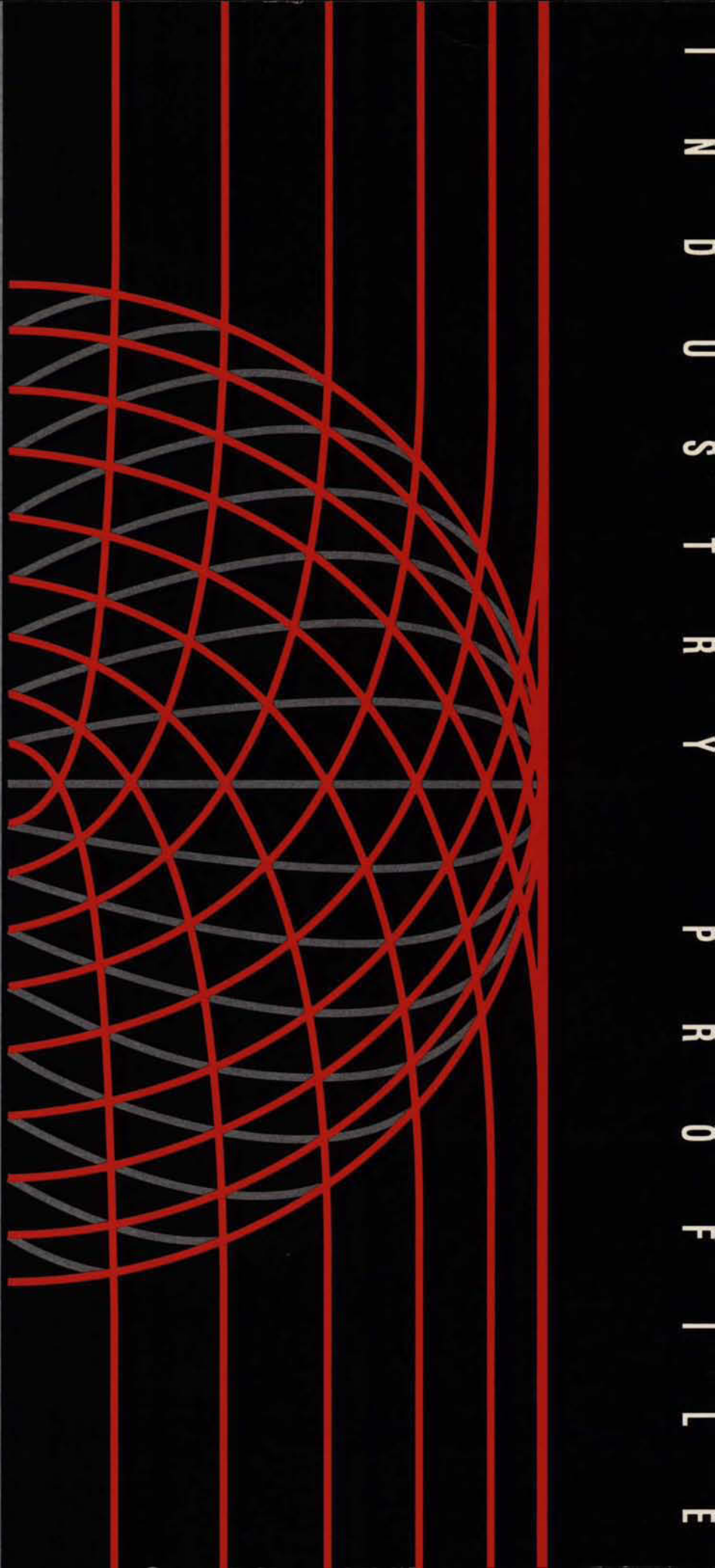


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# Oil and Gas Field Equipment

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**Canada**



1990-1991

## OIL AND GAS FIELD EQUIPMENT

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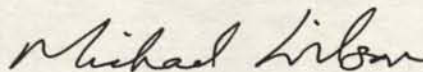
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## FOREWORD

*In a rapidly changing global trade environment, the international competitiveness of Canadian industry is the key to growth and prosperity. Promoting improved performance by Canadian firms in the global marketplace is a central element of the mandates of Industry, Science and Technology Canada and International Trade Canada. This Industry Profile is one of a series of papers in which Industry, Science and Technology Canada assesses, in a summary form, the current competitiveness of Canada's industrial sectors, taking into account technological, human resource and other critical factors. Industry, Science and Technology Canada and International Trade Canada assess the most recent changes in access to markets, including the implications of the Canada-U.S. Free Trade Agreement. Industry participants were consulted in the preparation of the profiles.*

