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Sectoral competitiveness profiles
capital and industrial goods

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TRADE NEGOTIATIONS STUDIES:

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MAY 21, 1986

16702 689

STUDY NO. 17a:

Sectoral competitiveness profiles: capital and industrial goods. (Dept. of Regional Industrial Expansion. REV. August 1985)

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SECTORAL

COMPETITIVENESS

PROFILES

CAPITAL AND INDUSTRIAL GOODS

D.R.I.E.

REVISED AUGUST 1985

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COMPETITIVENESS PROFILE

MOTOR VEHICLES

1. Structure and Performance

Structure:

SIC 323 Motor Vehicle Manufacturers includes the assemblers of cars and trucks. Major product lines include passenger cars, station wagons, mini vans, vans, pick-up trucks, and medium and heavy duty trucks. Sales in Canada of cars, including station wagons, were \$9 billion in 1983. Imports were \$6.2 billion and exports \$9.6 billion. (Figures on trucks are not available in a disaggregated form. However, similar ratios on imports and exports prevail.)

Motor vehicle assembly (cars and trucks) is concentrated in a few firms which are predominantly foreign owned and controlled. The industry has been operating in a conditional duty-free environment since 1965 within the framework of the Canada/United States Auto Pact. All of the six car and light truck manufacturers are foreign owned and are concentrated in Eastern Canada. The medium and heavy duty truck manufacturers are evenly distributed between British Columbia, Ontario, and Quebec.

Performance:

In the 1979-1983 period major changes have been made in the product and production process in most of the Canadian car assembly facilities. Investment in assembly facilities averaged approximately \$250 million annually compared with less than \$150 million annually in the previous five years. This came at a time when industry was facing severe financial losses due to a major decline in the market coupled with increasingly stiff competition from offshore producers, mainly the Japanese. During the recession of 1980-82, the industry lowered its breakeven point by 25 percent and as the recovery continues to take hold, profits are now reaching record levels. This recovery is largely in response to a quickly rebounding U.S. market and within that market high demand for the larger cars that Canada has traditionally produced. In 1984, vehicle sales in Canada and the U.S. increased by 19 percent over 1983. This led to a 19 percent increase in Canadian production and a trade surplus in excess of \$10 billion with the U.S. in vehicles in 1984.

2. Strengths and Weaknesses

The Auto Pact has served to rationalize the structure of the Canadian and American car and light truck assembly operations into an integrated North American automotive industry. Canada benefits from the scale efficiencies of long production runs of a limited number of models, but on the other hand is vulnerable to a downturn in demand in the United States market for those models produced in this country. Since the auto sector

is a mature industry, and, as well, is highly sensitive to the business cycle. Significant fluctuations in demand will keep it on a rollercoaster ride with respect to profitability. The extent to which the major manufacturers will be able to ride out the next recession without undue damage to balance sheets will depend on whether efforts of the last few years will enable them to continue to reduce costs, pare overheads, and raise in dividends and bonuses while investing heavily in new plant and equipment.

In the medium and heavy duty truck sub-sector, the same degree of rationalization has not taken place as for car assembly. Plants are generally smaller-scale, vertical integration is low and most of the components of Canadian built trucks are imported from the United States. The downturn in the economy and deregulation in the United States in the early 1980's severely depressed demand for heavy duty trucks. Excess capacity still exists in Canada. There is considerable apprehension that some United States based companies will consolidate their operations and close Canadian plants.

In the car assembly sub-sector, North American demand moved rapidly from the typical North American large car to imported sub-compacts following the oil price shocks in the 1970's. The offshore vehicles, in addition to meeting the fuel efficiency needs of consumers, were of better quality and lower cost than comparable North American produced vehicles. North American assembled vehicles still have a cost disadvantage vis-à-vis Japan of \$1500 - 2500 per vehicle leaving the industry exposed to severe erosion should an open market environment prevail. In addition, other low-cost competitors are entering the North American market (Korea, Mexico, Taiwan), thereby further increasing import pressures.

Canadian production facilities compare favourably with American plants with respect to production cost and technology. The current Canadian hourly wage advantage is about \$3 (U.S.). With respect to technology, the industry is aware of its shortcomings and is striving to improve the situation, but all decisions with respect to Canadian plants are made in the U.S.

3. Federal and Provincial Programs and Policies

The centrepiece of Canadian automotive policy is the 1965 Canada-U.S. Automotive Products Trade Agreement (Auto Pact) which permits qualified Canadian vehicle manufacturers to import free of duty original equipment parts and vehicles from the U.S. and other countries. Tariffs for vehicles which do not fall under the Auto Pact are 11.4 percent and will decline to 9.2 percent by 1987 under the General Agreement on Tariffs and Trade. Vehicles from developing countries (e.g. Korea) currently enter Canada duty-free under the General Preferential Tariff.

A more recent feature of Canadian automotive policy is the temporary system of Voluntary Export Restraints (VERs) on Japanese vehicles. The

one year agreement, which expired on March 31, 1985, limited the exports of Japanese cars to Canada to a maximum level of 170,400. It is expected that another year of restraint will be imposed. The existence of the VERs, since 1981, has been a factor in Japanese automakers' considerations for investment in North America. Japanese automakers seem to be working on a hypothesis that some form of restraint, whether formal or informal, will continue.

Financial assistance under the Industrial and Regional Development Program (IRDP) had been instrumental for the industry to modernize its plants and to improve its productivity. However, recent changes to the IRDP have eliminated all incentives for these areas which are prime industrial locations for the automotive industry. Export Development Corporation and Canadian International Development Agency financing for exports has been particularly relevant to the heavy duty truck manufacturers which have had some moderate success in exporting commercial vehicles offshore.

In December 1982, a private sector Automotive Task Force was appointed to make recommendations to assist the government in formulating strategies. The manufacturers' sales tax on automobiles was changed in February 1984 and is now applied at the wholesale level, eliminating an advantage previously accorded imported vehicles. Special training, retraining, and adjustment services are being developed by the Canada Employment and Immigration Commission specifically for auto workers. The Government also agreed to publish an Annual Report on the automotive industry. The first report was published in 1984. The Task Force recommendations to raise the General Preferential Tariff to two-thirds of the Most Favoured Nation rate has been adopted by the Government in the May, 1985 Budget. The only outstanding Task Force recommendation to legislate Canadian content requirements for automobile importers is still under review.

4. Evolving Environment

The Canadian automotive industry will continue to face competitive pressures from the Japanese and other offshore manufacturers to reduce costs, improve product quality, and increase productivity through plant modernization. Both technological and management innovations will be of central importance, the former necessitating continuing capital investments. In these circumstances, production and growth opportunities for Canada lie largely in our ability to encourage existing manufacturers to upgrade and expand their Canadian facilities and to attract new incremental investment by Japanese and European manufacturers. Since real output is not expected to increase significantly through the 1980's, employment in existing facilities will decline to effect the productivity increases forced by competition.

The Japanese have made extensive investments in assembly facilities in the U.S. These now have a production capacity approaching the total Canadian automotive capacity. A pattern now emerging is for world vehicle producers to establish corporate linkages such as General Motors/Toyota, Chrysler/Mitsubishi, Ford/Mazda, American Motors/Renault, etc. These links are designed to capitalize on the strengths of the offshore producers and to maintain a presence in the marketplace with a fully

competitive range of vehicle types and sizes. Market and political considerations place Canada at a disadvantage compared to the U.S. in attracting Japanese investment. However, the Canadian industry is well situated within the North American industry context from an economic perspective. Recent announcements of investments by AMC and GM indicate a high degree of confidence in Canada on the part of the North American producers. Honda has also announced an investment of \$100 million for an assembly facility in Canada. Other Japanese manufacturers are evaluating the feasibility of investing in Canada.

A factor which may influence investment decisions will be the Canadian UAW's decision to seek autonomy from its U.S. counterpart. However, it is too early to call what effect this action will have on the perceptions of the automakers towards Canada. The initial business reaction has been generally negative, and General Motors has advised the government that it is reviewing its Canadian operations in light of concerns about the impact on its U.S. operations of another strike in Canada. The real first test of the impact of the UAW split will come in the third quarter of 1985 when the Chrysler contract is renegotiated.

5. Competitiveness Assessment

With the North American automotive industry currently enjoying record levels of sales and profits following its recovery from the recession, it is easy enough to overlook the storm clouds on the horizon. Canada and the U.S. remain vulnerable to competitive pressures at both ends of the market - at the low end from Japanese and emerging low-cost offshore producers such as Korea, and at the high end from Europe, due to the strength of the dollar. This import pressure, combined with virtually no market growth and substantial incremental Japanese assembly investment in North America, will result in an extremely competitive market situation toward the end of the eighties.

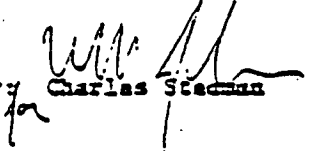
The extent of the competition will depend in large measure on U.S. and Canadian government import policies with respect to Japanese and LDC vehicles. Regardless of the import regimes in place, the huge Japanese cost advantage and growing innovative capability will enable them to market aggressively against North American competition to the point that virtually all surplus capacity will probably be borne by the Big 4. Surplus capacity by 1988-1990 is likely to be in the order of two million passenger cars, or up to a quarter of current capacity. This translates into ten to fifteen assembly plants at risk in North America, invariably the oldest and least efficient.

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Critical requirements for Canada in the next few

years will be to continue to modernize capacity (half completed to date) and to secure as much new state-of-the-art investment as possible as offsets to potential cutbacks in the future.

Prepared by: Kiran Mann

Approved by:  Charles Steadman

FACT SHEET

NAME OF SECTOR: MOTOR VEHICLE MANUFACTURING SIC(s) COVERED: 323

1. FEDERAL STATISTICS

	1980	1981	1982	1983
Establishments	22	21	21	21
Employment	44,870	44,257	42,168	44,400
Shipments (\$ millions)	10,071	11,402	12,343	15,590
Gross Domestic Product (Constant 1971\$ millions)	1,397.3	1,319.8	1,261.1	1,528.8
Investment (\$ millions)	136	273	164	479
Profits after tax (4 major assemblers)	(217)	(168)	(184)	946
Exports (\$ millions)	6,670	8,237	11,115	13,410
Domestic Shipments (\$ millions)	3,193	2,919	1,659	2,516
Imports (\$ millions)	4,605	5,058	3,750	6,015
Canadian Market (\$ millions)	11,379	11,918	9,824	12,196
Exports - % of shipments	66.2	72.7	90.1	86.0
Imports - % of domestic market	40.5	42.4	38.2	49.3

2. REGIONAL DISTRIBUTION - Average over the last 3 years

	Atlantic	Québec	Ontario	Prairies	B.C.
Establishments - % of total	4.8	23.8	52.4	4.8	14.3
*Employment - % of total	.8	8.8	88.7	.7	1
*Shipments - % of total	1.0	10.4	86.6	.8	1.2

*DBTE estimates

3. MAJOR FIRMS

Name	Ownership	Location of Major Plants
1. General Motors of Canada Ltd.	U.S.	Oshawa, Ontario
2. Ford Motor Company of Canada Ltd.	U.S.	Oakville, Ontario
3. Chrysler Canada	U.S.	Windsor, Ontario
4. American Motors (Canada) Inc.	U.S./France	Brampton, Ontario

4. FEDERAL AND PROVINCIAL GOVERNMENT PROGRAMS

Program	Type	Amount	Purpose
Auto Pace	Duty Remission		
Export Restraints (Japan)			

5. MAJOR REPORTS AVAILABLE

Name	Type of Report	Year
An Automotive Strategy for Canada	Task Force Report	1983
1983 Report on the Canadian Automotive Industry	Annual Report	1984

COMPETITIVENESS PROFILE

AUTO PARTS

1. Structure and Performance

Structure:

The automotive parts sector is normally defined to include SIC 325 (vehicle parts and accessories), SIC 188 (automotive fabric accessories), SIC 356 (automotive glass), and SIC 3391 (batteries). This excludes such related products as automotive castings, foundry products, and plastic components which are covered under other industrial groupings (steel, rubber, textiles, plastics, glass and aluminum, machinery and electrical products). The Canadian auto parts sector has an annual output of over \$6 billion, 80 percent of which is exported, mainly to the United States. The balance plus imports supports the Canadian vehicle market which is the seventh largest in the world.

The sector employs over 70,000 people. About 40 percent of production is accounted for by the in-house operations of the vehicle manufacturers, 20 percent by 12 large multi-nationals, and the remaining 40 percent by several hundred small and medium-sized, largely Canadian-owned, independent parts producers. The sector is traditionally divided into original equipment and aftermarket producers. The latter grouping accounts for about 15 percent of total production and employs about 10,000 people. About 80 percent of original equipment producers are located in Ontario, 10 percent in Quebec, and the rest largely in Western Canada. Aftermarket producers tend to be more regionally dispersed, and low in capitalization and often serve local markets.

Performance:

Parts production in Canada increased for the third consecutive year during 1983 to reach \$6.5 billion. This constituted a 37.2 percent increase over 1982 production levels. The magnitude of the 1983 increase was due to the higher vehicle production levels attained by the U.S. and Canadian assembly industries. The unexpected strength of the vehicle sales recovery in both Canada and the United States was manifest in parts supply bottlenecks. Domestic producers were short of parts in some product lines and this further depleted the supply of popular vehicle models available to consumers.

In terms of Canada-U.S. trade, Canada has suffered a chronic deficit in parts for essentially three reasons: first our relative reliance on assembly within a rationalized structure results in major imports of parts for those assembly plants; second, there has been relative underinvestment in Canada in in-house facilities by the assemblers; and third, the aftermarket sector is small and inefficient, despite a significant tariff and is subject to major import competition and relatively poor export performance.

2. Strengths and Weaknesses

Structural:

The independent parts producers in Canada have closely geared their production to the needs of the major North American vehicle manufacturers which until recently have largely sourced their parts needs from firms in North America. They are reliant to a great extent on sourcing contracts on a "make to drawing" basis and on access to the centralized purchasing structure of the car manufacturers. The branch plant parts producers tend to be second sources for identical products currently being produced elsewhere in the corporate empire. Those independent and multi-national parts firms that design and develop components have until recently benefited from, and perhaps become overly dependent on, the relative stability of automotive technology, particularly in North America. This situation is changing, and in the future success will depend increasingly on product development capability. Small Canadian-owned firms in particular will be hard pressed to adapt to new market requirements that demand sophisticated managerial, entrepreneurship and technical skills.

Recent and future design developments that will require more complex, higher priced replacement components, and a sharp increase in the use of electrical and electronic equipment could double the global automotive aftermarket by 1985. Canadian firms specializing in the aftermarket will have difficulty taking advantage of these opportunities because of stiff competition from major OE producers.

Offsetting some of these structural weaknesses are opportunities for Canadian parts makers to supply Canadian assembly plants on a "just in time" inventory reduction basis. There are growth prospects for car parts such as body stampings and seat assemblies which are expensive to transport. Production of these could be moved from more distant locations, often in the U.S., to agglomerations around assembly plants.

Trade Related Factors:

While original equipment parts enjoy conditional free trade with the United States under the 1965 Auto Pact, aftermarket parts are excluded and are protected by a tariff. The result is that the aftermarket parts sub-sector has not enjoyed the same degree of rationalization as the original equipment parts sub-sector.

Automotive products from G77 countries enter Canada duty-free. A number of countries, such as Mexico, Korea, etc. have fairly sophisticated automotive industries and are beginning to export significant quantities of parts to North America. At the same time their markets are largely closed to Canadian products. While injury is currently not evident, a close watch on imports from these countries will have to be maintained.

Technological Factors:

Factors determining competitive success in the North American environment have shifted significantly in the last decade. In previous years, competition among the North American vehicle manufacturers was based on attaining economic scale in production, attractive styling and strong distribution networks. Today, improved product quality, the pursuit of productivity through new manufacturing systems and technological innovation have taken their place as the principal factors in competition.

The requirement for technological advance is being felt by the parts sector. Radical changes intended to improve productivity are underway. These have taken a number of forms including the institution of just-in-time production to eliminate most inventory, the reorganization of work practices to minimize downtime and automation to improve quality and reduce the labour content of production.

Additionally, foreign suppliers to offshore vehicle manufacturers are establishing in Canada to service plants being established by V.W., Honda, AMC/Renault, etc. and are bringing new technology to the marketplace.

3. Federal and Provincial Programs and Policies

The fundamental policy instrument is the Auto Pact. In addition, the government has encouraged the industry to capitalize on areas of strength by identifying and exploiting export and import replacement opportunities. Financial assistance is no longer available for the prime areas for automotive plant location under the Industrial and Regional Development Program to assist in plant modernization and expansion and product innovation. Programs such as the Program for Export Market Development provides assistance for export marketing and the Export Development Corporation provides export financing. Government funding of \$40 million was also provided under the Industry and Labour Adjustment Program to assist parts manufacturers in restructuring to meet the changing needs of the industry.

The government is also attempting to encourage offshore manufacturers which do not operate under the Auto Pact to source both original equipment and aftermarket parts in Canada through the automotive duty remission programs (these programs reduce the value for duty on imported vehicles by an amount related to the value of Canadian parts exported by the producer).

The Ontario Government recently announced a \$30 million fund to be administered by the Ministry of Industry and Trade and funded under the 3ILD Program.

4. Evolving Environment

The Big Three North American automakers have committed themselves to drastic changes in technology, product design, and management. These

changes will alter substantially the relationship between vehicle manufacturers and component suppliers. The changes will mean more outside sourcing, longer contracts but less multiple sourcing, higher quality and reliability requirements, more stringent inventory control and centralized purchasing for "make to drawing" suppliers. In addition, "draw and make" suppliers will be faced with shorter engineering lead time and, therefore, higher risk and development cost. As the cost of labour in Canadian plants is often lower than in the United States, Canadian firms may well be able to expand significantly. On the other hand, Canadian auto parts producers will be facing increasingly stiff competition from developing countries such as Spain, Brazil, Mexico, and Korea which have taken impressive steps to encourage their automotive sectors and are beginning to broaden their product range and increase their penetration of the Canadian and American markets.

The trend to just-in-time delivery should provide opportunities for Canadian parts producers to supply Canadian assembly plants. Recent major investments in new or modernized assembly facilities by General Motors, American Motors, and Honda will stimulate parts production.

The recent decision by the Canadian U.A.W. to sever relations with the U.S. union could lead U.S. vehicle manufacturers to increase sourcing in the domestic market to alleviate the risk of dependence on Canadian sources which could halt North American production in a Canadian strike.

3. Competitive Assessment

Because of the increasing importance of just-in-time delivery, the opportunities for the parts sector will be determined in part by success in attracting investments in new assembly facilities in Canada.

In the past five years, many of the independent Canadian parts producers have taken the initiative to modernize and rationalize their operations. However, the extent to which industry initiatives can be taken is limited in view of the size of the companies and their technological base. The Canadian subsidiaries of multi-national parts manufacturers have also undergone a certain degree of rationalization, but on a North American basis. In-house production of parts by the Big Three could decline gradually in Canada, as Ford and Chrysler, though not General Motors, source more and more offshore. Canada's lower costs, due in part to favourable exchange rates, should counter this possibility.

