U.S.	E.C.	Asia	Others	
								1982	87	6	6	1
								1983	90	4	5	1
								1984	95	4	—	1
								1985	95	4	—	1
								1986	95	4	—	1
Destination of exports (% of total value)								U.S.	E.C.	Asia	Others	
								1982	50	6	15	29
								1983	39	7	17	37
								1984	42	10	15	33
								1985	25	10	20	45
								1986	20	10	25	45

(continued)



REGIONAL DISTRIBUTION — Average over the last 3 years

	Quebec	Ontario	Alberta	Others
Establishments – % of total	5	10	80	5
Employment – % of total	5	15	75	5
Shipments – % of total	5	10	80	5

MAJOR FIRMS

Name	Ownership	Location of Major Plants
Dreco Energy Services Ltd.	Canadian	Edmonton, Alberta
National Oilwell Canada Ltd.	American	Red Deer, Alberta
Smith International	American	Edmonton, Alberta
Legrand Industries Div.	American	Calgary, Alberta
Canadian Fracmaster Ltd.	British	Calgary, Alberta
Stream-Flo Industries Ltd.	Canadian	Calgary, Alberta
Propak Systems Ltd.	Canadian	Airdrie, Alberta
Strathcona Steel Inc.	Canadian	Edmonton, Alberta
Western Rock Bit Company Limited	Canadian	Calgary, Alberta
Dover Corporation Canada Ltd.	American	Edmonton, Alberta
Barber Industries Div.	Canadian	Calgary, Alberta
Nowasco Well Service Ltd.	Canadian	Calgary, Alberta
Site Oil Tools Inc.	Canadian	Calgary, Alberta

* Statistics Canada SIC 3192 does not include such items as skid-mounted drilling rig packages, which represent a significant level of industry shipments and exports, mobile drilling and service rigs, drill bits, valves and pumps and some oil and gas field processing equipment commonly used by the industry. SIC 3192 data are included for reference purposes.

** ISTC estimates used for analysis of industry.

N/A Not available

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