*Ensuring that Canada remains prosperous over the next decade and into the next century is a challenge that affects us all. These profiles are intended to be informative and to serve as a basis for discussion of industrial prospects, strategic directions and the need for new approaches. This 1990-1991 series represents an updating and revision of the series published in 1988-1989. The Government will continue to update the series on a regular basis.*



Michael H. Wilson  
Minister of Industry, Science and Technology  
and Minister for International Trade

## Introduction

Several firms making oil and gas field equipment in Canada also make similar equipment for other industries. The category assigned by Statistics Canada to a piece of equipment therefore frequently depends on how it is used rather than on its physical characteristics. Statistics Canada groups data on machinery and equipment under SIC 3192.<sup>1</sup> Five profiles have been prepared from this SIC category:

- Construction Machinery
- Forestry Equipment
- Materials Handling Equipment
- Mining Equipment
- Oil and Gas Field Equipment

In preparing these industry profiles, the Statistics Canada data have been sorted by Industry, Science and

Technology Canada (ISTC) according to the industry in which the machinery or equipment is used or the service is performed. Care has been taken to avoid double-counting in the disaggregation of these statistics. For this specific profile, data are from ISTC's own sources.

The value of shipments for the industries in SIC 3192 in 1991 was estimated by Statistics Canada to be \$2 841 million. Figure 1 shows the share of that total allocated to the particular industries. ISTC estimates that oil and gas field equipment was the second largest, representing 27 percent of total shipments.

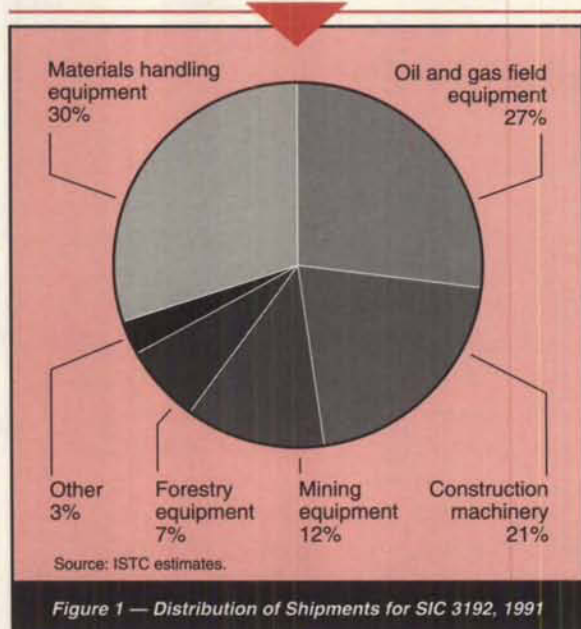
## Structure and Performance

## Structure

The manufacturers of oil and gas field equipment in Canada produce a wide variety of machinery and components

<sup>1</sup>See *Standard Industrial Classification, 1980*, Statistics Canada Catalogue No. 12-501 (SIC 3192, construction and mining machinery and materials handling equipment industry).

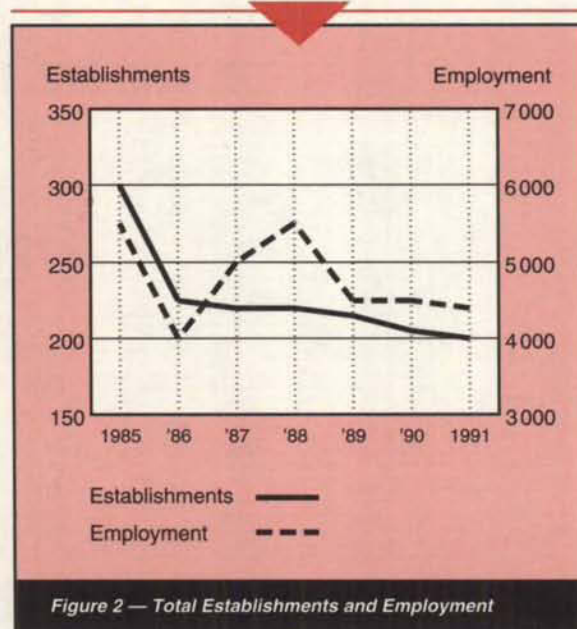




used in exploring for oil and gas deposits, in drilling and servicing wells and in producing and initially processing oil and gas in the field. The industry encompasses manufacturers of geophysical prospecting equipment; drilling rigs and ancillary tools; pumping, cementing and well-fracturing units; and 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 subsea 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.