The industry will need to continue to modernize to ensure that it remains competitive on a global basis. In the case of the small aftermarket and original equipment parts producers, this will entail product specialization and/or market diversification. Many companies cannot maintain a high degree of on-going investment and will either go out of business or merge. On the other hand, participation of foreign automotive parts producers in the Canadian industry through direct investment or joint ventures will present opportunities for domestic suppliers to acquire new product and process technology. Some success has been

achieved on this front through government induced and promoted investment missions by Japanese and European companies. But the Canadian industry will need to increase significantly its participation in the nascent internationalization of the auto parts sector if it is not be left out of the technically advanced industry of the future. Otherwise, we shall be relegated largely to low value, less sophisticated componentry geared to "just-in-time" requirements. Although assistance for plant modernization, research and development, and export marketing will continue to be important elements of government support to the industry, increasing attention will need to be paid to technology transfer, joint ventures and direct foreign investment.

Prepared by: Bert M. Barr

Approved by:  Charles Stedman

PAGE SHEET

NAME OF SECTOR: AUTOMOTIVE PARTS

SIC(s) COVERED: 325

1. FEDERAL STATISTICS

	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>
*Establishments	950	1,000	1,100	1,200
**Employment (000)	47.3	51.9	47.4	59.7
**Shipments (\$ millions)	4,034.2	4,879.3	5,059.7	7,000.0
**Gross Domestic Product	674.7	742.8	743.8	1,022.8
**Investment (\$ millions)	925.0	854.0	538.0	440.0
Profits after tax	N/A	N/A	N/A	N/A
**Exports (\$ millions)	3,825.0	4,707.0	5,506.0	4,012.0
**Imports (\$ millions)	7,955.0	9,572.0	10,055.0	8,540.0 (Inc.)
Canadian Market (\$ millions)	8,164.2	9,744.3	9608.7	11,523.0 (Inc.)
Exports - % of shipments	94.8	96.4	108.8	N/A
Imports - % of domestic market	97.4	98.2	95.5	74.0

*ORIE Estimates **Automotive Task Force Report ***Statistics Canada

2. REGIONAL DISTRIBUTION - Average over the last 3 years

	<u>Atlantic</u>	<u>Québec</u>	<u>Ontario</u>	<u>Prairies</u>	<u>B.C.</u>
Establishments - % of total	2	10	80	3	5
*Employment - % of total	1	5	89	2	3
*Shipments - % of total	2	10	80	3	5

*ORIE estimate

3. MAJOR FIRMS

<u>Name</u>	<u>Ownership</u>	<u>Location of Major Plants</u>
1. TRW	U.S.	St. Catharines,
2. BUDG	U.S.	Kitchener
3. Rockwell	U.S.	Tilbury
4. Magna	Canadian	Toronto
5. Waterville Cellular	Canadian	Waterville, Que.

4. FEDERAL AND PROVINCIAL GOVERNMENT PROGRAMS

<u>Program</u>	<u>Type</u>	<u>Amount</u>	<u>Purpose</u>
IRDP	R&D and Capital		
DIP	Defence		
BILD (Ont.)	Repayable Loan	\$30 million	Upgrade facilities

5. MAJOR REPORTS AVAILABLE

<u>Name</u>	<u>Type of Report</u>	<u>Year</u>
An Automotive Strategy for Canada	Federal Task Force	1983
1983 Report on Can. Auto Industry	Federal	1984

COMPETITIVENESS PROFILE

AUTOMOTIVE TIRES AND TUBES

1. Structure and Performance

Structure:

Automotive tires and tubes (not including bicycle tires and tubes) are covered under SIC Code 3511. Canadian retail sales in 1983 totalled approximately \$2 billion. Imports in that year were \$363.3 million and exports were \$517.98 million, yielding net exports of \$154.68 million.

This sector is comprised of eight companies producing over 20 million tires per year out of 13 plants. One additional plant is dedicated to tube production. Employment is just under 16,000, with 26 percent in Nova Scotia, 21 percent in Quebec, 52 percent in Ontario, and one percent in Alberta. With the exception of the two smallest producers, Uniroyal and Trans, the industry is foreign-owned. Michelin and Trans Rubber plants are non-union while the balance are represented by either the United Rubber Workers or the Confederation of National Trade Unions.

The older Canadian plants began as unspecialized branch plants producing in Canada for the Canadian market. However, the tire industry is rapidly internationalizing, and Canadian products now must compete around the world. Canadian plants, except those of Michelin, are small when compared to world scale plants.

Performance:

The tire industry operates in a mature, no growth market. With a shakeout going on and all producers trying to maintain or improve market share, the industry is very price competitive. The result has been an industry that is not particularly profitable. Industry average return on equity (ROE) has been in the vicinity of five to 8.5 percent for the past 20 years. Corporate return on Canadian sales was less than two percent in 1983. In the U.S., the seven public tire companies (Goodyear, Firestone, General, Uniroyal, Goodrich, Cooper, and Armstrong) reported a 1983 aggregate profit of \$609.5 million on sales of \$21.9 billion or 2.78 percent return on sales (ROS). For those with the installed plant capacity, 1984 was a strong year with profits considerably improved. However, as in the automotive industry, large capital investments have been necessary over the past few years and this is causing the weaker companies to withdraw or become specialized in certain segments of the market.

The performance of the Canadian tire industry has followed recent trends of the car makers. From a high of 24 million tires (of all types) sold in Canada in 1977, the market fell to just over 17 million tires in 1981. Tire plants in Calgary (Firestone), Whitchy (Firestone, formerly Dunlop),

and Toronto (Seiberling/Goodyear) closed and others experienced serious difficulties. Due to the recession, production of original equipment tires fell dramatically, as did truck and off-road tire production. Replacement passenger car tire production held up, however, as consumers tried to keep personal vehicles on the road longer. With the rebound of the car makers (and the economy) all sectors have picked up with the exception of the off-road mining and forestry sectors. Canadian production was over 19.3 million tires in 1983.

Trade Related Factors:

While North America receives a considerable volume of imports from Japan, Korea, and Europe, over 80 percent of tires used in North America are made in North America because of different standards and sizes. Nonetheless, competition to satisfy this market will increasingly come from all the major world tire plants.

2. Industry Strengths and Weaknesses

Structural:

Canadian tire firms enjoy the advantage of good quality labour and lower wage and energy costs than in the U.S., due in part to exchange rates. The branch plant structure, however, leaves little autonomy in decision making, a pattern accentuated by computer communications with the parent plant. The Canadian plants tend to be smaller, older, and less vertically integrated than their American counterparts. They receive lower levels of investment and have less advanced technology. While oriented to world markets, they specialize in product lines of declining popularity. The sole exception, Michelin, enjoys high productivity, economies of scale, and capital investment equal to U.S. levels.

The North American tire industry dwarfs the Canadian sector. In 1983, 17 percent (32,722,500 tires) of the total U.S. domestic market was supplied by imports. In the same year, the entire Canadian industry manufactured just over 19,300,000 tires, or only 59 percent of the U.S. import market. Globally, there is a overcapacity in most types of tire production.

Technological Factors:

The tire industry in North America has passed through considerable technological change over the past 20 years as automotive standards shifted from bias, to bias-belted, to radial, to low-profile, high mileage radial tires. These changes required a massive amount of capital investment at a time of slim profit margins. In constant dollars, the cost of tires to consumers is as low as it ever has been and yet the quality is much better. The industry is very consumer price competitive.

Worldwide, technology is evolving rapidly. Automated transfer lines, robotics, computer aided design, and computer assisted manufacturing are being implemented.

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becoming more and more of a significant factor in the Canadian market scene is Bridgestone Tire of Japan. There are no Bridgestone manufacturing operations in Canada.

Historically, new tire manufacturing technologies have been introduced in the USA. Later, as the resulting product became accepted in Canada (supplied by imports), the manufacturing technology was moved to Canada. Consequently, the machinery installed tended to be modified second or third hand machinery which U.S. plants had grown out of, and which was then adapted for Canadian use.

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The clear exception to the preceding is the Michelin tire plant in Nova Scotia. Michelin, assisted by regional incentives grants, installed all new state-of-the-art technology on a scale commensurate with its North American market share. Since the initial installations some 14 years ago, there have been several upgradings of these facilities. Furthermore, because of its desire to maintain its closely guarded rubber to metal bonding processes (trade secrets), Michelin also installed a complete wire making facility which uses steel rod from Stalco and copper from Noranda as raw materials. All of the others purchase their belt and body wire from either their U.S. parent or on the open market from Bekaert of Belgium, Tokyo Rope of Japan, or National Standard of the U.S.

3. Federal and Provincial Programs and Policies

Other than Transport Canada Safety Standards, Provincial Safety Regulations and Capital Cost Allowances, government policies do not have a direct impact on the industry. U.S. parent companies generally comment favourably on Canada's policy on rapid depreciation of capital expenditure and write-offs in R&D. While all use the rapid depreciation offered, very little R&D is done. Tires are not included in the Canada/U.S. Auto Pact

except indirectly if they are mounted on finished vehicles, and are currently protected by a 11.9 percent tariff.

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Tire manufacturers who use tire cord, steel (tire) wire, or mixed rubber masterbatch are required to pay duty on their import requirements of these items. This is due to the existence of the Michelin wire plant, Uniroyal, Goodyear, and Firestone tire fabric plants and Trent's position as a custom rubber mixer. Polysar produces artificial rubber while Cabot and Columbian produce carbon black. These items are also protected by various tariffs.

4. Evolving Environment

While projected market growth is not spectacular, (cyclical and slow), North America is still the world's most lucrative automotive market.

All major tire manufacturers and importers are striving to hold or increase their market share. Japanese and other foreign penetration of the car market is adversely affecting future market prospects for North American tire makers.

Strong currencies in Canada and the U.S. relative to other nations continue to attract aftermarket imports from offshore manufacturers who are seeking to gain market acceptance in North America.

Continued technological change (driven by government and auto industry demands for higher performance and safety standards, lighter weight, and lower tire prices) will mean a continuation of the need for large capital investment in CAD/CAM, robotics, and other productivity improvements in manufacturing.

While the Canadian dollar remains weaker than the U.S. dollar, this outweighs many of our productivity disadvantages, so long as Canadian plants are concentrated on the lower technology tires (i.e. those which can be produced on our currently installed equipment). ~~However, if the dollar rises above 50.25 U.S., several Canadian plants will be highly exposed.~~

5. Competitiveness Assessment

EXEMPT-
15(1)

EXEMPT-
15(u)

Prepared by: Don Campbell

Approved by: 
Charles Shadman

FACT SHEET

NAME OF SECTOR: TIRE AND TUBE MANUFACTURING SIC(s) COVERED: 161

1. PRINCIPAL STATISTICS

	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>
Establishments	15	14	13	14
Employment				16,000
Shipments (\$ millions)				2,031.87 M (1984)
Gross Domestic Product (Constant 1971 \$ millions)				
Investment (\$ millions)	546.26			
Profits after tax				38.9
Exports (\$ millions)				524.4
Domestic Shipments (\$ millions)				1,501.6
Imports (\$ millions)				363.3
Canadian Market (\$ millions)				1,501.8
Exports - % of shipments				26.9%
Imports - % of domestic market				24.2

2. REGIONAL DISTRIBUTION - Average over the last 3 years

	<u>Atlantic</u>	<u>Quebec</u>	<u>Ontario</u>	<u>Prinias</u>	<u>B.C.</u>
Establishments - % of total	21.0%	14.0	64.0	7	0%
Employment - % of total	26 %	21	52	1	0%
Shipments - % of total	22.5%		72.5	5	0%

3. MAJOR FIRMS

<u>Name</u>	<u>Ownership</u>	<u>Location of Major Plants</u>
1. Goodyear Canada Inc.	American	Ontario, Quebec
2. Michelin Canada Ltd.	French	Nova Scotia
3. Firestone Canada Inc.	American	Ontario, Quebec
4. Uniroyal Canada Inc.	American	Ontario

4. FEDERAL AND PROVINCIAL GOVERNMENT PROGRAMS

<u>Program</u>	<u>Type</u>	<u>Amount</u>	<u>Purpose</u>
IRAP, IRDP, EDIA		363.678M	Modernization, Expansion

5. MAJOR REPORTS AVAILABLE

<u>Name</u>	<u>Type of Report</u>	<u>Year</u>
Bilateral Trade Liberalization: The Canadian Tire Manufacturing Industry	Impact Analysis	1984

COMPETITIVENESS PROFILE

SPECIALITY AND OTHER VEHICLES

1. Structure and Performance

Structure:

This sector encompasses manufacturers of integral body-frame buses for intercity use (included in SIC 3231), off-highway haulers used in mining and construction (included in SIC 3231), specialty vehicles including truck bodies and trailers (SIC 3241, 3242, 3243), firefighting equipment (SIC 3199), all-terrain tracked and wheeled vehicles and snowmobiles (SIC 3299), and military trucks (SIC 3231).

There are two intercity bus manufacturers in Canada. Motor Coach Industries Ltd., the largest of the three manufacturers in North America and a subsidiary of the largest American bus carrier, operates a branch plant in Winnipeg employing 1,000 people. It produces only body shells and these represent only 30 percent of the value of the final product. Prevost Car Inc. is the second largest North American manufacturer, employing about 500 at Ste. Claire, Quebec. Unlike MCI or their American competitor, Eagle, Prevost is not associated with a major carrier.

The three companies manufacturing off-highway haulers (Wabco, Euclid, Unit Rig) are wholly owned subsidiaries of American firms. Employment of about 1,000 is all in Ontario. Production has been rationalized on a North American basis under the Off-Highway Vehicles Remission Order, and production is geared to the world market. Research and development is carried out in the United States. The industry is sensitive to cyclical fluctuations affecting its customers (major open-pit mines and large construction projects) and is now operating at half capacity.

Specialty vehicles are produced by over 300 establishments employing 11,000 people, the majority in central Canada. Foreign ownership is not significant (only 13 percent are foreign owned), and the industry operates on a small scale compared to its American competitors (only 10 percent of the Canadian plants employ more than 100 people).

Performance:

Total sales in 1983 were about \$1.5 billion, of which over \$1.1 billion were accounted for by specialty vehicles. Exports amounted to about 80 percent of the production of intercity buses and off-highway haulers and over 30 percent of the sales of specialty vehicles.

In general, the industry marginally came through a recession characterized by declining markets, no new major capital expenditures and high interest rates. The industry experienced no real growth in sales since 1979 while the cost of goods sold increased significantly. As a result, the industry's average net profit margins declined to below one-half of one

percent compared to the levels of three percent prior to 1979. Recovery to these earlier levels may occur by 1986. According to composite indicators, financial performance has declined by approximately 25 percent, from a relatively healthy level prior to 1979, to a marginal level in the early 1980's.

2. Strengths and Weaknesses

Structural:

The scale of operations in Canada is relatively small. The sector is experiencing industrial adjustment to realize greater economies of scale. For example, companies in the truck body and trailer subsector have been forced into receivership and plant closings. In the off-highway hauler sub-sector, DDGM of London, Ontario sold its Titan assets to U.S. interests and U.S. Euclid amalgamated all of its production in Guelph, Ontario. However, the industry has demonstrated its capability to manufacture specialty equipment of international quality for the transportation sector.

Trade Related Factors:

The bus manufacturers operate under the Canada/U.S. Auto Pact. The off-highway hauler manufacturers and truck body and trailer manufacturers operate under special remission Orders in Council.

However, non-tariff barriers in U.S. federal and state policies and regulations may severely curtail the sale of Canadian goods to the U.S. The small business and minority group regulations which were introduced recently and the "Buy America" policy in force since the early 1950's are good examples.

Exports are essential to the sector and export financing plays a significant role in offshore sales. In many instances Canadian export orders were lost to the Japanese and Europeans, who offered more attractive long term financing at low interest rates.

Technological Factors:

The Canadian manufacturers are flexible and innovative, and their manufacturing processes and engineering standards compare favourably with those of the U.S. and Europe. The high technology components (e.g., drive train components etc.) are sourced in the U.S. and Europe. In many cases the technology is of other than Canadian origin and is acquired through joint venture and/or licensing arrangements. The industry is moving toward the use of CAD/CAM and other automated information processing equipment.

3. Federal and Provincial Programs and Policies

Manufacturers of buses, off-highway trucks and certain specialty vehicles have taken advantage of the Auto Pact (on the Off-Highway Vehicle

Remission Order) to rationalize production between Canada and the U.S. For those companies with facilities only in Canada, the Auto Pact facilitates access to the large U.S. market. Canadian tariffs range from 11.4 to 12.5 percent.

The Defence Production Sharing Agreement provides Canadian companies with an opportunity to access the large U.S. market free of any tariff or non-tariff barriers.

A large number of companies have used the Industrial and Regional Development Program (and its predecessors) to develop new and improved products, improve their production processes, and expand and modernize their production facilities. Continued assistance, especially on the R&D side, will continue to be required to assist the relatively small Canadian companies to remain technologically competitive.

At the same time, this sector requires assistance in identifying and exploiting export markets. The Program for Export Market Development and selected missions will continue to be widely utilized. In addition, competitive export financing is essential if these companies are to compete internationally against aggressive foreign competition.

4. Evolving Environment

Markets for inter-city buses are opening up in North Africa and the Middle East. Prevost should be well placed to compete provided it maintains its lead in product innovation. With assistance under the former Enterprise Development Program, the company is now developing a prototype large-capacity articulated bus for introduction into the market by May 1985. A potential market in urban transit in the United States is blocked to Prevost, though not to Motor Coach Industries, by "Buy America" provisions. This situation will continue unless Prevost increases American content and establishes final assembly facilities in the U.S. The off-highway hauler manufacturers will have to match increasing foreign competition such as Komatsu of Japan, which is increasing its world market share with the help of favourable financing packages. If Canadian manufacturers are unable to meet the Export Development Corporation's 50 percent Canadian content levels, they will be at a disadvantage in this competition. The specialty vehicle group, especially truck and trailer manufacturers, will need to enhance productivity and product sophistication.

5. Competitiveness Assessment

This sector will not experience any significant growth: (a) bus manufacturers will continue to serve a mature market, (b) the off-road truck manufacturers are rationalizing (the impact on Canada is not yet clear, growth would occur only if the primary product industry recovers), (c) specialty vehicle manufacturing will undergo some rationalization which could result in the demise of certain companies; however, the overall outlook is for stable performance.

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INTERNAL AFFAIRS = AFFAIRES INTÉRIEURES

In order to improve competitiveness, all of these groups will have to emphasize research and development and product innovation. Praxair will need to adapt to the United States "Buy America" requirement if it wishes to pursue the urban bus market. For off-highway hauler manufacturers the key will be to maintain state-of-the-art products at competitive prices while adapting to Export Development Corporation financing criteria. This may require developing new Canadian component sources. Specialty vehicle manufacturers, especially in the truck and trailer group, face the need for plant modernization, improved production processes, and innovation - all in the context of financial weakness. Some consolidation may be required.

Prepared By: John Glayztor
Halimc Zanki

Approved By:  Charles Staman

DECLASSIFIED
CONFIDENTIAL
INTERNATIONAL AFFAIRS = AFFAIRES INTERNATIONALES
FACT SHEET

NAME OF SECTOR: SPECIALTY AND OTHER VEHICLES SIC(s) COVERED: 3231, 3241,
3242, 3243,
315, 3299.3251.

1. PRINCIPAL STATISTICS

	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>
Establishments	369	340	305	320
Employment	15,525	13,930	10,745	13,500
Shipments (\$ millions)	1,512	1,535	1,259	1,550
Gross Domestic Product (Constant 1971 \$ millions)				
Investment (\$ millions)				
Profits after tax				
Exports (\$ millions)	250	270	300	350
Domestic Shipments (\$ millions)	1,262	1,265	959	1,200
Imports (\$ millions)	190	180	180	175
Canadian Market (\$ millions)	1,452	1,445	1,139	1,375
Exports - % of shipments	16	17.5	23.8	22.5
Imports - % of domestic market	12.5	11.7	14.2	11.2

2. REGIONAL DISTRIBUTION - Average over the last 3 years

	<u>Atlantic</u>	<u>Quebec</u>	<u>Ontario</u>	<u>Prairies</u>	<u>B.C.</u>
Establishments - % of total	3	29	32	24	12
Employment - % of total	2	27	35	25	11
Shipments - % of total	4	28	33	22	13

3. MAJOR FIRMS

<u>Name</u>	<u>Ownership</u>	<u>Location of Major Plants</u>
1. <u>Prevost Car</u>	Canadian	Quebec
2. <u>MCI</u>	U.S.A.	Winnipeg
3. <u>Enlid</u>	U.S.A.	Ontario
4. <u>Webco</u>	U.S.A.	Ontario
5. <u>Westank-Willock</u>	Canadian	Saskatchewan
6. <u>Manac</u>	Canadian	Quebec

4. FEDERAL AND PROVINCIAL GOVERNMENT PROGRAMS

<u>Program</u>	<u>Type</u>	<u>Amount</u>	<u>Purpose</u>
IRDP, OIEP, PEM's			Innovation, Export Mktg.

5. MAJOR REPORTS AVAILABLE

<u>Name</u>	<u>Type of Report</u>	<u>Year</u>
Truck Body & Trailer Study - In House		1982
Off-Highway Haulers		1982
School Bus Study		1982
Intercity Buses - Profile		1984

COMPETITIVENESS PROFILEURBAN TRANSIT AND INTERCITY PASSENGER RAIL1. Structure and Performance

The two major groupings in the urban mass transit sector are urban buses and rail transit. The latter includes subway and commuter cars, guided light rail vehicles, monorails, and magnetic levitation transportation systems. Intercity rail includes the L.R.C. and the proposed bi-level cars. The Canadian urban mass transit industry has experienced strong and increasing sales and exports in recent years. Orders on hand for delivery for the period 1983-87 are \$2.6 billion of which 70 percent are for export. The major export market is the United States, accounting for 95 percent of the total. Intercity equipment sales have been for the domestic market (VIA) only.

The major vehicle (urban bus and rail) manufacturers employ some 4,000 workers and are concentrated in Ontario, Quebec, and Manitoba.

The three principal urban bus manufacturers in Canada are General Motors Diesel Division (wholly owned subsidiary of the largest North American manufacturer of buses), Flyer Industries (90 percent owned by the Manitoba government) and Ontario Bus Industries. Major components, such as engines, transmissions and axles, are currently imported from the United States under the Canada/United States Auto Pact.

The Canadian transit and intercity passenger rail industry is led by Bombardier in Quebec and Vermont and the Urban Transportation Development Corporation (UTDC) in Ontario (recently acquired Hawker Siddeley's Thunder Bay vehicle plant).

2. Strengths and Weaknesses

In 1976, the U.S. Department of Transport required bus suppliers to adopt a standard design. The new buses, referred to as Advanced Design Buses, were not well received by the operators, who then started to source the older model "new look" buses in Canada. Since then, Canada has exported on average 500 buses a year to the United States. There are no significant imports as 97 percent of urban transit buses in Canada are produced domestically. This is largely due to the Canadian industry's competitiveness on smaller scale orders combined with provincial government procurement policies.

Canadian content in buses for the domestic market is 56 percent against 47 percent in buses for the American market. This is due to the "Buy America" clause of the United States' Surface Transportation Assistance Act which applies to federally funded purchases and to the "Buy America" restrictions imposed by state governments.

The Canadian urban bus industry, in spite of its steady exports to the American market, is relatively inefficient and now, due to Buy America restrictions, it operates well below capacity. The basic designs are old and the industry lacks skills in aggressive marketing. Ontario Bus

Industries with the aid of DRIF is the only manufacturer which has developed a technologically superior product (Orion II) and is an aggressive marketer. Canadian bus manufacturers are generally not competitive in offshore markets because the North American bus is neither price nor design competitive. In fact, the only recent export market for Canadian bus builders has been the United States.

Originally dependant upon foreign technology, the two Canadian owned urban rail producers have now developed the capability to supply a broad range of conventional systems. They have developed a world lead in a number of selected technical areas such as intermediate capacity transit systems. The bulk of domestic requirements can be supplied from Canada. Canadian producers have made major export sales to the United States and Mexico and for the last few years, they have actively pursued major contracts around the world.

The proximity of the large American market for guided rail and the relative weakness of American manufacturers in the sector have put Canadian companies at an advantage. The Canadian market is, however, relatively small and unlike Japanese, European, and other major competitors, Canadian companies do not work from a large scale domestic base. Vertical integration in the industry is also low. This tendency towards fragmentation has been reinforced by provincial content requirements in Ontario and Quebec, encouraging the perpetuation of two parallel groups, headed by Bombardier in Quebec and the UEDC in Ontario developing their own individual supplier networks, each not allowed to bid in the other's home province and each bidding against the other for foreign contracts. This makes it difficult to form competitive "common front" Canadian proposals for international bids.

The European and Japanese markets are difficult to penetrate due to local government policies. In the international markets open to Canadian producers, government assistance, particularly export financing, is considered essential to meet other government supported competition. Access to the critical United States market has become increasingly difficult for both bus and rail-car manufacturers due to "Buy America" restrictions. This is resulting in a substantial shift of Canadian value added from Canadian to American plants. Bombardier has a plant in the United States and the other companies undertake final assembly in the United States on a project specific basis.

The Government has been pursuing this matter with the United States since 1978 with no success. The two major players in the urban mass transit industry; Bombardier and the Urban Transportation Development Corporation as well as most of the rest of the industry have indicated strong support for liberalization of both United States federal and state and Canadian provincial procurement markets on a bilateral basis. The issue also concerns the urban bus industry since Buy America policies override the provisions of the Auto Pact.

The only uniquely Canadian intercity rail product is the L.R.C. passenger train, although UIC is working on variants of its GO-transit bi-level for passenger rail use. AMTRAK is the only major customer outside of Canada. Generally, the product is not designed for third world markets, and other industrial markets are closed. Future decisions on VIA rail will determine the immediate future for passenger rail products.

3. Federal and Provincial Programs and Policies

The passenger rail car industry is protected by tariffs of 12.5 percent. The tariff for urban buses is 9.2 percent but the industry essentially operates under the duty-free provisions of the Auto Pact.

EXEMPT.

SEC. 15 (1)

~~Whether the market for New York orders would be guaranteed without E.D.C. and E.D.C. assistance.~~

4. Evolving Environment

The U.S. market will continue to be the major factor for Canadian companies. Due primarily to cost, this market is evolving towards lighter types of equipment such as the ALRT, street cars, etc. as opposed to heavy subway equipment. Canada is well suited to benefit from the change. Current trends in U.S. buy national policies, i.e., the probable increase in U.S. content requirements from 50 percent to 80 percent, will, however offset any hope of Canadian production for sales in the U.S.

There is an active lobby in the U.S. for the development of high speed rail corridors. These developments are extremely expensive and there may be a position for Bombardier's L.R.C. as a cheaper alternative to TGV's from France and Bullet Trains from Japan. The short-term market, however, appears very limited.

In the third world there is an increasing opportunity for Canadian transit system suppliers given population growth in major cities there. Competition is tough among European, Japanese, and Canadian suppliers with financing including soft loans playing a major role. Counter-trade and technology transfer requirements are also playing major roles. The appreciation of the Canadian dollar against European currencies and the continued strength of the U.S. dollar against the Japanese yen have constrained the Canadian industry's competitiveness in third markets in recent years.

Canadian urban bus manufacturers will be facing increasingly stiff competition from European companies which are establishing facilities in the United States in order to meet "Buy America" requirements. Overcapacity in North American bus manufacturing has already led to "buying" orders to maintain market share. A shake-out of North American firms is predicted to eliminate firms which are not sufficiently market-responsive with respect to vehicle size, design, reliability, repairability, and cost. Those with integrated production of major components (such as GM, Volvo etc.) are likely to suffer least.

In the urban rail sector, competition is also increasing rapidly with Brazil and Korea, among others, joining the traditional European, Japanese, and North American suppliers.

EXEMPT
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As a result of a recent disclosure by Transport Canada regarding a fleet upgrade for VIA, the intercity car industry could pick up. The product supplied will probably be of U.S. design but built in Canada to meet VIA requirements.

5. Competitive Assessment

In urban transit and intercity rail Canada's production capacity greatly exceeds domestic requirements. Over the next few years the domestic market is expected to absorb only 250 buses per year of 1,500 which could be produced, and none of the 800 transit cars which could be built annually will be needed at home. Exports are crucial to the industry's future. Yet the critical American market is increasingly closed by non-tariff barriers.

For the bus industry, whose products are not geared to offshore markets, the Buy America rules have resulted in overcapacity in North America. This is likely to result in a shakeout. Because Canadian urban bus producers lack financial strength and suffer from dated technology and lack of vertical integration, they are at great risk in such a shakeout.

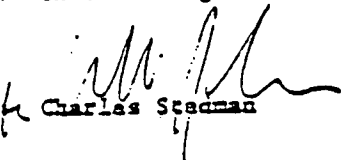
On the rail side both urban and inter-city, the next few years will be critical. Its facilities are fully booked through 1987. Beyond that the industry can survive in Canada if it succeeds in penetrating third country markets.

EXEMPT -
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To succeed in third country exports, however, the urban and intercity rail transportation industry will have to overcome the disadvantages it now suffers. The industry is profitable and its products are competitive in terms of both technology and price, but it lacks the financial strength to mount and pursue on its own projects of the large scale entailed in offshore exports. It also lacks the turnkey experience which is often required. In addition, the industry will have to face major competitors such as France, Germany and Japan, which are able to marshal a coordinated national bid with full government support and financing offers.

Prepared by: Charles Laughton

Approved by:  Charles Steadman

FACT SHEET

NAME OF SECTOR: URBAN TRANSIT

SIC(s) COVERED: Ex. 323, Ex. 326

1. PRINCIPAL STATISTICS

	1980	1981	1982	1983
Establishments	250	250	250	250
Employment - major suppliers only - average	4000			
*Shipments (\$ millions)	201	182	417	600
Gross Domestic Product (Constant 1971\$ millions)	N.A.			
Investment (\$ millions)	N.A.			
Profits after tax	N.A.			
Exports (\$ millions)	70	100	213	388
Domestic Shipments (\$ millions)	131	100	204	212
Imports (\$ millions)	0	0	0	0
Canadian Market (\$ millions) - Repair parts not included	131	82	204	212
Exports - % of shipments	33	45	51	64
Imports - % of domestic market	0	0	0	0

* Includes some infrastructure on domestic turnkey projects.

2. REGIONAL DISTRIBUTION - Average over the last 3 years

	Atlantic	Québec	Ontario	Prairies	B.C.
Establishments - % of total	51%	45%	50%	5%	5%
Employment - % of total		50%	40%	10%	
Shipments - % of total		45%	45%	10%	

3. MAJOR FIRMS

	Ownership	Location of Major Plants
1. Bombardier	Canadian	Québec, Vermont
2. UEDC	Canadian	Ontario
3. FLYER	Canadian	Manitoba
4. G.M. Diesel Div.	U.S.	Ontario
5. O.S.I.	Canadian	Ontario, New York

Note: Intercity passenger rail not included. VIA purchase of L.S.C.'s is only activity in the last 5 - 10 years.

4. FEDERAL AND PROVINCIAL GOVERNMENT PROGRAMS

EXEMPT
15(1)

5. MAJOR REPORTS AVAILABLE

<u>Name</u>	<u>Type of Report</u>	<u>Year</u>
Task Force on Urban Transportation		1977
Canada - U.S. Sectoral Free Trade (DRIE Internal)		1983
U.S. Marketing Strategy and Guide (DRIE Internal)		1984
Canadian Transit Bus Industry-Perspective (DRIE Internal)		1985

COMPETITIVENESS PROFILELOCOMOTIVES AND DIESEL ENGINES1. Structure and Performance

The locomotive manufacturing sector in Canada consists of the General Motors Diesel Division facility in London, Ontario and the Bombardier Rail and Diesel Products Division in Montreal.

The major product lines include electric locomotives, diesel-electric locomotives, diesel engines (1000-4000 hp), traction motors, alternators and components. In 1982, domestic sales were \$50.9 million, imports were \$71.3 million and exports were \$302.7 million.

2. Industry Strengths and WeaknessesStructural:

General Motors Diesel Division of London, Ontario, is a facility wholly owned by General Motors employing up to 800 people. It is a locomotive assembly operation with Canadian content of about 60 percent, and can produce about 225 units annually. (EXEMPT 20(1)(4)(c)) There are an estimated 40 major and 160 minor sub-suppliers for components used in fabricating a locomotive. However, both design and the critical components such as diesel motors and main generator sets are imported from the United States. A recent acquisition of Swedish technology (ASEA) has given General Motors Diesel Division the capability of building all-electric locomotives in the 6000 hp range. The electrical components come from Sweden.

Bombardier Rail & Diesel Products of Montreal, Quebec is a subsidiary of the Canadian owned Bombardier Inc. employing up to 1,500 people although operating at about half that level at this time. It is Canada's only manufacturer of locomotives and diesel engines and can produce about 125 units annually. Canadian content is about 85 percent. Major traction components for the Bombardier units are produced by Canadian General Electric of Peterborough, which has drawn upon the expertise of its American parent, also a producer of locomotives and competitor of General Motors and Bombardier. The latest technology for locomotive electrics from General Electric (United States) has not been made available through Canadian General Electric, therefore Bombardier locomotives have not benefited from performance improvements that would otherwise have been possible. This has constrained Bombardier's ability to compete technically.

Also, because of its early involvement as a licensee of Alco (United States) for many critical components, Bombardier had little technical control over the locomotives it built. The quality of their parts

subsequently deteriorated resulting in a loss of most of the domestic locomotive market to General Motors Diesel Division. Bombardier also had problems in sustaining its share of export markets. Bombardier has now instituted stringent quality control and has purchased Alco, the licensor, and many improvements are being made. The company has approximately 100 major sub-suppliers and it deals with an additional 200 smaller firms.

EXEMPT- 20(1)(a)(c)

Trade Related Factors:

The major foreign competitors are General Motors (United States), General Electric (United States), parent of Canadian General Electric which is a supplier of Bombardier locomotive electrics, Alsthom of France, and Hitachi of Japan.

For the past five years Canada has been the largest locomotive exporter in the world, with about 15 percent of the world export market, divided 70/30 between GM Canada and Bombardier. Much of the locomotive export success can be traced to financing provided by Crown agencies (Export Development Corporation and the Canadian International Development Agency) which have participated in \$509.7 million of sales or 36 percent of total exports since 1977. Over 33 percent of this was CIDA or concessional financing, elements which have become increasingly important in support of trade activity.

Technological Factors:

EXEMPT-
20(1)(2)(c)(d)

Federal and Provincial Programs and Policies

In the past, trade and market promotion, plant modernization and product improvement incentives available under various government programs have been utilized. Export financing and the concessional element have been critical. Product development and modernization assistance have been particularly important to Bombardier. While financial assistance under the ERDP program continues to be available to this sector, recent changes have reduced contribution levels. Crown procurement (VIA and CN), export financing and ERDP will likely continue to have a significant impact on the sector.

4. Evolving Environment

Domestic demand during the recent recession has fallen, affecting cash flows and profitability of the firms. World demand for locomotives is reasonably level, but it has recently decreased due to a worldwide economic recession. This is resulting in significant world overcapacity and rampant price cutting. World overcapacity in locomotive manufacturing is expected to continue, as competition from such countries as Japan and Korea increases.

The dynamic component of the market is in Third World countries. The market in industrialized countries is mature, and marked by requirements for local assembly, rebuild shops and technology transfer.

The factors which will play an increasingly important role in the competitiveness of the sector will be productivity improvements both of product and process, and the development of a high speed passenger rail technology. Technology transfer, joint ventures and licensing agreements may also play an important role in helping Canadian suppliers to access emerging markets.

5. Competitive Assessment

The Canadian industry has been competitive internationally and has been the world's leading exporter. American based suppliers, with about ten times the market and capacity, enjoy economies of scale unavailable to Canadian suppliers. With significant plant modernization and R&D programs as well, the U.S. competitors are threatening Canada's export position, both from technical and price points of view. In recent international tenders, GM Canada and Bombardier have been price competitive, while GE (the world leader) has consistently underbid both Canadian suppliers by about 10%, although it is not known how much of this is traceable to lower costs or predatory pricing.

EXEMPT-

SEC 20(D)(4)(c)(d)

EXEMPT
20(G)(4)(C)(d)

Prepared by: Erach Morrison

Approved by:  Charles Stadman

NAME OF SECTOR: LOCOMOTIVE SIC(s) COVERED: Ex. 326

1. PRINCIPAL STATISTICS

	1980	1981	1982	1983
Establishments	2	2	2	2
Employment - (approx.)	2,200	2,000	1,900	1,000
Shipments (\$ millions)	321.0	309.5	353.6	116.0
*Gross Domestic Product (Constant 1971\$ millions)				
*Investment (\$ millions)				
*Profits after tax				
Exports (\$ millions)	205.2	203.8	302.7	40.0
Domestic Shipments (\$ millions)	117.8	105.7	50.9	75.9
**Imports (\$ millions)	68.3	67.9	71.3	38.4
Canadian Market (\$ millions)	186.1	173.6	122.2	114.4
Exports - % of shipments	63.5	65.8	85.6	34.5
Imports - % of domestic market	36.7	64.2	140.0	33.3

* Not available due to consolidated financial reporting of companies divisional results.

** Spares and components only. This may not reflect total imports due to anomalies in Statscan reportings.

2. REGIONAL DISTRIBUTION - Average over the last 3 years

	Atlantic	Québec	Ontario	Prairies	B.C.
Establishments - % of total	N/A	50.0%	50.0%	N/A	N/A
*Employment - % of total		60.0%	40.0%		
*Shipments - % of total		46.8%	53.2%		

* Includes sub-suppliers.

3. MAJOR FIRMS

Name	Ownership	Location of Major Plants
1. General Motors Diesel Div.	GM Canada (US)	London, Ontario
2. Bombardier Rail & Diesel Prod. Div.	Bombardier Inc. (Can.)	Montreal, Quebec

4. FEDERAL AND PROVINCIAL GOVERNMENT PROGRAMS

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COMPETITIVENESS PROFILE

RAILWAY FREIGHT CAR INDUSTRY

1. Structure and Performance

There are four main manufacturers of freight cars in Canada, capable of producing up to 15,000 cars annually. In 1983, 1,833 units were produced (value \$108.0 million).

National Steel Car Ltd. began building cars in Hamilton, Ontario in 1912 and has manufactured most types of freight cars, except for tank cars; 1983 sales: \$40.0 million (661 units).

Hawker Siddalay Canada Ltd. (Trancon, Nova Scotia) commenced freight wagon production in 1930 and manufactures all types of freight cars, including tank wagons. The company also produces wrought steel wheels for railway vehicles and is the sole producer of freight car axles in Canada; 1983 sales: \$31.0 million (330 units).