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 (\$1 million per day) downtime or repair activities. For this reason, most drilling contractors and oil and gas companies buy equipment that has a record of reliability. Accordingly, manufacturers are constantly carrying on development and testing to improve the reliability of their products.

The industry draws upon a wide variety of sources for its supply of basic steel, castings, forgings, pumps, valves, engines, motors, vehicle chassis and instrumentation. (See other industry profiles for information on these supplies, especially *Fluids-Handling and Mechanical Power-Transmission Equipment*, *Industrial Electrical Equipment* and *Instrumentation*.)

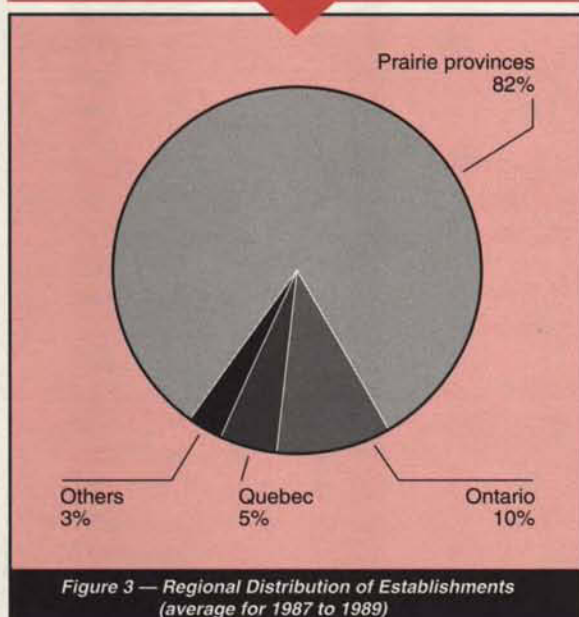


In 1991, the industry was composed of approximately 200 small to medium-sized establishments employing a total of about 4 400 people (Figure 2), including many skilled workers and professionals. A significant amount of subcontracting work is also done by local machine shops, which make component parts and assemblies. The regional distribution of establishments is illustrated in Figure 3. The dominant position of the Prairies results from the concentration of this industry in Alberta. About 30 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 1991, total shipments (in current dollars) were estimated by ISTC to be \$760 million, of which some \$330 million, or 43 percent, were exports. The former Soviet Union, South Asia and the People's Republic of China accounted for some 60 percent of Canada's exports, South America, the Middle East and Africa accounted for another 25 percent, the United States accounted for 10 percent, while the European Community accounted for 5 percent.

Figure 4 illustrates shipments, imports and exports in constant 1988 dollars. Imports were less than exports, amounting to approximately \$170 million (in current dollars) in 1991. Imports captured about 28 percent of the Canadian market. About 98 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.



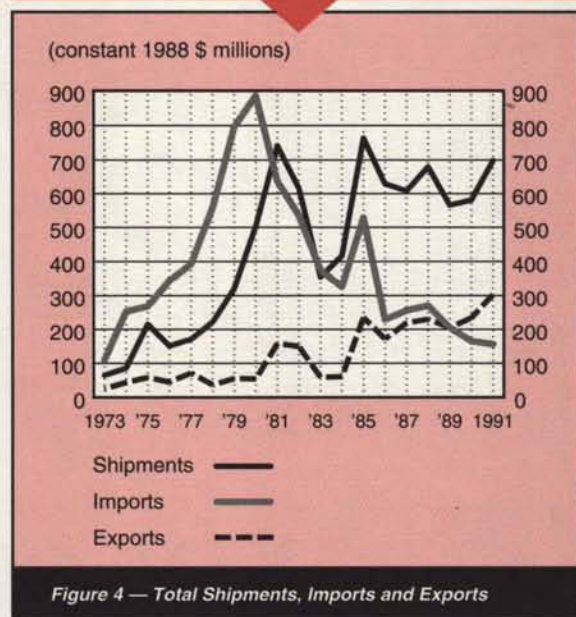


The principal markets for oil and gas field equipment are oil field supply houses (distributors or specialized wholesalers with an orientation toward customer service), service and drilling rig contractors and oil and gas companies. In addition to firms manufacturing for sale to distributors, there are some service companies (for example, well-stimulation services) that manufacture primarily for their own consumption.

In the domestic market, more than 70 percent of oil and gas field equipment is sold to drilling rig contractors and oil companies through supply houses. 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.

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 U.S. manufacturers of oil drilling equipment. 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.

Most supply houses regard their Canadian operation as an extension of their U.S. operations; consequently, they 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 through a subsidiary of a U.S. supply house must often obtain the approval of the U.S. parent company. This practice makes it difficult for many



small Canadian firms to overcome established buyers' preferences for well-known equipment of U.S. origin.

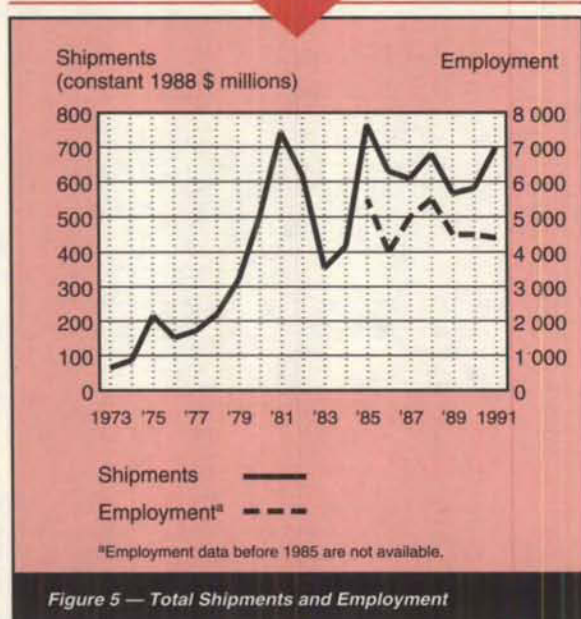
### Performance

The health of the oil and gas field 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 field equipment. However, during the 1970s the domestic market experienced rapid growth, and Canadian capability to manufacture and market oil and gas field equipment increased substantially. 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.

In the late 1980s, there was a substantial worldwide overcapacity in the availability of oil and gas field equipment and competition in domestic and export markets was fierce. In particular, there has been greatly increased competition from U.S. firms, which have substantial amounts of new and used equipment in inventory in addition to their considerable excess manufacturing capacity. In 1989, these pressures began to abate.

Most of the oil and gas field equipment companies in Canada that survived the economic downturn of the early





1980s have undergone considerable internal rationalization. The rationalization of establishments has resulted in a more efficient industry while there has been a significant decrease in employment. Total employment decreased from 9 000 people in 1981 to 5 500 in 1988 and fell even further to 4 400 people in 1991. Figure 5 shows a fairly strong correlation between employment and shipment patterns from 1985 to 1989, followed by increases in the output/employee ratio in 1990 and 1991. 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. Cooper Industries' acquisition of the businesses of McEvoy and Cameron is a typical example of this trend.

Constant 1988 dollar shipments declined from 1985 through to 1989, except for a temporary recovery in 1988. There was a downturn in demand for equipment during the late 1980s resulting from reduced exploration and development activity for oil and gas. The industry collectively (including oil companies) cut drilling programs since there was a shortage of funds available for exploration and production. This shortage of funds was caused partly by the stabilization of world oil prices at US\$18 per barrel (down from highs of about US\$30 per barrel) and partly by the substantial government cutback on financial grants and royalty relief.

The recovery in shipments since 1989 has been driven more by the export market than by the domestic one. In real terms, exports increased by 48 percent between 1989 and

1991, while domestic shipments grew by 9 percent. The growth in domestic shipments was due to the replacement of imports by domestic production since the Canadian market shrunk by 3 percent in real terms during the same period.

Overall, the Canadian oil and gas field equipment industry operated at 70 percent capacity in 1991 and supplied approximately 72 percent of the Canadian market. The industry's exports, as a percentage of total shipments, increased from 27 percent to 43 percent between 1986 and 1991. This trend reflects a greater reliance on exports as domestic drilling declined and then stabilized.

By 1989, oil and gas field equipment prices had recovered to the extent that the heavily discounted prices of the previous years were no longer available. With this return to more normal market prices and with the increased efficiency of the industry, manufacturing firms have been able to obtain reasonable profit margins. However, manufacturers continue to be faced with pricing that continues to be extremely sensitive to variations in demand, a saturated market and excess manufacturing capacity.

## Strengths and Weaknesses

### Structural Factors

The key elements essential to a strong and internationally competitive industry are state-of-the-art technology, product reliability and quality, after-sales servicing, competitive manufacturing costs, continuing research and development (R&D), a sound financial structure and a skilled labour force.

The Canadian industry is strong in the areas of technology, product quality and after-sales service, particularly in specialized equipment developed to accommodate Canada's resource characteristics (sour gas, heavy oil and oil sands).