Marine Industries Ltd. (Sorel, Quebec) manufactures light ships, heavy industrial turbines, and related equipment. In the mid-1950's MIL opted to build freight cars in order to take advantage of an available labour source (when the shipbuilding side experiences a downturn in orders); 1983 sales: \$28.0 million (334 units).

Procor Ltd., a subsidiary of the Union Tank Car Corporation (U.S.A.), was founded in Oakville, Ontario in 1952 as a lease operation. Procor subsequently began to manufacture tank cars to meet the requirement of lessees; 1983 sales: \$9.0 million (108 units).

2. Industry Strengths and Weaknesses

Structural:

There is significant overcapacity in the Canadian industry. The capacity of 12,000-15,000 cars per year vastly exceeds the historical annual average output of 5,000-6,000 (1974-1984), the recent average of 3,200, and the 1983 output of 1,833. This overcapacity combined with the cyclical character of the demand have created a disincentive to capital investment and modernization. Long-term adjustment has been hindered by regional concerns and the nature of the labour market. Labour can readily be cut back in downturns through layoffs or reassignment to other production areas (in the case of MIL) and recalled when required.

Some wagon manufacturers have been able to diversify production and keep their plants operating utilizing reduced production staff. Hawker Siddalay is currently manufacturing lime sludge kilns for paper mills, and are prepared to sign other contracts for non-structural steel fabricating. Marine Industries are looking for ship manufacturing contracts and will finish the current grain hopper car production by this spring. National Steel Car do not normally diversify their car production and tend to concentrate on obtaining additional orders from both the CNR and the CPR.

Trade Related Factors:

The industry has exported less than 10 percent of its output over the last decade, although Hawker Siddalay have exported up to 32 percent of their annual production in some years. Exports have been restricted to LDC's supported by government financing through CIDA or EDC. Other countries enjoy a competitive advantage in exports due to colonial ties (France and UK) or lower wage costs (Japan and Korea).

The Canadian market is protected by a tariff (17.5 percent) and non-tariff barriers. The latter derive from the procurement practices of the Canadian Wheat Board and the railways. A special group of tariffs is applied by Canada to foreign (U.S.A.) wagons entering Canada as part of the "international service" fleet. These units are granted privileges to operate on specific routes and can deviate from these routes for up to 90 days per annum only. Once a car exceeds this 90 day limit, a 17.5 percent tariff is applied against the monthly rental fee during its use as domestic equipment. From time to time pressure is brought to bear on the Government of Canada to ease the application of these tariffs — however, these duties have been enforced just as Canadian built cars have come under American enforced tariffs.

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Finally, it should be noted that, at Hawker Siddalay's request, an anti-dumping investigation has been announced against axles imported into Canada from Japan, the U.S., and the U.K.

Technological:

Robotics and MC (machine controlled) cutting, drilling, and milling operations are present in various degrees in the freight car plants in Canada. However, product and process innovation has been hampered by the lack of economies of scale, the need to employ an over abundant local labour force, and limited R&D budgets as a result of poor performance over the last several years in the domestic and export market.

There has been little product innovation in the industry. The freight wagon industry, except for aluminum cars, welded tank cars, and special purpose units utilizes older technology and leans towards standard designs. As for processes, the use of fully automatic welding machines and submerged torch plate cutting has been in use for the last few years, and is representative of the limited change which has occurred in this technology. CAD/CAM systems for car design have only recently come into use in Marine Industries Ltd. and National Steel Car Ltd. Hawker Siddalay is in the process of obtaining a CAD/CAM system for car design and tank car development and Procor have not identified CAD/CAM as a strong requirement.

3. Federal and Provincial Programs and Policies

The Canadian car industry has received federal government support for product innovation, Canadian sourcing of components, and overseas market development. Federal policy has also been used to support the status quo by distributing large government procurements among the major companies. The Wheat Board (or provincial) purchases of grain cars over the last 10 years have accounted for approximately 33 percent of domestic car purchases.

On occasion the government has supported the manufacture of railcars by the railways as a means to avoid layoffs in their overhaul and repair shops at times of excess capacity. This regional employment concern was a factor in the 1983 decision to manufacture coal cars at CN's Transcona (Winnipeg) shops. However, this activity is detrimental to the private car builders.

4. Evolving Environment

Domestic freight car demand for the next few years is not encouraging. Less than 1,500 cars will likely be ordered by the Canadian National and the Canadian Pacific Railways in 1985. Procor and Hawker Siddeley (GTX) predict that less than 650 tank cars will be manufactured for the leasing industry. In total, it is expected that less than 3,000 wagons will be ordered this year and the period 1986 to 1990 does not look any brighter.

The Canadian Wheat Board has no immediate plans to order additional hopper cars, hence the builders know the ordering pattern for the next few years is weak.

Potential opportunities exist in the development of lighter weight wagons, and the industry and their suppliers will need to undertake applied R&D to develop new products of this type. As Canadian railways become more conscious of operating (fuel) costs, they will tend to purchase light weight wagons whenever possible. Opportunities for export orders for these cars would however be minimal.

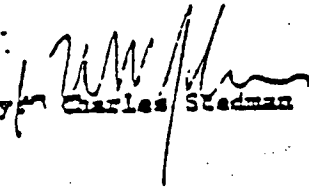
The export market also looks poor due to a lack of Canadian financing for markets with non-credit worthy buyers. Many of these markets are in LDC's which do not meet EDC financing requirements or are in sectors not supported by CIDA projects. The global deterioration in the international credit structure has also closed doors on export opportunities using unaided financing.

5. Competitiveness Assessment

The Canadian freight car industry is only marginally competitive domestically despite advantages due to tariff barriers, favourable exchange rates with U.S., and procurement preferences for Canadian firms on the part of Canadian railways and private users.

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20(1)(2)(c)(d)

Prepared by: Erach Morrison

Approved by:  Charles Stedman

PAGE SHEET

NAME OF SECTOR: RAILWAY FREIGHT CARS SIC(s) COVERED: Ex. 326

1. PRINCIPAL STATISTICS

	1980	1981	1982	1983
Establishments	4	4	4	4
Employment	3,800	3,200	1,400	1,000
Shipments (\$ millions)	486	452	190	113
Gross Domestic Product (Constant 1971\$ millions) (Product 85% Cdn content)				
Investment (\$ millions)	N.A.	N.A.	N.A.	N.A.
Profits after tax	N.A.	N.A.	N.A.	N.A.
Exports (\$ millions)	131	30	13	0
Domestic Shipments (\$ millions)	355	422	177	113
Imports (\$ millions)				
Canadian Market (\$ millions)				
Exports - % of shipments	25	6	7	0
Imports - % of domestic market (incl. components)	5	5	5	5

2. REGIONAL DISTRIBUTION - Average over the last 3 years

	Atlantic	Québec	Ontario	Prairies	B.C.
Establishments - % of total	25	25	50	-	-
Employment - % of total	22	24	54	-	-
Shipments - % of total	35	24	41	-	-

3. MAJOR FIRMS

	Ownership	Location of Major Plants
1. Hawker Siddaley	Canadian/British	Nova Scotia
2. National Steel Car	Canadian	Ontario
3. Marine Industries	Canadian/French	Québec
4. Procor	Prov. of Québec American	Ontario

4. FEDERAL AND PROVINCIAL GOVERNMENT PROGRAMS

FEMD AND EDC/CIDA support international marketing and sales. List any specific programs (financial or regulatory) that support the sector. The industry is not making extensive use of IRDP at this time.

Program	Type	Amount	Purpose	N/A
Provincial funding of capital acquisitions by operators.				
FEMD repayable grants \$1.0 million/yr. marketing.				

5. MAJOR REPORTS AVAILABLE

Name	Type of Report	Year
The Canadian Freight Car Industry 1974-84 & Profiles	Draft internal working document	1985

COMPETITIVENESS PROFILE

SHIPBUILDING, SHIP REPAIR, AND MARINE EQUIPMENT

1. Structure and Performance

Structure:

Output of this sector includes cargo vessels, ferries, ice breakers, fishing vessels, naval vessels, semi-submersibles, jack-ups, and drilling vessels as well as pumps, cranes, propellers, shafts, steering gear, and propulsion systems for these vessels. Both shipbuilding and marine equipment are classified under SIC 327*. The value of vessel construction and conversion work in Canada, as reported by Statistics Canada, averaged \$162 million annually between 1975 and 1984, in 1971 dollars. During the same 10 year period, the value of ship repairs averaged \$74 million annually, or just over 30 percent of the total value of shipyard work.

There are 21 major shipyards in Canada, with total yard employment in 1984 of about 8,000. These major yards represent 90 percent of employment, 91 percent of value added, and 92 percent of total production in the Canadian shipbuilding and repair sector. The residual of the sector's activities are accounted for by approximately 50 smaller yards and repair shops. The industry has facilities in the North West Territories and in every province, except Saskatchewan.

There is little foreign ownership. Yards are owned by both governments and commercial enterprises. The federal government owns and operates Department of Public Works docks in Quebec and British Columbia though it was announced in the May budget that the government wished to find buyers from the private sector for these facilities. The Government of Newfoundland owns Maryscott Shipyards, Prince Edward Island owns Georgetown, and the Quebec and Nova Scotia governments are part owners of shipyards (Marine Industries Limited - MIL and Halifax Industries Limited - HIL respectively). Some foreign participation is present through partial Alstom ownership of MIL. There also exists a degree of vertical integration between shipping lines operating in Canada and Canadian shipyards. Many of the major yards are wholly or partially held by such lines as ULS International, Genstar, CN Marine, Rytow Straits, and CSL.

Performance:

The average annual decline in new construction production value for 1975-84 has been 6.3 percent while the value of repair work has increased 2.7 percent. With respect to the value of new construction, conversion, and repair work, the rate of decline has been steeper over the past five years than during the 1975 to 1979 period. The secular decline in the value of production by Canadian yards reflects both the market

* The Marine Systems Division also has residual responsibilities for some items of specialized ocean equipment, pleasure craft, etc. not dealt with here.

volatility of the period and the erosion of the Canadian yards' competitive position in domestic and foreign markets.

During 1984, the current dollar value of production at member yards of the Canadian Shipbuilding and Ship Repairing Association (CSSRA) was \$539 million. This represented a decline of over 8 percent from the \$586 million value of work completed in 1982. However, it should be noted that the value of work in 1983 also represented a decline of 38 percent from 1982.

2. Strengths and Weaknesses

Structural:

There are more Canadian shipyards than can be justified on the basis of potential demand. The consequent underutilization of facilities has led to cost disadvantages in the order of 20 percent on new commercial bids, and cut throat competition and losses on government work. The absence of vertical integration with suppliers precludes any compensating efficiencies. Links with shipping companies and provincial governments are likely to impede consolidation. Shipyard hourly wage rates are 30 percent above the Canadian manufacturing average. Poor profit performance and market prospects have retarded capital investment in the sector, slowing innovation and productivity improvements. Government procurement allocation subsidies and ownership have not encouraged competitiveness, and labour has been slow to adjust to problems in the sector.

To a large extent, marine equipment is supplied to the shipbuilding industry by domestic and foreign manufacturers of industrial machinery and equipment. The bulk of these manufacturers are diversified in the products and markets they serve. There are a few manufacturers though which specialize in a product line dedicated to serving the marine equipment market. There are more than 160 companies which manufacture marine equipment, with Canadian content of 63 percent.

Trade Related Factors:

The Canadian shipbuilding industry claimed only .5 percent of the world market in 1983. Canada's major competitors are Japan, which held a 42 percent market share in 1983, and Korea, with almost 10 percent. The market shares of Norway, France, the United Kingdom, Holland, the United States, and Yugoslavia are declining. During the period 1970-1973, foreign shipyards had backlogs of up to four years and Canada was able to obtain export orders through STAP subsidies and by promising earlier delivery. However, world overcapacity is presently estimated at 40 percent for merchant ships and 20 percent for drilling rigs. In this environment, prospects for exports are poor. Canadian shipyards have excess capacity, while foreign yards frequently have lower supply costs, due to vertical integration, as well as better facilities and lower labour rates.

A tradition of protection marks the policies of virtually all shipbuilding countries. Seven out of 10 European shipbuilding countries as well as the United States, provide direct subsidies. The American market is virtually closed to Canadian yards. U.S. coastal shipping is reserved by the Jones Act to American built ships, and marine equipment has been excluded from the Defense Production Sharing Agreement by overrides in various U.S. appropriations acts. Most shipbuilding countries offer favourable export financing. Canada's export financing does not match the minimum rates agreed to under the OECD Understanding on Export Credit for ships. Canada does not have preferential interest-rates for ships built for the domestic market, as do the U.S. and virtually all industrialized shipbuilding countries. This context plus the appreciation of the Canadian dollar against most European currencies have made Canada's competitive position more difficult to sustain.

Technological Factors:

On the average, Canadian yards lag behind foreign yards in technology although the size of the margin varies with individual yards. Most yards are still in their original locations and have had to cope with physical constraints which hamper production of large modern vessels. These constraints, combined with slack demand, poor profits, and bleak market prospects, have also retarded the introduction of advanced production methods. Ideally these involve modular construction in covered facilities with heavy lifting at the assembly stage. They also involve adjustment to union job demarcation practices.

3. Federal and Provincial Programs and Policies

There has been a long-standing pattern of industry-wide subsidies at the federal level combined with yard-specific support by the provinces. In 1983, the federal government announced its decision to phase out direct production subsidies (no vessel completed after June 30, 1985 may be covered). Instead, a more uniform tariff is being applied in the traditional customs jurisdiction, and extended to the continental shelf zone for vessels used in activities related to resource exploitation. This decision was based on an optimistic outlook for domestic demand (especially related to offshore oil and gas) and the poor outlook for export competitiveness.

The tariff is 25 percent for all ships except fishing vessels over 100 feet in length, and 20 percent for drilling rigs. Temporary entry provisions allow some flexibility in implementing the tariff, and the industry has complained of abuse. The industry benefits from more generous capital cost allowances than most industries.

The strong demand anticipated in 1982 for the domestic offshore area has not materialized, resulting in declining employment and the postponement of necessary capital investment. Government procurement, which has always been important to the industry, has now become its mainstay. It is expected to constitute well over 40 percent of new construction business over the next 10 years. The competitive basis for awarding government contracts has been tempered by distributional criteria and allocations intended to maintain minimum levels of activity across the industry.

DECLASSIFIED = DÉCLASSÉ

EXTERNAL AFFAIRS = AFFAIRES ÉTRANGÈRES

In the May Budget Statement, the Minister of Finance announced that earning of credits under the Performance Improvement Grant scheme would no longer apply after June 30, 1985. However, \$100 million in credits are still likely to be disbursed and at the average annual disbursement rate of \$14 million, which has been the case over the last several years, it will take seven years to pay out these credits. They will be applied towards covering 50 percent of the costs of projects whose purpose is to modernize and improve shipyard productivity.

4. Evolving Environment

World demand is not expected to pick up before the end of the decade. While Canada previously could aspire to matching the prices of some European suppliers, the appreciation of Canada's dollar against European currencies has placed Canadian yards at a disadvantage. Meanwhile, new competitors (Korea, Brazil, and Taiwan) are undercutting even Japan, which has been forced to mothball 35 percent of its shipbuilding capacity. The world-wide pattern of subsidy and support is not expected to change sharply. Canada is, therefore, unlikely to reclaim a strong export role. Domestic demand is expected to remain poor, due to slower than anticipated offshore development, and world-wide oversupply and overcapacity. Even with unusually high levels of government orders, total person years of employment in new construction and repair are expected to average 3,000 or less for the rest of the 1980's, compared to an average during the 1970's of nearly 12,000.

5. Competitiveness Assessment

Recent international bids reveal that in most product areas, Canadian yards are uncompetitive on the world market. Canadian bids have been 30 to 70 percent higher than those of the most competitive foreign yards (Korea and Singapore) depending on the vessel type. Thus even with the protection of the 20 to 25 percent tariffs, Canadian yards are only marginally competitive in the domestic market.

EXEMPT
21(1)(a)

Prepared by: Alain Maloche

Approved by:  Charles Stedman

NAME OF SECTOR: MARINE SIC(s) COVERED: 327

1. PRINCIPAL STATISTICS

	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>
Establishments	69	70	69	49
Employment (census)	14,231	13,605	13,122	9,068
Shipments (\$ millions)	1,076.2	1,101.7	1,051.9	822.1
Gross Domestic Product (Constant 1971\$ millions)	168.4	165.1	164.0	172.1
Investment (\$ millions) (new capital)	31.0	47.8	58.3	28.6
Profits after tax	26.1	8.5	1.2	N.A.
Exports (\$ millions)	294	141	260	125
Domestic Shipments (\$ millions)	1,142	1,044	1,362	1,183
Imports (\$ millions)	51	252	80	572
Canadian Market (\$ millions)	899	1,155	1,183	1,355
Exports - % of shipments	25.7	13.5	19.1	13.8
Imports - % of domestic market	5.7	21.8	6.8	42.2

2. REGIONAL DISTRIBUTION - Average over the Last 3 years

	<u>Atlantic</u>	<u>Québec</u>	<u>Ontario</u>	<u>Prairies</u>	<u>B.C.</u>
Establishments - % of total	33.3	14.3	14.3	0.0	38.1
Employment - % of total	27.7	26.3	19.5	0.0	25.6
Shipments - % of total	24.9	26.4	18.3	0.0	30.9

3. MAJOR FIRMS

<u>Name</u>	<u>Ownership</u>	<u>Location of Major Plants</u>
1. Allied Shipbuilders Ltd.	Independant, MacLaren Family	V. Vancouver, B.C.
2. Bel-Aire Shipyard Ltd.	Mr. G. Forbes and two partners	V. Vancouver, B.C.
3. Burrard Yards Corp.	Versatile	V. Vancouver, B.C.
4. Collingwood Shipyards	Canadian Shipbuilding & Engineering Limited	Collingwood, Ont.
5. Les Chantiers Versatile Davie Limitée	Versatile Corporation	Lévis, Qua.
6. Ganstar Shipyard Co. Ltd.	Ganstar Corp.	V. Vancouver, B.C.
7. Georgetown Shipyard Inc.	Prince Edward Island	Georgetown, P.E.I.
8. Halifax Industries Limited	Receivership	Halifax, N.S.
9. Marine Industrie Limitée	65% Prov. of Quebec 35% Alstom	Sorel, Qua.
10. Marystown Shipyard Limited	Province of Newfoundland	Marystown, Nfld.

DECLASSIFIED = DÉCLASSÉ
EXTERNAL AFFAIRS = AFFAIRES EXTERIEURES

- 2 -

CONFIDENTIAL

<u>Name</u>	<u>Ownership</u>	<u>Location of Major Plants</u>
11. Picou Industries Ltd.	ULS Internacional Ltd.	Picou, N.S.
12. Port Arthur Shipbuilding	Canadian Shipbuilding & Engineering Limited	Thunder Bay, Ont.
13. Port Weller Dry Docks	ULS Internacional Ltd.	St. Catharines, Ont.
14. Rivtow Industries Limited	Independant	Vancouver, B.C.
15. Saint John Shipbuilding & Dry Dock Co. Ltd.	Irving Oil	Saint John, N.B.
16. Shelburne Marine Limited	Halco	Shelburne, N.S.
17. Versatile Vickers Inc.	Versatile Corp.	Montréal, Que.
18. Vico Steel Boat & Barge Construction Co. Ltd.	Mr. Vico Travisi	Dalca, B.C.