Often in co-operation with their key customers, Canadian firms have developed advanced technologies related to drilling as well as specialized recovery and processing products. These advanced technologies, discussed in more detail in the "Technological Factors" section, include automatic computer controls to reduce manual labour, optimize processes and performance and improve safety in operations on the rig floor. With a solid track record, Canadian firms have created the confidence in their equipment required to gain and sustain markets based on a reputation for supplying high-quality products.

Service is as important as quality. The purchaser of the equipment must be assured that there is a readily available source of supply for components. The Canadian manufacturers of many types of equipment, especially those types that





require frequent replacement, have established highly developed service facilities very close to the drilling or operation sites in order to ensure that there is an adequate supply of spare components readily available. The staff at these service facilities ensure that components are in stock, are delivered on schedule and are properly installed. They also provide technical advice and assistance that is valuable to the rig operators.

The sector has increased its productivity over the past 10 years by rationalization, by installing more automated production equipment and by making other production improvements. Numerous cost-reduction programs have been successfully implemented. As a result, the sector has been able to maintain its viability and expand exports despite the downturn in equipment requirements. However, the industry's wage rates, material and overhead costs are higher than those of its U.S. competitors and, in general, the industry, with its small domestic market, does not benefit from the same economies of scale as many of its international competitors. Lines of products that are mass-produced — such as drill bits, fishing tools, packers and drill collars — are most likely to suffer in the small Canadian market, although freer access to the U.S. market under the Canada-U.S. Free Trade Agreement (FTA) is alleviating some of the disadvantage.

The foreign-owned subsidiaries (about 30 percent of the industry's firms) have done very little R&D in Canada but have had the opportunity to manufacture in Canada all of the product lines developed by the parent company. However, since the 1981–1982 recession, the parent companies have been suffering with excess capacity and many subsidiaries are now allowed to manufacture only the more mature product lines in Canada. Newly developed product lines are marketed both in Canada and the United States by the parent companies.

Canadian-developed equipment designed especially for heavy oil, sour gas and oil sands is internationally competitive and is being exported to other nations that have similar reserves, such as India, the People's Republic of China and the Commonwealth of Independent States (CIS).

Many firms are relatively small, undercapitalized and still carry heavy debt loads incurred during the mid-1980s. Consequently, they often lack the resources needed to carry out extensive research and export promotional programs. Although many firms are already successful in the export field, they are limited by a lack of working capital. Their financial vulnerability in times of industry downturn is the principal weakness of the Canadian oil and gas field equipment manufacturing industry.

This sector is being drained of skilled labour and is finding it very difficult to attract, train and retain skilled personnel

in Western Canada. The industry attributes this difficulty to the large number of layoffs that have occurred over the past 10 years as a result of the highly cyclical nature of the oil-patch. The work force in Alberta is looking for a more stable environment in which to work, and the situation will become critical as the remaining experienced work force reaches retirement age.

### **Trade-Related Factors**

Almost all imports of oil and gas field equipment to Canada are from the United States, and most (approximately 90 percent in terms of dollar value) enter Canada on a duty-free basis. Under the FTA, implemented on 1 January 1989, tariffs were phased out in five annual, equal steps to facilitate a gradual adjustment for those general-purpose oil and gas field equipment manufacturers that continued to enjoy tariff protection. The 1992 tariff on dutiable goods entering Canada from the United States was 1.8 percent. The U.S. rate on dutiable goods from Canada was 0.4 percent. All remaining tariffs were removed on 1 January 1993.

State-owned oil companies, such as those of France, Italy, Brazil and Mexico, all have had policies favouring their domestic equipment manufacturers. The United Kingdom and Norway also have mechanisms in place that favour domestic producers. On the other hand, trade barriers in other countries, such as India, the People's Republic of China and the CIS, have not been major impediments to Canadian exports.

In Canada, provinces encourage the purchase of equipment from local sources. For example, under the Atlantic Accord, Newfoundland encourages procurement of goods and services for the oil and gas industry within the province where bids are competitive.

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. The program has been very successful in encouraging greater Canadian participation in such major projects as Hibernia and the Husky heavy oil upgrader in Lloydminster.

### **Technological Factors**

In the area of technology, Canadian firms have developed specialized techniques and equipment for secondary recovery from wells that have reached a low rate of productivity (for example, well stimulation by fracturing equipment and thermal drive boilers). Canada is also recognized as a world leader in specialized subsurface mining equipment.





for extracting oil sands (for example, heavy-duty draglines) and sour gas gathering and treatment facilities.