4. FEDERAL AND PROVINCIAL GOVERNMENT PROGRAMS

<u>Program</u>	<u>Type</u>	<u>Amount</u>	<u>Purpose</u>
SIAP	-subsidy	-9% of cost of vessel, not applicable to vessels completed after June 30, 1985	- assist in domestic and international sales of ships.
	-grant Performance Improvement Grant (PIG)	-credit 3% of vessel cost: \$15-20 million p.a. Earning of additional credits ends as of June 30, 1985.	-assist productivity improvement.
			-to ensure that all purchases by the provinces are from within their own provincial shipyards
DEFP	-grants		-enhance economic growth through promotion of viable financing or defence-related efforts.
PEMD-A	-cost sharing	-up to 50% of costs sustained by exporters	-share cost of bidding on specific projects anywhere outside Canada.
PEMD-F	-grant	-up to 50% of costs sustained by exporters	-helps Canadian exporters undertake sustained marketing effort in foreign market by establishing facilities on location.

5. MAJOR REPORTS AVAILABLE

<u>Name</u>	<u>Type of Report</u>	<u>Year</u>
Canadian Ocean Industries Directory	Directory of Canadian companies in Marine Industry	1980
Canada's Shipbuilding Industry: Prospects and Policy Options	Review of Industry	1983
Canadian Shipbuilding Industry: Sector Profile	Overview of Industry	1985 (To be released)
Offshore Hydrocarbon Exploration	Overview	1983
Offshore Field Profiles - four area papers	Descriptive Overviews	1983
Offshore Oil & Gas - three area papers	Scenario papers	1983
Product Papers - Pleasure Craft		1985
- Rigs and Structures		1984
- Supply Boats		1984
- Shuttle Tankers		1985

COMPETITIVENESS PROFILE

AGRICULTURAL MACHINERY

1. STRUCTURE AND PERFORMANCE

The Canadian agricultural machinery sector encompasses a wide range of farm machinery required for the various kinds of agricultural pursuits encountered in Canada including 4-wheel drive tractors, combine harvesters, grain drills and tillage equipment. In addition to three main line companies in Ontario, the sector comprises some 200 short line manufacturers located in Quebec, Ontario and the Prairie Provinces. The sector has annual shipments of some \$1.0 billion and employs an estimated 16,000 people.

Main line firms are those offering on the market a full line of farm equipment through an exclusive dealer network; the full line companies manufacture the major pieces of equipment, i.e. tractors and combines and either make or buy on an OEM basis a range of farm implements. In Canada, these firms include: (i) a Canadian-based multinational (Massey-Ferguson) which is the largest single producer in Canada accounting for about 40 per cent of the value of industry shipments; and (ii) subsidiary operations of two U.S.-based multinational firms (Deere and International Harvester/J.I. Case) whose production in Canada, while significant, does not extend to any major piece of equipment, i.e. tractors or combines. All of these firms produce equipment on a rationalized basis for the North American or world market. While Farm Canada, was but no longer can be considered a full line company in view of change of ownership, even though it still produces a line of self-propelled and pull-type combine harvesters.

Short line firms are those producing a specialized range of equipment for particular crops or geographical regions; such firms manufacture agricultural implements and attachments rather than tractors and/or combines. Short line companies are mainly Canadian-owned enterprises located in Western Canada. Versatile Farm Equipment, the largest "short liner" with annual sales of approximately \$230 million, manufactures large 4-wheel drive tractors, pull-type combines, and other implements for large-scale dryland farming. Owing to their position of leadership and pioneering development in large 4-wheel operations (the company is now Canada's second largest producer) Versatile could be considered a main line company.

Between 1973 and 1980, industry shipments increased at an average annual rate of over 21 per cent in current terms from \$339 million in 1973 - \$1,126 million in 1980. While exports also increased substantially over this period - increasing from \$290 million in 1973 to \$876 in 1980, an average annual rate of over 17 per cent - as a percentage of industry shipments they declined from 86 per cent in 1973 to 66 per cent in 1980. During this period, the sector improved its position in the domestic market, with the import share of the Canadian market decreasing from 92 per cent in 1973 to 80 per cent in 1980.

The world is in the seventh year of continuing depressed demand for farm machinery which has resulted in the near collapse of several major, full line companies; the short line manufacturers, owing to their specialization, lower overheads, and a surprising firmness of the Western Canadian market, fared relatively better experiencing a decline only starting in 1982. Overall, industry shipments declined by over 30 per cent from the peak level of \$1.3 billion in 1981 to \$905 million in 1983. Export shipments also declined significantly (28 per cent) over this period from \$885 million in 1981 to \$551 million in 1983.

2. STRUCTURE AND CAPABILITIES

The principal strength of the industry lies in the favourable market access to and successful exploitation of the large United States market on the basis of long standing virtual free trade with that country. As a result, problems normally related to production scale and/or fragmentation are not a significant factor for this industry. While imports from the United States dominate the Canadian market, this is offset by the export opportunities for Canada in the much larger United States market. Competition from the other world sources, i.e. Europe and Japan, is not a significant factor as offshore equipment is usually not suited to the large scale farming practices prevailing in much of Canada and the United States, or consists of products which have never been made in Canada, e.g. conventional 2-wheel drive farm tractors.

Over the years, Canada has successfully developed specialized machinery for the production of cereal grains on large farms under dryland farming conditions. Designed to meet the needs of the Western Canadian grain farm, this equipment which is internationally competitive in price is also well suited to the requirements of other large scale farms throughout the world, especially the grain growing regions of the United States and Australia where it has enjoyed significant success in recent years.

The Canadian industry is technologically competitive and, in recent years, has been at the forefront of several technological achievements including the development of large capacity 4-wheel drive tractors and axial flow combines. While product improvements will continue to be made, no significant new technological breakthroughs are expected.

Despite the recent severely depressed market conditions which have resulted in low capacity utilization rates and extensive layoffs, the sector has retained a solid core of skilled workers, good engineering support, and currently benefits from a competitive cost structure for most major inputs (i.e. labour, materials, transportation). The retrenchment and consolidation process that has been carried out in the worldwide operations of the major multinational companies has not resulted in the divestiture or abandonment of farm machinery product segments for the operations of these companies in Canada. In the case of the short line, mainly Canadian-owned firms, their operations which focus on specialized equipment have been less adversely affected by the market downturn and their greater resiliency has enabled them, so far, to avoid major dislocations.

The main line machinery manufacturers have seen their financial position severely weakened as a result of depressed markets and the high cost of maintaining large inventories and servicing their debt loads. In this regard, Massey-Ferguson have managed through divestitures, downsizing and cost cutting measures to approach a breakeven position after suffering \$1 billion of losses since 1978. The recent acquisition of the agricultural equipment activities of International Harvester by I.T. Case could have a considerable effect on International Harvester's operations in Canada and the United States and while it is too early to assess its impact, the merger could prove beneficial for the Canadian operation in view of its current production capabilities which complement those of I.T. Case in the U.S. While Case has been saved from bankruptcy through government assistance but their excellent line of large combines is high cost and produced in antiquated facilities; the future of this operation is by no means assured. Deere and Company is in a strong competitive and financial position and could engage in predatory practices that could increase their North American market share considerably at the expense of Massey-Ferguson and to the detriment of Canada since the Deere manufacturing operations in Canada are not very significant.

The long awaited market resurgence for farm machinery has not yet materialized and prospects for an improvement in 1983 are not very promising. This will continue to put pressure on the industry and will severely limit its capacity to undertake the research and development and productivity improvements required to keep up with international

competition. While short line manufacturers as a group are not facing any major threat, individual firms are vulnerable to management weaknesses typical of small enterprises. In addition, they face a competitive threat from major main line companies who are able to offer better financing terms and price discounting and can impose stringent conditions on OEM purchases.

3. FEDERAL AND PROVINCIAL PROGRAMS AND POLICIES

Since 1981, federal and provincial governments have provided over \$250 million of adjustment assistance for three farm machinery companies facing financial difficulties (i.e. Massey-Ferguson, Canadian Cooperative Implements Ltd. and White Farm). In addition, approximately \$25 million in DREZ incentive programming assistance has been provided in the same period to support the research and development, plant expansion and modernization and export market development of many companies. The federal government, over the years, has also mounted a large program of trade fairs, missions and seminars to support market penetration in the United States, Australia, Europe and other cereal producing areas of the world amenable to the kinds of dryland farming conditions encountered in North America.

4. EVOLVING ENVIRONMENT

Over the long-term, the farm machinery sector is assured of a stable but mature market environment as food production increases to meet population growth. As in the past, cyclical demand fluctuations will occur in response to such factors as climate, crop conditions, farm commodity prices, farm incomes, interest rates, attitudes of buyers and agricultural policies of governments. There is widespread expectation that market conditions will move to more satisfactory levels although a return to the high level of demand experienced during the 1970's will not occur for some time to come. However, there is an emerging concern that over the longer term farm equipment markets could be adversely affected by abnormally high farm debt and the resultant diminished expectations for an early return to increased farm incomes.

Meanwhile, the hoped for market resurgence did not take place in 1984 and only modest improvement is foreseen for 1985. A return to more normal market conditions is needed to assure the viability of a number of the larger firms that are still in a tenuous financial position despite the considerable downsizing of operations that has taken place. In the short-term, improved market conditions will enable companies to reduce inventories, reactivate idle operations and rebuild their balance sheets. It will be some time, however, before the industry will again reach a level of full capacity utilization. In the circumstances, there will be little need to invest in new production capabilities although competitive pressures will undoubtedly force the pace of productivity and product improvement.

5. COMPETITIVENESS ASSESSMENT

The agricultural machinery sector is internationally competitive in terms of price and technology and despite low capacity utilization rates and extensive layoffs which have resulted from severely depressed market conditions in recent years, the sector has retained its competitive productive capabilities.

For the last seven years of depressed market conditions, the process of adjustment on the part of the main line companies facing financial difficulties has been proceeding along a continuing and difficult path. The process is now largely completed as companies approach a breakeven point at a reduced level of demand and look to moderate market improvements to assure continued viability. The short line companies, because of their greater resiliency and lesser exposure have not, in the main, suffered major dislocations and should be able to achieve higher capacity utilization rates and rebuild employment levels as markets improve.

EXEMPT-
20(1)(2)(c)(2)

There are several areas in the world that are suitable for the kind of dryland farming practices that have been developed successfully in the cereal growing regions of North America, and there is a growing interest on the part of many countries to adopt such techniques. This presents opportunities for Canadian farm machinery firms that specialize in machinery suited to dryland farming to increase and diversify their export sales. In this regard, a continued and intensified export promotion program by the government might involve a significant payback.

Government policies aimed at improving farm incomes should result in stimulating demands for farm machinery and would contribute to the stability and growth of the agricultural equipment industry.

Prepared by: _____

Approved by: Norman A. Fraser
Norman A. Fraser

FACT SHEET

EXTERNAL AFFAIRS = AFFAIRES EXTERIEURES

NAME OF SECTOR: Agriculture

SIC(s) Covered: 311

1. PRINCIPAL STATISTICS

	1980	1981	1982	1983
Establishments	206	207	197	203(a)
Employment	17425	16073	12795	12500(e)
Shipments (\$ Millions)	1325	1351	1106	905
Gross Domestic Product (Constant 1971 \$ Million)	211.2	184.1	117.7	105.4
Investment (\$ Millions)	20.9	18.6	6.2	3.3
Profits after tax (\$ Millions)	5.9	(17.4)	(117.5)	N/A
Exports (\$ Millions)	376	885	631	551
Domestic Shipments (\$ Millions)	450	466	455	354
Imports (\$ Millions)	1823	2164	1568	1405
Canadian Market (\$ Millions)	2273	2530	2023	1759
Exports - % of Shipments	66%	66%	59%	61%
Imports - % of Market	80%	82%	78%	80%

2. REGIONAL DISTRIBUTION - Average over the Last 3 years.

	Atlantic	Quebec	Ontario	Prairies	B.C.
Establishments - % of Total	2%	10%	36%	38%	4%
Employment - % of Total	1%	4%	55%	40%	-
Shipments - % of Total	-	4%	55%	41%	-

3. MAJOR FIRMS

	Name	Ownership	LOCATION OF MAJOR PLANTS
1.	Massey-Ferguson	Canadian	Brantford, Ont.
2.	Vertac	Canadian	Winnipeg, Man.
3.	International Harvester	U.S.A.	Hamilton, Ont.
4.	John Deere	U.S.A.	Welland, Ont.
5.	Degelman Industries Ltd.	Canadian	Regina, Sask.
6.	Flam-Coil Ltd.	Canadian	Saskatoon, Sask.
7.	Mac Don Industries Ltd.	Canadian	Winnipeg, Man.
8.	Morris Rod-Weeder Co. Ltd.	Canadian	Yorkton, Sask.
9.	Rice Way Mfg. Co. Ltd.	Canadian	Regina, Sask.
10.	Leon's Mfg. Co. Ltd.	Canadian	Yorkton, Sask.
11.	Vertac Industries Ltd.	Canadian	Vermilion, Alta.
12.	Victory Equipment Ltd.	Canadian	Lethbridge, Alta.

4. FEDERAL AND PROVINCIAL GOVERNMENT PROGRAMS (as appropriate)

List any specific programs (financial or regulatory) that support the sector.

Program	Type	Amount	Purpose
ERP, PRP	Promotional Programs	-	Financial Incentives. Major adjustment assistance provided to White Farm and Massey-Ferguson

5. MAJOR REPORTS AVAILABLE (As appropriate)

List any task force, policy review, parliamentary committee reports or detailed profile available on the sector.

Name	Type of Report	Year
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* Use the 1980 SIC classification.

COMPETITIVENESS PROFILE

RESOURCE MACHINERY

1. STRUCTURE AND PERFORMANCE

The sector comprises those companies engaged in the production of machinery and equipment required by Canada's resource industries and includes mining equipment; forestry equipment (pulp and paper, logging, woodworking and sawmilling); power generation equipment (boilers, pressure vessels, engines and turbines); construction equipment; and oil field production equipment. These products are normally included within SIC 301, 302, 309, 315. This sector includes over 750 firms with total shipments of \$3.0 billion in 1984 and exports of \$1.1 billion. Approximately 25 large firms dominate the sector typically with sales volumes in the \$100 million range. The majority of these firms are foreign subsidiaries active in at least two or three resource equipment markets while the remaining smaller firms, often Canadian-owned, specialize in a more limited product range. The sector is concentrated in Ontario and Quebec with regional areas of specialization such as in Alberta (oil and gas equipment) and British Columbia (forest harvesting and sawmilling equipment).

Between 1973 and 1981, shipments of all types of resource machinery increased from \$0.3 billion to \$3.2 billion, an average annual growth of 18.3 per cent in current terms. A notable feature of sector expansion during this period was significantly improved export performance. In this regard, exports moved from \$0.2 billion in 1973 to \$1.2 billion in 1981 (23.7 per cent average annual growth) with export orientation of production going from 25 per cent to 36 per cent. At the same time, however, rationalization and specialization trends have resulted in a narrowing of the product base opening the way for significantly increased penetration in the domestic market. In this regard, imports were taking 70 per cent of the Canadian market by 1980 versus 61 per cent in 1973 and the implicit self-sufficiency of the sector (i.e. shipments/domestic market) moved down during this period from 60 per cent to approximately 35 per cent.

During the past three years (1981 to 1984), resource machinery manufacturers, as a group, have experienced the largest cyclical decline of all sectors in the machinery industry. Overall, shipments have dropped more than 10 per cent from the peak levels reached in 1981, from \$3.2 billion to \$2.3 billion in 1983 and it is estimated that 10,000 jobs were lost in the sector during this period. The sharp decline in both domestic and international markets for resource machinery has resulted from reduced investments in major resource projects due to lower prices for most forest products, minerals, particularly copper, lead and nickel as well as excess petroleum supplies and sharply curtailed energy exploration and production.

Despite a consumer-led economic recovery which has been under way throughout 1983 and 1984, resource equipment firms have not experienced significant sales increases and healthy markets are not expected to be restored quickly. In this regard, the main determinant of expected new domestic market demand, investment in major new mineral and energy projects, is still some way off and when initiated these projects are likely to be staged over a longer period than had previously been expected. In addition, several major capital projects in developing countries have been set back by debt problems and world over-supply.

2. INDUSTRIAL STRENGTHS AND WEAKNESSES

Structural

Despite cyclical problems, resource machinery manufacturers continue to provide a diversified range of high quality products to meet the particular needs of Canada's varied resource industries as well as international market demands. In general, Canadian manufacturers have derived a considerable competitive advantage from their long standing reputation for service and reliability established through close association with the development of the Canadian resource base. Many areas of resource machinery production (e.g. mining, power generation, and pulp and paper equipment) involve custom-engineered equipment where "production scale" is a less significant factor than in many other industry sectors. Accordingly, Canadian production facilities are normally of a size comparable to foreign competitors although plant loading ratios tend to be less due to the relatively small domestic market. Scale economies are more important in forest harvesting equipment and construction equipment where limitations imposed by the small size of the Canadian market for each type and size of equipment has forced specialization, accompanied by increasing imports to fill out the product range.

While Canadian manufacturers demonstrate competitive strength across a wide range of product categories, their capabilities tend to be selective within each product area as indicated in the following summary:

- **Mining Equipment** - Canadian equipment manufacturers have demonstrated competitive strength in underground loading and hauling equipment, drill jumbos, hoisting skips and cages, and a wide range of beneficiation equipment. On the other hand, there are product gaps in many areas of open pit mining equipment such as draglines, power shovels, large rotary drills and underground locomotives. While the mining equipment sector achieved significant export gains in recent years, there is some evidence that the sector is strongest in areas of mature technology and may not be well placed to take advantage of expected new equipment markets, particularly in open pit mining. This sector continues to be adversely affected by insufficient demand and has been consistently losing its domestic market share to foreign, mostly Western European and Japanese producers.
- **Construction Equipment** - Capabilities in this sector are highly selective but include competitive production of front end loaders (small/medium size), road graders and excavators (larger sizes). Severely depressed market conditions have resulted in considerable consolidation moves involving the subsidiaries of large CNE's and recent corporate decisions have resulted in the termination of the Canadian production of rough terrain cranes, and asphalt rollers. A competitive cost structure continues to exist for selected rationalized production units in Canada but economies of scale considerations are limiting indigenous developments in large high unit cost standard products which take up a large portion of equipment markets in this area.
- **Power Generation Equipment** - Canadian production capabilities are fairly complete and involve mainly custom-engineered high technology products. Particular strengths include large hydro electric turbines, highly specialized turbine shaft valves and a wide range of thermal power generation equipment including power boilers and boiler room equipment. There is limited production of small hydraulic turbines and only one manufacturer of large steam turbines. While the Canadian industry is internationally competitive on the basis of technology and price, it is sometimes prevented from seeking export markets due to

corporate affiliations and licensing arrangements and some fragmentation of production exists as a result of locating production units in such a way as meet the preferences of provincial utilities. The sector has a limited capability to undertake turnkey projects and a still underdeveloped Canadian consulting/construction engineering industry are competitive disadvantages in the export market. In addition, markets in Japan and most European countries are closed to Canadian firms due to the Buy National policies of the major utilities in these countries.

- Pulp and Paper - Canada has an internationally competitive forest equipment sector with strong technical capability in paper mill equipment, particularly pulp mill equipment and technology. While pulp and paper equipment firms remain competitive internationally on the basis of price, quality and delivery, manufacturers consider that their position in their own home market has been adversely affected by foreign concessional financing and dumping.
- Forest Harvesting Equipment - Canadian manufacturers of forest harvesting equipment produce a complete range of machinery suitable for harvesting all species of trees on all types of terrain and have established a world reputation for supplying highly reliable wheeled skidders which is the basic element in mechanized logging operations. A competitive disadvantage currently affecting forest harvesting equipment firms is the fact that all engines, transmissions and drive train components (approximately 50 per cent of unit cost) must be imported, mostly from the United States where an unfavourable exchange rate is increasing costs significantly in relation to imports and on export sales to other than the United States.
- Oil Field Production Equipment - Canadian manufacturers of a wide range of oil field equipment including specialized wellhead assemblies, high volume pumps, blowout preventors, and gate valves have maintained a reasonably good competitive position despite cyclically depressed markets. This sector now provides approximately 50 per cent of domestic market needs, competes strongly against U.S. firms in a tariff free environment and is developing a solid reputation for many types of specialized equipment for hazardous, climatic and undersea environments.

Across all sub-sectors, there are a number of structural problems which are preventing manufacturers from obtaining higher levels of profitable growth. For instance, the competitive position of several of the larger subsidiary firms in the sector continues to be adversely affected by restricted product mandates, low levels of indigenous R & D and a tendency to assembly-type operations. In addition, a number of firms which are manufacturing similar products or have comparable facilities to their foreign parents are not assigned export orders within the corporate structure unless they can obtain generous Canadian export financing. This constraint is impeding the sector's ability to compensate for depressed domestic markets by aggressively seeking more foreign sales.

The weakened financial position of most resource machinery manufacturers is placing significant constraints on needed new investments just at a time when the sector must increase productivity to meet increased international competition. For the smaller Canadian-owned firms, this will be a particularly difficult adjustment problem. For the larger subsidiary firms access to new financing may be available through parent firms but in most cases subsidiaries will be in competition for funds with other parts of the corporate organization and commitments to invest in Canada will be influenced by a range of economic environment factors, i.e., taxation, regulatory, etc.

Trade

As previously indicated, trade is extensive in all categories of resource machinery with exports providing a rising share of overall production and imports taking an increasing share of the domestic market. However, since the volume of imports has been substantially greater than exports, the cumulative impact of this process has been a large and growing deficit in sector trade, which increased from \$0.7 billion in 1973 to \$1.6 billion in 1981. Since 1981, sharply lower domestic demand has significantly reduced imports and hence the trade imbalance, but this cyclical decline is expected to end when more normal markets return. While it would be unrealistic to expect balanced trade given the very wide range of equipment required by our resource based economy and the competitive pressures that have developed internationally; nevertheless, the large import penetration and subsequent narrowing of the production base is seen as a deterrent to higher levels of new capital investment and hence a long-term problem for the sector.

The pattern of trade in the resource machinery sector also varies somewhat from most other capital goods sectors in terms of trade with the United States. While the U.S. continues to be the largest single market for resource machinery exports (approximately 50 per cent of exports since 1980), the ratio of exports into the United States versus other markets is considerably lower than the 70 to 80 per cent share which applies to most other machinery products and most capital goods items. This reflects the fact that major capital projects in developing countries and the Pacific Rim have become increasingly important markets for Canadian manufacturers.

Imports, on the other hand, do come predominantly from the United States (approximately 80 per cent of imports since 1980), however, to a large extent this may represent the importation of a wide range of standard equipment items not manufactured in Canada as well as imports of component parts from parent firms in the United States. In general, the major competition for resource machinery firms in the domestic market and in third country markets tends to come now from equipment producers in the EEC, and Japan. In this regard, major European competitors such as the Firms and Sweden continue to subsidize their resource sectors, (including related machinery, as part of national strategies to improve their position in world markets. These subsidies take the form of tied and concessional financing arrangements and inventory and market support policies which often allow manufacturers to marginally price their products in other markets. In addition, there has recently been a noticeable increase in offshore competition as a result of the emergence of very efficient low cost heavy equipment fabricating facilities in newly industrialized countries such as South Korea, Singapore, Brazil and Mexico.

3. FEDERAL AND PROVINCIAL PROGRAMS AND POLICIES

Resource machinery manufacturers in Canada are self-reliant corporations which have not and are not likely to require future large scale government intervention to remain profitable, and in company with most other machinery sectors, these firms are not significantly influenced by government regulatory or market interventions, particularly at the federal level. With the notable exception of power generation equipment, federal and provincial governments are not major purchasers of resource machinery and therefore exercise little influence through procurement policies. Similarly, while there are some provincial government research facilities which support equipment testing and design in the forest harvesting and energy sector, by and large there is limited technological support for the sector through this medium. In addition, resource machinery manufacturers obtain little or no tariff protection over a wide area of their product range (mining equipment, metallurgy equipment, oil and gas, fertilizer production equipment, etc.) as this equipment is imported duty-free into Canada under "end use" tariff items designed to lower costs to resource processing industries.

However, as the sector provides inputs to a wide range of basic resource industries, it does benefit very directly and quickly from broad government framework policies (tax incentives, accelerated depreciation, etc.) aimed at stimulating overall demand, even though these measures convey no preference on Canadian manufactured equipment as opposed to imports. The introduction of the Front End Loader Remission Order by the federal government in 1980 has also led to a significant increase in productivity and exports of this equipment and there may be opportunities to introduce similar measures in other sub-sectors with special needs. In addition, resource machinery manufacturers should continue to be assisted through incentive programs for R & D, innovation and export market development at the firm level, but it must be recognized that these incentives can have only a marginal impact on overall sector performance. All resource machinery manufacturers in Canada remain vulnerable to foreign tied and concessional financing practices and the effects of "dumping" in the Canadian market, and accordingly, they will need to rely on the timely and expeditious application of anti-dumping procedures and other compensatory measures when called for. However, there is a hesitancy on the part of Canadian manufacturers to resort to anti-dumping action in order to avoid offending their major clients in the Canadian market. Accordingly, regulatory measures of this kind have not proven particularly effective in the past.

4. EVOLVING ENVIRONMENT

As a result of the recent cyclical decline, resource machinery manufacturers as a group have been forced to implement strategies designed not only to ensure survival in the immediate future, but to position themselves for the market environment in the decade beyond. In this regard, they expect that since domestic and international markets are likely to grow more slowly than they did in the 1970's, markets will be more competitive requiring investments in new and more efficient marketing structures and production processes. In addition, while technology developments will continue to be influenced mainly by changes in user demand patterns and will be evolutionary rather than revolutionary, there are some emerging trends which will require increased levels of indigenous R & D and technology exchange if Canadian firms are to remain competitive. These trends include the application of computer controlled drilling equipment for mines, the development of robotic devices for hazardous underground environments, increased use of electronic components in forest harvesting and construction equipment, and the introduction of CAD/CAM and flexible manufacturing systems to their engineering, design, and production processes.

5. COMPETITIVE ASSESSMENT

The resource machinery and equipment sector in Canada has had the resiliency to specialize and increase exports significantly in a market environment which has become increasingly international in nature. Although currently struggling to recapture pre-recession output levels, the sector retains a solid core of skilled workers, good engineering support, and currently benefits from competitive cost factors (labour materials, etc.) in relation to its major competitors in the United States and Europe. In general, the sector is self-reliant and is not likely to require major government intervention to remain competitive.

At the same time, sector rationalization and specialization brought about by the need to adjust to increased competition in international markets has resulted in progressively larger gaps in the range of products produced. This process has opened the domestic market to increased import penetration while restricting further the ability of manufacturers to supply turnkey packages in export markets. Although it has access to state of the art technology through inter-corporate linkages, the sector lacks sufficient indigenous technology and tends to react rather than lead in new technical developments. In addition, the sector is vulnerable to foreign tied and concessional financing

practices, particularly in the domestic market and this is becoming increasingly troublesome. Since orders in the domestic markets tend to be very large and infrequent, their loss to foreign competition can be a severe blow to the competitive stature and reputation of Canadian firms affecting performance in the export market as well.

Against this background, it appears that while the sector is basically well situated to continue to contribute meaningfully to future economic development, there will need to be a number of structural adjustments made to meet this objective. Chief among these will be:

- The need to secure substantially increased investments by major subsidiary firms in new fully mandated production units which will not only provide more efficient and internationally competitive capabilities, but will also provide scope for broadening the product base in Canada and help counter the erosion of the domestic market base.
- The need for firms in the sector to expand product development and R & D as well as to make investments in productivity improvement and the utilization of new technologies.
- The need for firms to strengthen their ability to aggressively pursue export opportunities. In some cases, this will imply a greater freedom and more active role for subsidiaries in participating in multilaterally financed projects abroad and in turnkey operations.

As previously indicated, the role of government in this process will primarily be to set the appropriate economic and policy climate in order to encourage the significantly higher investment levels that are needed. In addition, however, the continued application of financial incentives, particularly in support of R & D and the acquisition of new technology, the delivery of improved export market development programs and services as well as the appropriate application of regulatory measures to counter the effect of heavily subsidized foreign imports, can all significantly assist the sector to improve its competitive position in both domestic and international markets.

Prepared by: _____

Approved by: _____

Norman A. Fraser

NAME OF SECTOR: RESOURCE MACHINERY

SIC(s) Covered: 313

1. PRINCIPAL STATISTICS

	1980	1981	1982	1983
Establishments	N/A	N/A	787	N/A
Employment	N/A	N/A	40000	N/A
Shipments (\$ Millions)	2570.7	3222.0*	2782.0	2365.7
Gross Domestic Product - (Constant 1971 \$ Millions)	N/A	N/A	N/A	N/A
Investment (\$ Millions)	N/A	N/A	N/A	N/A
Profits after tax (\$ Millions)	N/A	N/A	N/A	N/A
Exports (\$ Millions)	1015.2	1165.3	1070.4	907.3
Domestic Shipments (\$ Millions)	1555.5	2056.7	1711.6	1458.4
Imports (\$ Millions)	3228.5	3236.7	2390.2	2077.4
Canadian Market (\$ Millions)	4784.0	5283.4	4101.8	3535.8
Exports - % of Shipments	39%	36%	38%	38%
Imports - % of Market	67%	61%	58%	59%

2. REGIONAL DISTRIBUTION - Average over the Last 3 years.

	ATLANTIC	QUEBEC	ONTARIO	PRAIRIES	B.C.
Establishments - % of Total	N/A	N/A	N/A	N/A	N/A
Employment - % of Total	N/A	N/A	N/A	N/A	N/A
Shipments - % of Total (est.)	2	23	60	10	3

3. MAJOR FIRMS

	NAME	OWNERSHIP	LOCATION OF MAJOR PLANTS
1.	Jarvis Clark	England	Burlington, Ont.
2.	Beloit	U.S.A.	Sorel, Quebec
3.	Timberjack Ltd.	U.S.A.	Woodstock, Ont.
4.	Babcock Wilcox	U.S.A.	Cambridge, Ont.
5.	Combustion Engineering/Superheater	U.S.A.	Sherbrooke, Quebec
6.	Ingersoll-Rand Canada Inc.	U.S.A.	Sherbrooke, Quebec
7.	Dominion Engineering	U.S.A.	Montréal, Quebec
8.	Champion Road Machinery Ltd.	Canadian	Goderich, Ont.
9.	Caterpillar Canada Inc.	U.S.A.	Mississauga, Ont.
10.	Dresser	Canadian	Edmonton, Alta.
11.	Porta-Systems Ltd.	Canadian	Edmonton, Alta.
12.	Whitehead Engineering	Canadian	Agincourt, Ont.

4. FEDERAL AND PROVINCIAL GOVERNMENT PROGRAMS (as appropriate)

List any specific programs (financial or regulatory) that support the sector.

Program	Type	Amount	Purpose
IRDP, FEMD, CIDA, EDC		-	Financial Incentives
Front End Loader Remission Order		-	Duty Remission

5. MAJOR REPORTS AVAILABLE (As appropriate)

List any task force, policy review, parliamentary committee report or detailed profile available on the sector.

NAME	TYPE OF REPORT	YEAR
A Profile of the Mining Machinery and Equipment Sector in Canada	Profile	1982

* Use the 1980 SIC classification.

COMPETITIVENESS PROFILE

PLANT AND INDUSTRIAL MACHINERY

1. STRUCTURE AND PERFORMANCE

This sector includes a wide range of plant and industrial machinery and equipment required for the most part in secondary manufacturing and processing industries. Included are rolling mill and metalworking equipment, pumps, compressors, materials handling equipment, plastics and rubberworking equipment, machine tools, printing, and packaging equipment, and food and beverage equipment.

The sector encompasses close to 1,300 firms located for the most part in Ontario and Quebec with a production in 1984 of \$4.5 billion. As a group, firms producing industrial plant equipment have a relatively high degree of Canadian ownership compared to other machinery sectors but this can vary significantly by sub-sector.

Between 1973 and 1980, production of plant and industrial equipment in Canada increased at an average annual rate of 13.7 per cent in current terms from \$1.3 billion in 1973 to \$3.5 in 1980. During this period, exports increased from \$0.3 billion in 1973 to \$1.0 billion in 1980, an average annual growth of over 19 per cent; exports as a percentage of the sector's output increased from 24 per cent in 1973 to some 30 per cent in 1980. At the same time, imports into Canada grew at an average annual rate of 17 per cent, however, the import share of the Canadian market has remained virtually the same since 1973 at some 60 per cent.

All sub-sectors of plant and industrial equipment have been adversely affected by declining markets during the last two years with shipments dropping to \$3.0 billion in 1983 from a high of \$3.7 billion in 1981. Export shipments in 1983 were \$1.1 billion, representing a sharp increase in export orientation (37 per cent versus 33 per cent in 1981), as many smaller firms in the sector were forced to pursue foreign sales in the face of declining domestic markets and increased import competition. While markets for most categories of plant and industrial equipment remain soft, based on expected modest new investment levels in user industries, there has been notable improvement in order bookings in 1984. In particular, sales of machine tools, plastics and printing machinery are expanding as the automotive and other consumer related industries continue to expand. In addition, manufacturers of packaging equipment report sales and order bookings have returned to pre-recession levels.

2. STRENGTHS AND WEAKNESSES

Structural

In common with most other machinery sectors, competitive strength in plant and industrial equipment tends to be selective in terms of the range of sizes and models of equipment produced. Particular strengths include specialized packaging equipment, customized machine tool equipment for the automotive industry, steel plant and heat treating equipment, and a wide range of equipment for the food and beverage industry. Since plant and industrial equipment markets encompass a very broad range of distinct machinery needs, demand tends to grow at a relatively constant rate, reflecting the need to replace and update obsolete equipment. This feature has allowed a large number of relatively small Canadian firms to develop successfully while avoiding the higher overheads associated with more cyclical markets such as those for resource machinery. In addition, since individual orders tend to be much smaller than those in the resource machinery sector, the financing of large work in process inventories and the need for sales financing is not normally a problem.

As a group, firms producing industrial plant equipment have a relatively high degree of Canadian ownership compared to other machinery sectors but this can vary significantly by sub-sector. The majority of smaller Canadian-owned firms, while innovative and aggressive, often lack the financial resources to maintain extensive ongoing marketing and R & D programs and although production cost factors, materials, labour, etc. are competitively available, the overall cost structure of the group is somewhat higher than those of most foreign competitors. This is due to the fragmentation caused by the limited domestic demand for each type and size of machine. In addition, investment levels in the sector over the past five years have been adversely affected by high interest rates and sharply reduced capital formation as a result of the recession.

The competitiveness of Canadian firms producing industrial plant equipment varies significantly by sub-sector.

- Canadian packaging, printing, plastics and rubberworking equipment manufacturers have developed a competitive world position in a number of product areas on the basis of quality and technology and are competing successfully against U.S. and German firms who have a much larger domestic market base.
- Industrial plant and materials handling equipment firms have demonstrated capability in a selected range of forklift trucks, conveying systems, overhead cranes and elevator systems. In general, Canadian production of such equipment is aimed at the domestic market and in many instances is carried out by subsidiaries of U.S. parents in plants which normally duplicate the parent company's product line. Most firms in this sector are presently operating in a shrinking worldwide market environment under intense import pressure which has resulted in substantial consolidation of North American production.
- Canadian machine tool builders are competitive in a very selected range of standard products, primarily for the machine shop and institutional (training) markets as well as in special purpose custom-designed machinery for the automotive industry; Canadian firms do not compete in a number of more sophisticated machine tool markets. Canadian producers have developed expertise primarily in areas where there has traditionally been a solid domestic market, however, increasingly they are required to pursue export markets to obtain the volume of business needed to remain competitive and to sustain new investment. At the same time, manufacturers of standard machine tool products are meeting increased competition from both Asian and East European countries; as well, the industry is not well placed to enter more sophisticated markets in face of severe import competition from Japanese and Western European manufacturers.
- Canadian tooling manufacturers produce a fairly wide range of standard and custom-designed tools and dies, work holders and jigs and fixtures. There is limited capability in specialized cutting tools and very selected capability in machine tool accessories. Canadian tools have a good reputation for quality but are primarily sold to domestic tool and die shops which serve the needs of local industry. However, in some lines of custom tooling production Canadian manufacturers, located in proximity to large U.S. industrial centres, are competitive and have been successful in exporting to the United States. Canadian producers are presently meeting considerable import competition in cutting tools from Brazil, India, Japan, the United States, the U.K. as well as other countries. In addition, the competitiveness of Canadian tooling manufacturers is being adversely affected by the requirement to source much of their material inputs from the United States as Canadian producers do not offer a full range of tool steels. Accordingly, material costs have increased significantly due to unfavourable exchange rate differentials.

- Canadian food and beverage processing equipment manufacturers have demonstrated competitive strength in milk sterilization and bakery equipment, meat processing equipment and some specialty machines such as continuous sausage making systems, and are active in both domestic and export markets. The sector is strongest in areas of mature technology and has not taken sufficient advantage of newly emerging developments in food sterilization and biotechnology or in equipment for specialized markets such as low calory, ethnic or convenience foodstuffs. In addition, while labour and material costs are competitive, investment in modern production facilities and equipment has not kept pace. As well, the sector has encountered difficult market conditions in recent years as the food processing industry, facing reduced profit margins, has been reluctant to undertake needed reinvestment in plant and equipment.

Trade Factors

While plant and industrial equipment firms have generally improved their export performance in recent years, export orientation varies significantly across individual sub-sectors. On the one hand, Canadian firms manufacturing packaging equipment, plastic molding equipment, and equipment for the manufacture of wire and cable and electronic components have developed product portfolios aimed at supplying foreign markets (primarily the U.S.A.) with very specialized equipment for which there is only limited demand in the Canadian market. On the other hand, most sectors of industrial material handling equipment are generally oriented to the domestic market although increasingly some export activity is taking place. Exports are primarily to the industrialized markets, particularly the U.S.A. and Western Europe as opposed to developing countries. In this regard, the competitive position of the sector is currently influenced by a very favourable exchange rate differential with the U.S.A. but generally unfavourable rates with most European countries.