Canadian companies have also made major advances in the development of top motor drives replacing the conventional rotary table, winterized drilling rigs, "measurement while drilling" systems that provide downhole data for improved performance, directional and horizontal drilling techniques that improve downhole production, computer controlled automatic weight-on-bit coring controls that reduce drill bit wear and increase core lengths, and automatic pipe handling systems that lift, position and makeup/breakout drill pipe.

At the same time, Canadian firms have improved the quality of their products by introducing automatic computer controls, which reduce manual labour, optimize processes and performance and improve safety in operations on the rig floor. As a result, these firms have created confidence in their equipment and have gained a reputation for supplying high-quality products to the oil and gas industry.

In the area of oil sands and heavy oil, the Alberta Oil Sands Technology and Research Authority (AOSTRA) has recently completed a horizontal well *in situ* steam-injection project it calls a major world breakthrough in commercially producing bitumen from oil sands and heavy oil deposits. The underground test facility (UTF) pilot process involved vertical shafts and the injection of steam to liquify the bitumen. The project has achieved a 60 percent bitumen-recovery rate compared with less than 20 percent recovery with conventional methods. The technology could be applicable in any area where *in situ* steam stimulation is used to produce bitumen.

In the field of sour gas (which is lethal in certain concentrations), Canada's expertise is unparalleled. Because of the high concentration of hydrogen sulphide ( $H_2S$ ) in some of its fields, Canada has developed some of the largest and most efficient gas plants in the world and has become the world leader in sour gas technology for sweetening, dehydration, cryogenic natural gas liquids recovery and sulphur degassing processes.

In the more conventional equipment, technological advances have been made in recent years by Canadian firms in such areas as slant-hole drilling rigs, horizontal drilling, continuous sucker rods and production choke valves. Canadian manufacturers have also advanced the development of downhole mud motors, which eliminates the need to rotate drill pipe, thereby reducing pipe wear and failure. They have also contributed to new surveying techniques, directional and downhole tools that will provide greater accuracy, reliability and shorter drilling times.

Although many Canadian manufacturers use modern computer numerically controlled (CNC) machinery, and

computer-aided design (CAD) equipment in their manufacturing operations, there remains considerable scope for upgrading through further automation.

A promising area for future product development is beginning to be exploited by the Canadian companies in the field of automated drilling rigs using robotics, computerized equipment, control systems and advanced telemetry. These applications are making field production more efficient and economical and enhancing employee safety. In the exploration area, significant advances have been made on the application of advanced computer techniques and seismic technology.

### Other Factors

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 encourage domestic suppliers who are competitive and whose products carry a high Canadian content. However, some oil and gas companies tend to prefer purchase of U.S. manufactured equipment, which presents a major barrier to market entry for manufacturers in Canada.

In the past, Alberta provided a royalty tax credit program applying to wells producing from Crown lands. This program expired in 1989 and has been replaced by an oil and gas price-sensitive structure program with an annual maximum of \$2.5 million per company or associated corporation(s). On 7 November 1991, Alberta announced a royalty holiday on new wells drilled during the winter of 1991–1992. Depending on the type of well, the royalty holiday will run from two to five years. As a result of the program, it is anticipated that many wells that were shut down in early 1991 will start working again, and hundreds of new wells will be drilled. Alberta's royalty structure was further revised in October 1992 in an effort to encourage exploration. Similarly, other petroleum producing provinces such as Newfoundland, Nova Scotia, Ontario, Manitoba, Saskatchewan and British Columbia, tailor programs to meet the needs of their oil and gas industry, thereby encouraging exploration and the demand for oil and gas field equipment.

### Evolving Environment

There will likely be more investment in gas plants, oil recovery and processing equipment — especially in Alberta, Newfoundland and Nova Scotia — in the near future because of the local market demand for oil and gas field equipment. Increased market demand for oil field equipment will probably persist for the next five years, in the view of industry





analysts, assuming that world oil prices remain between the US\$18–\$22 per barrel level and show some stability. There is likely to be some investment in machine tools to modernize, and in new products for the exploitation of tar sands and heavy oil should the OSLO (Other Six Leased Operations) Oil Sands Project near Fort McMurray, Alberta, go ahead. Most of this investment is expected to be made in Alberta and Newfoundland. Provided current agreements are kept, it is expected that the \$5.2 billion Hibernia project, the \$825 million Shell Caroline project and the \$565 million Panuke/Cohasset development project off Nova Scotia will all generate opportunities for oil and gas field equipment companies in Canada. The downstream sector is already benefiting from the \$3.2 billion Husky heavy oil upgrader in Lloydminster. A final decision on the \$4.2 billion OSLO project is pending, while Panuke/Cohasset has begun operations.