3. FEDERAL AND PROVINCIAL PROGRAMS AND POLICIES

As in other sectors of the machinery industry, the application of tariff policy through the provisions of the Machinery Program continues to be a significant policy instrument in support of manufacturers of plant equipment. In addition, broad framework policies which specifically encourage the overall demand for machinery and equipment such as the depreciation provisions of the Tax Act or tax credits which support the purchase of new machinery are particularly relevant for this sector. While this sector will continue to benefit from the full range of incentive programs for export development, R & D and innovation, there is scope to increase the levels of support for the utilization of microelectronic technology in both products and processes.

4. EVOLVING ENVIRONMENT

The evolving market environment for plant and industrial equipment will generally be characterized by such trends as the continuing automation of industrial processes and the discovery of new uses for various materials. In some instances, these factors will necessitate the development of highly sophisticated equipment and advanced technological capability such as those associated with some machine tool installations and material handling systems. In other areas, new developments will be less dramatic involving mainly the design of faster, larger and more efficient machines. In particular, however, industrial plant and equipment manufacturers are becoming increasingly affected by two developments which appear to be impacting on this sector more significantly than on others, i.e.:

- The rapidly increasing applications of microelectronics to both products and manufacturing processes which is quickly changing the competitive environment, particularly for those products which involve a high level of discreet parts manufacturing and the utilization of advanced metal cutting technology.
- In a number of relatively standard product areas, e.g., standard machine tools, material handling equipment, and some industrial valves, Canadian manufacturers are facing stiff import competition from Japan and Southeast Asia which in some cases is threatening continued Canadian production in these products.

3. COMPETITIVE ASSESSMENT

The competitiveness of the Canadian plant and industrial equipment sector varies widely across the broad spectrum of products encompassed by the sector, from those which enjoy international success to others which are encountering severe import competition.

In this regard, the major adjustments/developments required for the sector includes:

- the immediate need for new investment in advanced manufacturing technologies;
- further rationalization and/or consolidation of manufacturing units producing relatively standard product lines aimed primarily at the domestic market;
- measures to assist the industry to seize significant new product opportunities in a range of automated storage and parts handling systems;
- the need for sharply increased new product design and development to take advantage of emerging technologies and compensate for relatively mature markets which dominate in the sector.

All machinery manufacturers and particularly those producing plant and industrial equipment are calling for increased government support to help them meet the heavy costs associated with electronic enhancement and automation trends which are rapidly changing their competitive environment. Such changes are particularly radical, costly and difficult for much of plant and industrial equipment production which is characterized by a relatively high level of discreet parts manufacturing as compared to other sectors of machinery production, e.g. resource equipment. As a result, it is essential that automated manufacturing techniques be introduced quickly to meet European, Japanese and American competition. In particular, the government is being requested to increase its grant programs to offset the cost of new computer hardware, as well as costly fees for software and personnel retraining, and to target this assistance to small and medium-sized firms who cannot obtain this kind of support from parent firms.

Prepared by: _____

Approved by: _____
Norman A. Fraser

FACT SHEET

NAME OF SECTOR: PLANT AND INDUSTRIAL

SIC(s) Covered: 315

1. PRINCIPAL STATISTICS

	1980	1981	1982	1983
Establishments	N/A	N/A	1278(a)	N/A
Employment	N/A	N/A	39470	N/A
Shipments (\$ Millions)	3306.3	3764.8	3385.4	3011.3
Gross Domestic Product - (Constant 1971 \$ Millions)	N/A	N/A	N/A	N/A
Investment (\$ Millions)	N/A	N/A	N/A	N/A
Profits after tax (\$ Millions)	N/A	N/A	N/A	N/A
Exports (\$ Millions)	1031.6	1231.3	1186.8	1104.4
Domestic Shipments (\$ Millions)	2474.9	2533.8	2198.6	1907.1
Imports (\$ Millions)	3604.8	4103.8	3748.2	2934.3
Canadian Market (\$ Millions)	6079.7	6637.4	5446.8	6341.4
Exports - % of Shipments	29%	33%	35%	37%
Imports - % of Market	39%	62%	60%	61%

2. REGIONAL DISTRIBUTION

	ATLANTIC	QUEBEC	ONTARIO	PRAIRES	3.C.
Establishments - % of Total	N/A	N/A	N/A	N/A	N/A
Employment - % of Total	N/A	N/A	N/A	N/A	N/A
Shipments - % of Total (est.)	3	20	70	5	2

3. MAJOR FIRMS

	NAME	OWNERSHIP	LOCATION OF MAJOR PLANTS
1.	Jos. Lamb Co.	U.S.A.	Windsor, Ont.
2.	Bata Engineering Ltd.	Canadian	Sarawa, Ont.
3.	Husky Mfg. Tool Works Ltd.	Canadian	Solcon, Ont.
4.	Otis Elevators	U.S.A.	Hamilton, Ont.
5.	Stephens-Adamsen	U.S.A.	Belleville, Ont.
6.	Brimingham-Williamette	U.S.A.	Burnaby, B.C.
7.	Wear-United	U.S.A.	Cambridge, Ont.
8.	Ajax Magnachemic	U.S.A.	Ajax, Ont.
9.	John Maurier	Canadian	Montreal, Quebec
10.	H.R. Murphy	U.S.A.	Cambridge, Ont.
11.	Valen Inc.	Canadian	Montreal, Quebec
12.	Jenkins Canada Inc.	U.S.A.	Montreal, Quebec

4. FEDERAL AND PROVINCIAL GOVERNMENT PROGRAMS (as appropriate)

List any specific programs (financial or regulatory) that support the sector.

Program	Type	Amount	Purpose
IRDP, FIMS, EDC, CIDA, Machinery Program	Promotional Projects	Financial Incentives	Tariff Policy

5. MAJOR REPORTS AVAILABLE (As appropriate)

List any task force, policy review, parliamentary committee report or detailed profile available on the sector.

NAME	TYPE OF REPORT	YEAR
Machine Tool Industry in Canada	Profile	1984

* Use the 1980 SIC classification.

COMPETITIVENESS PROFILEELECTRICAL EQUIPMENT1. STRUCTURE AND PERFORMANCE

Electrical equipment firms in this group manufacture products which generate, transmit and store electricity primarily for the industrial and power utility markets including heavy electrical power equipment, wire and cable, batteries, and miscellaneous products (note appliances are not included). This sector includes some 350 firms with shipments in 1984 of \$4.2 billion and employment of approximately 55,000. Most of the sales in the sector are generated by foreign, mostly U.S.-owned companies and some 75 per cent of the largest firms are subsidiaries. In only one sub-sector - wire and cable - do Canadians have a controlling interest. The sector has a high degree of concentration with only fifty of the firms accounting for seventy per cent of total employment and eighty per cent of revenues. Despite this concentration, even the largest Canadian electrical equipment firms are small by international standards. A large majority of the sector's manufacturing activity and employment is in Ontario and Quebec where it was originally established to serve the power requirements of the early population centers. Over time, however, there has been a gradual shift in production to regional areas, often to meet the industrial development objectives of the provincial utilities as these utilities have been established to serve their growing populations.

The strong emphasis on the role of electricity in energy planning in Canada over the last thirty years, together with protective tariffs and other incentives, has permitted smaller scale electrical equipment plants to grow and prosper while catering primarily to the domestic market. Technologies have generally been of a type that are widely available and easily accessed with the result that there has been a stronger emphasis on engineering design than on basic technological innovation. The domestic market orientation of many firms in the sector has led to considerable fragmentation of production where diversifying product lines was a more attractive growth strategy than increasing market share for specific products. Although these structural weaknesses remain in several areas, the situation is changing. The two dominant companies in the sector, Canadian General Electric and Westinghouse, are now becoming fully rationalized with their U.S. parents and enjoy world mandates for many of the products they now manufacture. This, together with similar rationalization moves in some smaller firms, has improved the overall productivity of the sector to some degree and has led to improved export performance. Despite growing export interest, Canada still only ranks eleventh among world producers in export volume and trails several countries with much smaller electrical industries such as Belgium and the Netherlands. In overall production of electrical equipment, Canada occupies seventh position behind the United States, Japan, Germany, Britain, France and Italy.

Between 1970 and 1981 sector shipments increased at an average annual rate of 12 per cent in current terms from \$1.3 billion to \$4.5 billion, a rate slightly lower than the increase in the domestic market. During the same period, exports increased from \$0.2 billion to \$0.5 billion, an average annual growth of 12 per cent, leaving the ratio of exports to shipments unchanged at 12 per cent. At the same time, imports increased from \$0.3 billion in 1970 to \$1.4 billion in 1981 (15 per cent average) and the trade deficit grew during the period from \$0.1 billion to \$0.9 billion (21 per cent a year on average). Since 1981 the sector has been affected by sharply declining markets for all products with both domestic shipments and exports declining significantly, however, imports declined only marginally in this period and this is a source of renewed concern.

DECLASSIFIED = DÉCLASSÉ
EXTERNAL AFFAIRS = AFFAIRES EXTERIEURES

The overall trend that emerges throughout the last 11 years is one of gradual loss of domestic market share, only partially offset by gains in the export market. In fact, a closer look at these trends is revealing. During the latter half of the seventies, in conditions of much slower economic growth overall, the sector surpassed performance levels achieved during the early seventies when general economic conditions were much stronger. This trend appears to be explained by the abnormally high rates of electrical utility construction underway in Canada during this period, aided by some rationalization of production and owing to a more favourable Canadian exchange rate. As demand in developing economies slackened in the early 1980's, however, the sector again came under severe import pressure as European and Japanese manufacturers stepped up their export activities. This points up the reliance of the sector on the domestic market and signals the existence of adjustments that must continue to be made to allow the sector to compete internationally in the face of sharply lower projections for electrical operating capacity in North American markets.

2. STRUCTURE AND TRENDS

Although the sector as a whole shares some common characteristics, competitive strength varies by major sub-sector.

Heavy Electrical Equipment - This is the largest sub-sector in the group with annual shipments of \$1.3 billion. Roughly one-half of sector output consists of large mostly custom-engineered equipment required by the primary and secondary manufacturing industries. Examples are drive systems for the mining, steel and paper industries. The other half is sold to power utilities that produce power for their own use. In the latter area, Canadian firms have developed several areas of internationally recognized competence, notably in large hydro electric turbines and generators, transformers, long distance transmission equipment and large motors and control systems. On the other hand, there is limited capability in thermal power generation equipment and systems and in several lines production is based on mature technologies available only from parent firms. As previously indicated, manufacturers in this sector are predominantly foreign-owned and were originally established to serve the Canadian market. With energy demand growing strongly throughout most of the last thirty years, the domestic market for equipment was doubling every ten years and in this commercial environment, there was relatively little need to consider exports.

International competition in heavy electrical equipment is fierce and Canadian export efforts are hampered by a lack of turnkey capability and structural weaknesses related to relatively small firm size and low levels of R & D. The major source of competition for large turbines and generator sets in both domestic and foreign markets comes from Japan and the EC countries (see the United States). In this regard, electrical equipment manufacturing worldwide is increasingly concentrated in the hands of a small number of giant corporations who often act as international agents for the attainment of economic development objectives for their home governments. Protective procurement policies virtually ensure these national suppliers the full market requirements in their own countries, enabling them to marginally price goods and services when bidding internationally. The EC did little to alter these international market practices as Japan and Europe refused to remove their non-tariff barriers. In response, Canada and the United States retained their tariffs on most electrical equipment products at pre-Tokyo Round levels (i.e. Canada 15 per cent to 17.5 per cent), however by contrast, the Canadian market still remains relatively open making Canadian-based manufacturers particularly vulnerable to the effects of dumping and other predatory pricing practices.

Wire and Cable - The wire and cable sector includes approximately fifty establishments with a combined production in 1983 of \$1.0 billion. It differs from all other sectors in the electrical equipment industry on the basis of its relatively high degree of Canadian control. This sector is also unique with products changing relatively slowly and production very volume and price sensitive. Production in Canada generally covers the full range of products including power cables, building wires and cables and flexible wires for telephone and data transmission. The sector is capital intensive requiring high levels of capacity utilization for efficient production and this is a constant concern to firms given the relatively small size of the Canadian market for each category of wire and cable and the need to produce a mix of products in each regional area. As a result of recently depressed markets, the sector has been experiencing over-capacity in several product areas and this has led to considerable consolidation. In this regard, two major firms, International Telephone and Telegraph (ITT) and C.G.E., have withdrawn completely from the sector and Northern Telecom has vacated the power cable sector and sold its assets to Phillips Cable.

In general, the combination of relatively low value and bulk weight of wire and cable products has tended to keep production facilities close to markets. To a large extent, however, the multi plant structure of the sector in Canada has been induced by the procurement practices of provincial governments which have sought to provide local (i.e., provincial) capability to serve their utility markets. It is widely accepted that these policies have led to considerable fragmentation and sub-optimal operating levels in some plants as manufacturers have tended to place several product lines in a given facility to meet the range but limited volume needs in each province. Responding to provincial pressure for regional development has provided wire and cable companies with an assured domestic market and a product mix flexible enough to withstand cyclical fluctuations in demand but the limited size of total demand in each plant is such that true economies of scale are lost. This could become an increasingly important factor in the sector's competitive position as markets become more internationalized and manufacturers face more competition from foreign firms who do not face this situation in their own domestic markets. Technological capability is generally on a par with that of its major competitors since domestic markets are just as demanding as foreign markets and imports are still relatively low. The development of fibre optics technology for application in communications markets represents both a major potential opportunity and a significant challenge to wire and cable manufacturers and most major manufacturers are moving quickly to establish a capability in this area.

Miscellaneous Electrical Products - This group included a number of relatively small sub-sectors covering a diverse range of products, such as conduit and fittings, lamp bulbs, wiring devices, lighting fixtures and batteries.

The production of lamp bulbs in Canada is highly concentrated, with three firms - all subsidiaries of foreign-owned companies dominating the business. Most of the products are manufactured in high volume, capital intensive facilities and price competition is severe as manufacturers attempt to maintain the market share for essentially undifferentiated products.

The battery industry worldwide is dominated by some 14 multinational corporations, nine of which are active in Canada. Battery production is widely dispersed across Canada reflecting the high weight-to-cost ratio of the products. With the exception of certain OEM automotive batteries, low-cost, low-quality dry cells and certain low volume specialty batteries, Canadian manufacturers continue to dominate the domestic market.

Conduit and fittings production which incorporates simple technology tends to be produced close to markets and as a result is not subject to competitive pressure from imported products. Canadian manufacturers of consumer lighting fixtures have maintained their competitive

position in the Canadian market on the basis of their high level of design capability. However, in the commercial and industrial lighting fixtures and wiring devices product groups, Canadian manufacturers are at a competitive disadvantage vis-à-vis foreign producers. In this regard, most Canadian producers manufacture for a small Canadian market to U.S. designs and lack the large-scale capital intensive facilities which characterize production of these products by U.S. manufacturers.

3. FEDERAL AND PROVINCIAL PROGRAMS AND POLICIES

The supply of electricity in Canada is controlled by the provinces and it is the procurement policies of provincial utilities that provide the most notable example of government influence on the sector. Premium procurement practices have been used to influence investment location decisions with a view to creating local (i.e. provincial) employment growth. Utilities in Quebec, Ontario and B.C. have explicit purchase preferences, 3 to 10 per cent usually, for local suppliers and have developed close operating ties with equipment manufacturers operating in their own provinces. Arrangements such as these have, however, contributed to the proliferation of small plants, most notably in the wire and cable sector, to serve individual provincial utilities. Moreover, the small margins of preference offered have been of little consequence in protecting Canadian suppliers from dumped bids which often present price differentials of up to 30 per cent.

At the federal level, the impact of policy has been less apparent. Canadian electrical equipment firms have made extensive use of financial incentive programs, particularly PATC, EIP (EITP), PRM and trade fairs and missions but while helpful, these programs are not designed to alter overall R & D and market performance. Recently, however, there have been directed negotiations with key firms in the sector aimed at encouraging the realignment of corporate strategies to meet changing economic conditions and in one case (CSC) it has resulted in major government support for the development in Canada of very advanced hydro turbine and generators. In addition, both federal and provincial funds have been used to demonstrate new low head turbine technology which could have long-term significance for Canada by making possible less costly new low head hydro developments. Federally administered border measures such as anti-dumping procedures, countervailing and safeguards have also become important instruments in support of the sector as it has come under renewed import pressure. Similarly, as the sector increasingly looks to export markets in the developing countries, financing assistance through EDC and CIDA which is already significant will take on even greater importance.

4. EVOLVING ENVIRONMENT

For heavy electrical power equipment, the future environment will be conditioned by the rate of worldwide growth in electrical energy consumption and the level of investments which will be committed to install new electrical generating capacity. It is now widely accepted that the rapid North American expansion of electrical generating capacity in the late 1970's, based on expectations of a continuing rise in the price of fossil fuels and strong economic growth, has resulted in excess capacity and left the whole Canadian power industry in a deep recession. This situation is causing power utilities to drastically curtail future investment programs with the result that capital investments in Canada are projected by the late 1980's to be at roughly half the average that existed throughout the 1970's. The outlook in the United States is no more favourable. The U.S. utilities are curtailing their system expansions even more drastically than in Canada, with 1990 investments projected to be at approximately 40 per cent of level by which existed in 1980.

Until recently, the slump in energy demand was seen as a relatively short-term blip resulting from the worldwide recession and conservation efforts. It was expected that renewed economic

expansion, together with a return to rising oil prices, would propel the world toward an electrical future. Accordingly, this development would lead to a resumption of investment in electrical generating capacity as the transition from oil to electricity started to take effect in the mid to late 1980's. While this scenario may still unfold, it is increasingly viewed with skepticism and even if valid could only occur much later in the century. In the meantime, heavy power equipment manufacturers are attempting to adjust to these altered circumstances by rationalizing their production base and focusing their attention on exports, particularly to developing country markets, where the expected future demand for hydro-based electrical generating equipment is expected to be several times greater than that forecast for North America.

For wire and cable manufacturers it is expected that change in most areas will be relatively gradual with the sector continuing to supply over 80 per cent of the Canadian market. Technology changes are occurring, however, and these include the utilization of new materials for wire coating to improve thermal conductivity, improved building wire designs, particularly new flame retardant characteristics, and the development of specialized wire and cable for hostile climate and rugged terrain. In addition, the impact of fibre optics on the production of communication cables is expected to be significant and this development may force the sector to move more aggressively into the telecommunications market as opposed to the more stable resource-based power side of the industry, which has traditionally been its largest market base. In the longer term, moves to more liberalized trade with the United States, should these develop, could force manufacturers to face up to structural problems of fragmentation and small plant size which has resulted from their unique relationship with provincial utilities.

5. COMPETITIVENESS ASSESSMENT

The entire power industry in Canada is attempting to emerge from a deep recession. The situation is the result of a sharp reduction in the previously uninterrupted exponential growth of demand for electric energy. In this environment, electrical equipment manufacturers are attempting to reorient their business strategies away from North American markets where demand remains stagnant towards developing country markets which hold more promise. There are mixed views on the outlook for their success.