Total Canadian conventional oil production is declining as a result of declining reserves from traditional Western Canadian sources. Future oil supplies in Canada will increasingly come from non-conventional and frontier sources. Energy, Mines and Resources Canada estimates that Canada has 25 billion to 30 billion barrels of conventional undiscovered recoverable oil and approximately 350 trillion cubic feet of gas.

The rig utilization rate in 1991 was 40 percent and there have been 5 388 well completions. According to the Petroleum Services Association of Canada, shipments by their members grew by about 10 percent in 1991. For 1992, the Canadian Association of Oilwell Drilling Contractors (CAODC) predicts less than 30 percent rig utilization with 4 200 well completions.

Another factor, which could provide further stimulus to the oil and gas field equipment industry in the future, is a strong and increasing demand for natural gas in the United States. On the other hand, no consensus has been established concerning when the North American gas bubble will diminish. Until the gas bubble shrinks, gas prices are likely to remain near their present levels. Once they do begin to strengthen, exploration and production drilling will be stimulated, as Canada has substantial reserves of natural gas, probably second only to those of the CIS. Natural gas is also the least carbonaceous of the fossil fuels, therefore the least polluting, and consequently will play an increasingly important role in the fight against environmental degradation. The Canadian natural gas industry is expected to expand its markets on many fronts such as residential heating, conversion by car owners and public transit authorities, increased industrial demand spurred by the need for greater cost efficiencies, better environmental standards and reliable electricity supplies through gas-fueled generators.

A major industrial development opportunity for the Canadian oil and gas field equipment manufacturers lies in overseas markets in India, the People's Republic of China, the CIS and the Middle East where there is a growing interest in Canadian-developed technologies for sour gas and heavy oil treatment.

In view of the economic integration of the European Community (EC) after 1992, some Canadian firms are already positioning themselves by establishing manufacturing operations, sales offices or joint venture and licensing arrangements with European firms. Canadian companies can also expect to benefit from increased business opportunities in the Eastern bloc countries, which have recently made changes to their ownership and joint venture laws. This applies to the CIS, Poland, Hungary and Romania, which all have indigenous oil and gas industries.

Many firms that would like to enter or expand in exploration drilling and well servicing equipment have also 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.

The industry in Canada has developed with virtually no tariff protection. As a result, manufacturing is done mainly to satisfy the specialized needs of resource characteristics or to support the needs of drilling contractors and supply houses. As expected, the FTA has had no significant impact on the Canadian firms in this sector.

On 12 August 1992, Canada, Mexico and the United States completed the negotiation of a North American Free Trade Agreement (NAFTA). The Agreement, when ratified by each country, will come into force on 1 January 1994. The NAFTA will phase out tariffs on virtually all Canadian exports to Mexico over 10 years, with a small number being eliminated over 15 years. The NAFTA will also eliminate most Mexican import licensing requirements and open up major government procurement opportunities in Mexico. It will also streamline customs procedures, and make them more certain and less subject to unilateral interpretation. Further, it will liberalize Mexico's investment policies, thus providing opportunities for Canadian investors.

Additional clauses in the NAFTA will liberalize trade in a number of areas including land transportation and other service sectors. The NAFTA is the first trade agreement to contain provisions for the protection of intellectual property rights. The NAFTA also clarifies North American content rules and obliges U.S. and Canadian energy regulators to avoid disruption of contractual arrangements. It improves the dispute settlement mechanisms contained in the FTA and reduces the scope for using standards as barriers to trade. The NAFTA extends





Canada's duty drawback provisions for two years, beyond the elimination provided for in the FTA, to 1996 and then replaces duty drawback with a permanent duty refund system.

Specific to oil and gas field equipment, for the first time suppliers will have fair opportunities to bid on contracts issued by Mexico's state-owned oil company, PEMEX. Canada is seeking to expand ties with Mexico. The Export Development Corporation (EDC) recently signed a US\$500 million line of credit with PEMEX. This action is likely to help increase trade between the two countries.

In general, Europe's single-market initiative and related arrangements between Canadian and European firms can only have a positive impact on the oil and gas field equipment industry, as recent trade between Canada and the EC in this industry has been negligible.

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

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## Competitiveness Assessment

Although the industry generally does not enjoy the efficiencies of long production runs, some companies have developed niche markets for specialized equipment and application technology developed to meet Canada's oil and gas resource characteristics. These companies have been successful in selling their products in both the U.S. and overseas markets where countries have similar conditions. In particular, Canadian firms are recognized as world leaders in sour gas, heavy oil and oil sands technology.

The most promising firms are those that have the experience and technology to develop and exploit a specialized market niche, as well as those producing small, custom-designed process plants. Companies producing standard, mass-produced equipment competing against firms with greater economies of scale experience difficulties.

For the next five years, the industry will benefit from opportunities deriving from the exploitation and development of natural gas as well as from such major projects as OSLO, Hibernia, Shell Caroline and Panuke/Cohasset.

Subsidiaries producing oil and gas field equipment are likely to experience some difficulty because of their low level of R&D activities and also because they do not have export mandates, whereas Canadian firms are likely to expand their involvement in export markets such as the CIS to offset low growth activity in the Canadian market.

The work force in this sector will offer the greatest potential to improve the industry's productivity. As well, the development and application of enhanced technology offers an opportunity to maintain the industry's competitiveness. Technical excellence is the key to success if the sector is to create an industry that can be profitable.





## PRINCIPAL STATISTICS<sup>a</sup>

	1985	1986	1987	1988	1989	1990 <sup>b</sup>	1991 <sup>b</sup>
Establishments	300	225	220	220	215	205	200
Employment	5 500	4 000	5 000	5 500	4 500	4 500	4 400
Shipments							
(\$ millions)	650	550	594	680	580	670	760
(constant 1988 \$ millions)	764	630	608	680	566	581	698

<sup>a</sup>ISTC estimates. For complete industry statistics, see *Machinery Industries, Except Electrical Machinery*, Statistics Canada Catalogue No. 42-250, annual (SIC 3192, construction and mining machinery and materials handling equipment industry).

<sup>b</sup>Preliminary ISTC estimates based on a 25 percent sample.

## TRADE STATISTICS<sup>a</sup>

	1985	1986	1987	1988	1989	1990 <sup>b</sup>	1991 <sup>b</sup>
Exports							
(\$ millions)	200	150	214	230	210	270	330
(constant 1988 \$ millions)	235	172	219	230	205	234	303
Domestic shipments							
(\$ millions)	450	400	380	450	370	400	430
(constant 1988 \$ millions)	529	458	389	450	361	347	395
Imports							
(\$ millions)	450	200	250	270	210	190	170
(constant 1988 \$ millions)	529	229	256	270	205	165	156
Canadian market							
(\$ millions)	900	600	630	720	580	590	600
(constant 1988 \$ millions)	1 058	687	645	720	566	512	551

<sup>a</sup>ISTC estimates.

<sup>b</sup>Preliminary ISTC estimates based on a 25 percent sample.





### SOURCES OF IMPORTS<sup>a</sup> (% of total value)

	1985	1986	1987	1988	1989	1990	1991
United States	95	95	95	95	97	98	98
European Community	4	4	4	4	2	1	1
Other	1	1	1	1	1	1	1

<sup>a</sup>ISTC estimates.

### DESTINATIONS OF EXPORTS<sup>a</sup> (% of total value)

	1985	1986	1987	1988	1989	1990	1991
United States	25	20	20	20	15	12	10
European Community	10	10	5	5	—	3	5
Asia (including the former Soviet Union)	20	25	30	30	60	60	60
Other	45	45	45	45	25	25	25

<sup>a</sup>ISTC estimates.

### REGIONAL DISTRIBUTION<sup>a</sup> (average over the period 1987 to 1989)

	Quebec	Ontario	Prairies	Others
Establishments (% of total)	5	10	82	3
Employment (% of total)	5	15	77	3
Shipments (% of total)	5	10	82	3

<sup>a</sup>ISTC estimates.





## MAJOR FIRMS

Name	Country of ownership	Location of major plants
Barber Industries Ltd.	United States	Calgary, Alberta
Canadian Fracmaster Ltd.	Canada	Calgary, Alberta
Dover Corporation (Canada) Limited	United States	Edmonton, Alberta
Dreco Energy Services Ltd.	Canada	Edmonton, Alberta
Legrand Industries	Canada	Calgary, Alberta
Newsco Well Service Ltd.	Canada	Calgary, Alberta
Propak Systems Ltd.	Canada	Airdrie, Alberta
Site Oil Tools Inc.	Canada	Calgary, Alberta
Smith International Canada Ltd.	United States	Edmonton, Alberta
Strathcona Steel Mfg. Inc.	Canada	Edmonton, Alberta
Stream Flo Industries Ltd.	Canada	Calgary, Alberta
Western Rock Bit Company Limited	Canada	Calgary, Alberta

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