On the one hand, it is generally believed that Canadian manufacturers continue to demonstrate competitive strength in a number of product areas of significant export potential which have been developed based on the high technology requirements of our relatively large and sophisticated Canadian power utilities. These products include large hydro based turbines and generators, long distance high voltage transmission equipment, large air blast circuit breakers, small gas turbines and small steam turbines/generators. In all of these areas, Canadian MNE's have already taken steps to maximize international sales through world product mandates thereby making available the full international marketing resources of the corporation to promote Canadian exports of these products. In addition, equipment manufacturers can, if effectively co-ordinated, call on the services of Canadian contractors and consultants who are increasingly gaining international experience on major resource projects. The capabilities of Canadian constructors, in particular, have been well demonstrated in recent years on projects like James Bay and Revelstoke and the technical organization and management skills they have developed to deal with remote sites must be regarded as an asset for developing country markets where access, communication, and logistic supply problems abound. Canada's power utilities also offer potential for contributing to the expansion of exports. Canada's two largest utilities, Hydro Quebec and Ontario Hydro for instance, are becoming increasingly interested in exporting their services which could include overall utility management, systems operations, and training of utility personnel. The provision of such services can enhance the total Canadian export package of goods and services from our power sector.

But while strengths exist significant difficulties are apparent. Structural problems affect a number of smaller and medium-sized firms. For many of these plants typically producing switchgear and transmission equipment at the lower end of the power range, the relatively small size and fragmented nature of their production units will tend to work against them as markets become more internationalized. In addition, even the larger power equipment firms generally lack the scale and vertical integration common in other OECD countries which can provide an entire power project on a turnkey basis, by making available engineering, financial and construction resources under a single or co-ordinated management. Moreover, co-operation between consultants, utilities, manufacturers and contractors is not encouraged by our domestic system of building power projects. Very limited experience exists in collaboration among industry members for foreign ventures. Of overriding concern is the fact that competition for business in developing countries is fierce and will intensify. Substantial excess manufacturing capacity exists worldwide and the governments of many industrialized countries are actively intervening to support exports by their electric equipment manufacturers, constructors and consultants. Many of our most successful competitors are implementing cohesive export strategies and have long experience in international markets. Moreover, newly industrialized countries are encouraging the establishment of local manufacturing facilities to lessen their dependence on imports and these expanded electrical equipment plants are increasingly entering international markets.

While the outlook may be uncertain, the industry is taking steps to adjust. A comprehensive study of industry problems and opportunities together with an action plan has recently been completed as part of a joint initiative by all members of the power industry, the federal government and the provinces of Ontario, Manitoba and Quebec.

Prepared by: _____

Approved by: _____

Norman A. Fraser

NAME OF SECTOR: ELECTRICAL EQUIPMENT

SIC(s) Covered* 333:336:338:3391:3399

1. PRINCIPAL STATISTICS

	1980	1981	1982	1981
Establishments	541	549	551	540(e)
Employment	57129	60056	53872	55000(e)
Shipments (\$ Millions)	3913.7	4537.2	4052.3	3814.3
Gross Domestic Product - (Constant 1971 \$ Millions)	747.9	807.6	672.1	619.5
Investment (\$ Millions)	352.2	457.6	454.1	511.7
Profits after Tax (\$ Millions)	237.1	259.5	148.5	N/A
Exports (\$ Millions)	501.9	543.5	331.4	498.4
Domestic Shipments (\$ Millions)	3411.8	3993.7	3521.4	3315.9
Imports (\$ Millions)	1188.2	1359.4	1320.3	1384.9
Canadian Market (\$ Millions)	4600.0	5353.1	4841.7	4700.3
Exports - % of Shipments	13%	12%	13%	13%
Imports - % of Market	26%	25%	27%	29%

2. REGIONAL DISTRIBUTION - 1982 Data

	ATLANTIC	QUEBEC	ONTARIO	PRAITIES	S.C.
Establishments - % of Total	2%	25%	57%	8%	8%
Employment - % of Total	2%	21%	70%	1%	2%
Shipments - % of Total	1%	27%	63%	1%	2%

3. MAJOR FIRMS

	NAME	OWNERSHIP	LOCATION OF MAJOR PLANTS
1.	C.C.Z.	U.S.A.	(Lachine, Quebec (Peterborough, Ont.)
2.	Philips Cable	British	Brockville, Ont.
3.	Evide	U.S.A.	Toronto, Ont.
4.	Lightoller	U.S.A.	Cambridge, London, Ajax, Ont.
5.	Lavoton	U.S.A.	Montreal, Quebec
6.	Canada Wire & Cable	Canadian	Don Mills, Ont.
7.	Marine Industries	Canadian	Tracy, Quebec
8.	Westinghouse	U.S.A.	Hamilton, Ont.
9.	Federal Pioneer	U.S.A.	Toronto, Ont.
10.	Cogelac Industries Inc.	Can./French	Laprairie, Quebec
11.	Siemens	German	Pointe Claire, Quebec
12.	Asa Industries Inc.	Swedish	Varenes, Quebec

4. FEDERAL AND PROVINCIAL GOVERNMENT PROGRAMS (as appropriate)

List any specific programs (financial or regulatory) that support the sector.

Program	Type	Amount	Purpose
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5. MAJOR REPORTS AVAILABLE (As appropriate)

List any task force, policy review, parliamentary committee report or detailed profile available on the sector.

NAME	TYPE OF REPORT	YEAR
Profiles On:	Wire and Cable	1984
	Heavy Electrical	1983/84
	Bulbs, Tubes	1984

(e) Estimated

* Use the 1980 SIC classification

COMPETITIVENESS PROFILE

SERVICE INDUSTRIES MACHINERY

1. STRUCTURE AND PERFORMANCE

Service industries machinery includes hand operated power and other hand tools, plumbing and hardware items, instruments, commercial refrigeration and air conditioning equipment, heating equipment, service station equipment, food and beverage preparation equipment, vending equipment, cleaning equipment and painting equipment. The sector is comprised of some 1,400 firms employing close to 39,000 people with production of approximately \$3.0 billion in 1984. Firms in the sector are located for the most part in Ontario and Quebec. While production in most sub-sectors is dominated by a small number of subsidiary operations of mainly U.S.-based firms, the preponderance of firms producing service industries equipment are small to medium sized Canadian-owned firms.

Between 1973 and 1980, production of service industries equipment increased at an average annual rate of 15 per cent in current terms from \$884 million in 1973 to \$2.3 billion in 1980. During this period, exports contributed significantly to the sector's performance increasing at an average rate of 23 per cent from \$190 million in 1973 to \$828 million in 1980; the export orientation of the sector increased from 21 per cent in 1973 to 35 per cent in 1980. At the same time, however, imports continued to make inroads into the Canadian market improving their market share from 53 per cent in 1973 to 59 per cent in 1980. Imports increased at an average annual rate of close to 15 per cent from \$843 million in 1973 to \$2.1 billion in 1980.

Compared to other sectors in the machinery industry, service industries machinery manufacturers as a group were the least affected by the recent economic downturn. Indeed, while shipments in other machinery sectors continued to decline in 1983, the revival of residential and commercial construction during 1983 contributed to a recovery in shipments across all service equipment sub-sectors. In addition, the sector's export shipments, which reached over \$1 billion in 1983, have greatly influenced its performance in recent years. Between 1980 and 1983 export sales grew by over 21 per cent - an increase in export orientation from 35 per cent in 1980 to 43 per cent in 1983. At the same time, however, while imports have declined from a peak of \$2.5 billion in 1981, the import share of the domestic market remained unchanged in subsequent years at 54 per cent.

2. STRENGTHS AND WEAKNESSES

Although encompassing a diverse range of products, production of service industries machinery and equipment involves, to a greater extent than other machinery sectors, standard or off-the-shelf types of products where economies of scale are a major competitive factor. The gradual reduction in the level of tariff protection together with the limitations imposed by the small size of the Canadian market have forced Canadian manufacturers over the years to specialize and rationalize into selected product areas where competition from foreign companies, which enjoy the benefits of scale economies, is less vigorous. However, while product specialization has enabled Canadian manufacturers to compete effectively in export markets, it has also created significant gaps in Canadian production capabilities.

The level of technology for much of service industries machinery is low in comparison to other machinery production and is widely available and readily accessed. As such, technological change is not a major factor affecting the Canadian industry's competitiveness. Emphasis in product development in the sector focuses on innovation in design, quality and specialization. However, technological innovation has recently become an important issue in the heating equipment sector as the demand for more energy efficient products has increased significantly and Canadian firms are generally well situated to take advantage of the new market opportunities in this area. For many of the smaller Canadian-owned firms which require new technology,

the financial constraints imposed by reduced margins places them at a disadvantage with their foreign competitors in financing continuing 2 & 3 efforts. In addition, major competitors in the U.S.A. operate in a much larger domestic market which provides more opportunities to meet specific needs or market segments where competition from the large producers is not as significant a factor.

Distribution methods play an important role in the marketing of most service industries machinery products and accordingly, limited financial resources severely constrains the ability of many firms to afford a level of promotional activity or a distribution network comparable to that of their larger foreign competitors. In addition, the progressive narrowing of the sector's product range has tended to negatively affect the ability of many firms to market their own or the firms of equipment, as major distributors usually demand complete "packages" of equipment. Larger Canadian firms and foreign competitors can more readily put together complete product lines.

Product standards and related certification requirements in foreign markets can represent significant barriers for Canadian exporters of certain service industries equipment. While the Agreement on Technical Barriers to Trade negotiated in the Tokyo Round of trade negotiations addresses many of the restrictive effects of product standards, the costs and length of time associated with meeting various foreign standards oftentimes proves too costly and burdensome for many smaller Canadian firms.

In addition to the foregoing general observations regarding the competitiveness of service industries machinery, the competitive environment facing Canadian firms varies significantly by sub-sector.

- **Plumbing and Sanitary Ware Products** - Canadian manufacturers of plumbing fittings and fixtures produce a complete range of products aimed primarily at the Canadian market where it has established a reputation of producing high quality products. However, in recent years exports have been increasing, particularly to the U.S. where some small Canadian-owned firms have been enjoying success on the basis of their highly specialized products. For the most part, this sub-sector is dominated by subsidiaries of large U.S.-based firms offering a wide range of products. Canadian-owned firms are much smaller in size and have highly specialized production.
- **Hardware Products** - Economies of scale is a significant competitive factor in the production of hardware products. As a result and in view of the small size of the Canadian market, Canadian manufacturers (including the larger U.S. subsidiary operations) rely on export sales in order to maintain competitive levels of production. Canadian manufacturers are competitive in the builders'/construction and furniture manufacturers' hardware markets where factors other than price are more important (e.g. quality, design). In the consumer product segment of the market, however, price is of prime importance, particularly for products sold to the large major Canadian retailers and, as a result, competition from lower cost imports has been forcing Canadian companies to move out of the lower cost product range and specialize in the production of higher quality or innovative products.
- **Hand Operated Power Tools and Other Hand Tools** - Canadian production capabilities are fairly complete and the sector is internationally competitive for much of its production, particularly in consumer-use power tools and accessories, mechanics hand tools, gasoline chainsaws and lawn mowers, grass trimmers, snowblowers, and garden tractors. There are however, significant gaps in Canadian production in such areas as industrial power tools, cordless power tools, lawn and garden tools and specialty tradesman tools. While the principal focus of manufacturers is the Canadian market, certain product areas have enjoyed particular success in export markets, notably chainsaws, electric orbital sanders, and snowblowers.

- **Heating Equipment** - Canadian production capabilities are fairly complete and the industry is for the most part oriented to the domestic market where it encounters little competition from imported products. The industry has been active in recent years in developing higher efficiency products and, as a result, it has been able to maintain its competitive position to meet market demands in the Canadian market and, to an increasing extent, in export markets. In this regard, the Off-Oil Program introduced in 1981, has provided a significant increase in demand for new heating equipment; while it had been estimated that in excess of two million heating equipment conversions would be realized over the ten year period of the program, the announced termination of the program is not anticipated to greatly reduce this level of activity.
- **Air Conditioning and Refrigeration Equipment** - Production of air conditioning and refrigeration equipment in Canada is dominated by subsidiaries of large U.S.-based companies who maintain production of the complete corporate product line for sale in the domestic market. Canadian-owned firms on the other hand have maintained their competitive position primarily by focusing on specialized equipment and pursuing export markets. There is limited Canadian capabilities in the production of certain sophisticated components (e.g. compressors and controls), and while this factor has not had a major influence on the competitiveness of the sector to date, the increasing cost of these imported components (exchange rate) could become a significant problem.

3. FEDERAL AND PROVINCIAL PROGRAMS AND POLICIES

Service industries machinery manufacturers have benefitted perhaps more than any other machinery sector from the application of tariff policy through the provisions of the Machinery Program. The availability and active use of export promotional instruments (i.e. trade fairs, missions, FEMD) by service industries equipment manufacturers has contributed significantly to the sector's development and competitive position in export markets; the sector's utilization of these programs will continue as it pursues the development of export markets. As well, this sector will continue to derive benefit from the range of incentive programs for R & D and innovation as it responds to new process and product technologies. However, government procurement practices, including source development funding could be more effectively utilized to benefit manufacturers of building hardware, air conditioning equipment and scientific services equipment.

4. EVOLVING ENVIRONMENT

The service industries machinery sector has exhibited considerable resiliency to specialize and develop export markets to maintain a reasonable competitive position. For certain sectors of the industry (i.e. hand tools and hardware) this process of specialization is likely to continue as competition from NIC's such as Korea, Brazil, Mexico and Taiwan will exert increasing pressure on Canadian manufacturers. While Canadian firms have maintained their competitive position in the past by specializing in unique or high quality products, the increasing capability of these low cost sources toward higher quality standards as well as their ability to readily duplicate unique Canadian-developed products, is already in evidence and is becoming a grave concern for Canadian firms.

The emergence of new competitive sources in other sectors (i.e. power tools and air conditioners) will also have a substantial influence on Canadian firms. In this regard, the Japanese are becoming active in window-type air conditioners and have been underbidding Canadian units in various export markets. As well, it is expected that Taiwan will begin production of power hand tools, an area traditionally dominated by U.S. and Japanese firms.

In order for the various sectors of the industry to maintain their position in this more competitive environment, it will be incumbent on Canadian firms to invest in more efficient production processes. To a large extent, this will necessitate the development of automated assembly operations to compensate for lower wage costs of Pacific Rim and newly industrialized country producers. However, the development of such operations entails emerging technology which will prove extremely difficult and costly to develop and exploit. In addition, while product technology is not a major competitive element across much of service industries machinery production, development of key technologies will be necessary in certain areas to meet emerging user demand sectors (e.g. advances toward energy efficiency, microelectronic controls).

3. COMPETITIVENESS ASSESSMENT

For a large number of relatively small producers in the service industries equipment industry, the existence of Canadian tariffs through the application of the provisions of the Machinery Program is a significant factor in maintaining competitiveness. In common with several other sectors of the machinery industry, the sector has adjusted to increasing foreign competition, particularly from NIC's, by specializing into product areas where competition is less severe or which could be successfully marketed on the basis of unique technology, distinctive designs or high standards of quality. This process of specialization has led to a significantly increased level of export activity which in recent years has benefited substantially from Canada's exchange rate differential with the U.S.

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Against this background, there are a number of adjustments needed within the sector to enable it to maintain and improve its competitive position. These include:

- The need for investment related to productivity improvement and the acquisition of new production process technologies in all sub-sectors.
- Continuing emphasis in pursuing export market opportunities to compensate for reduced tariff protection and increased import competition.
- Increased emphasis in R & D, design and marketing infrastructure.

There do not appear to be any specific broad government policy issues which are currently occupying the attention of industry spokesmen. Perhaps more than most other machinery sectors, the issues of interest to service industry equipment manufacturers tend to be those of the small business community. Accordingly, sector firms are presently concerned with several issues such as high interest rates which have impaired their ability to obtain long-term financing, weaknesses in manpower training programs, and the cost of social safety net programs which tend to impose a relatively high burden on these labour intensive smaller enterprises.

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Prepared by: _____

Approved by: Norman A. Fraser
Norman A. Fraser

FACT SHEET

NAME OF SECTOR: Service Industry Machinery SIC(s) Covered* 315

1. FEDERAL STATISTICS

	1980	1981	1982	1983
Establishments	N/A	N/A	N/A	N/A
Employment	N/A	N/A	38900	N/A
Shipments (\$ Millions)	2348.8	2343.7	2180.0	2313.1
Gross Domestic Product - (Constant 1971 \$ Millions)	N/A	N/A	N/A	N/A
Investment (\$ Millions)	N/A	N/A	N/A	N/A
Profits after Tax (\$ Millions)	N/A	N/A	N/A	N/A
Exports (\$ Millions)	828.0	949.2	963.9	1003.2
Domestic Shipments (\$ Millions)	1520.8	1394.5	1216.1	1309.9
Imports (\$ Millions)	2217.7	2491.4	2152.3	2317.8
Canadian Market (\$ Millions)	3738.5	3885.9	3378.6	3627.7
Exports - % of Shipments	35%	41%	44%	43%
Imports - % of Market	59%	64%	64%	64%

2. REGIONAL DISTRIBUTION - Average over the last 3 years.

	ATLANTIC	QUEBEC	ONTARIO	PRAIRIES	B.C.
Establishments - % of Total					100%
Employment - % of Total					100%
Shipments - % of Total					100%

3. MAJOR FIRMS

	NAME	OWNERSHIP	LOCATION OF MAJOR PLANTS
1.	Emco Ltd.	Canadian	London, Ont.
2.	Kesprine Inc.	Canadian	Brantford, Ont.
3.	Crane Canada Inc.	U.S.A.	Montreal, Quebec
4.	Mark Hoc Inc.	Canadian	Longueville, Quebec
5.	Engineered Air Div. of Airtex Industries Ltd.	Canadian	Calgary, Alberta
6.	Black & Decker Canada Ltd.	U.S.A.	Brockville, Ont.
7.	Pioneer Chainsaw Corp. Inc.	U.S.A.	Peterborough, Ont.
8.	Windsor Machine Co. Ltd.	Canadian	Burnaby, B.C.
9.	Lennon Industries (Cia.) Ltd.	U.S.A.	Mississauga, Ont.
10.	Sup-Matic Olsen Inc.	Canadian	Wilbury, Ont.
11.	Wormald Fire Systems Inc.	Australian	Mississauga, Ont.
12.	Chubb Securities Ltd.	U.K.	Brampton, Ont.

4. FEDERAL AND PROVINCIAL GOVERNMENT PROGRAMS (as appropriate)

List any specific programs (financial or regulatory) that support the sector.

Program	Type	Amount	Purpose
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5. MAJOR REPORTS AVAILABLE (As appropriate)

List any task force, policy review, parliamentary committee report or detailed profile available on the sector.

NAME	TYPE OF REPORT	YEAR
A Study of the Residential & Small Commercial/Industrial Heating Equip. Mfg. Sector in Canada.	Sector Profile	1984

* Use the 1980 SIC Classification

COMPETITIVENESS PROFILE

Name of Sector: TELECOMS

1. Structure

The Telecommunications Equipment Sector consists of the manufacturers of equipment needed to transmit information such as voice, data or video.

The major products are radio transmission equipment, multiplex equipment, central office and subscriber switches, cable, both metallic and fibre optic, and subscriber apparatus.

Telecommunications in Canada is provided by telephone operating companies, such as Bell Canada with a broad range of voice and data services, CNCP, a competing carrier with data (eg. telex) and private network traffic, and by Telesat, a satellite carrier. Overseas communications is provided by Telglobes.

Two of the major suppliers, Northern Telecom and Microtel are closely associated with the Bell and BC Tel operating companies respectively. These suppliers have benefited from this association through access to a steady predictable market and through information gained about future product requirements. Vertical integration has progressed to the point where in many cases everything from components to larger systems to final customer service is provided by various members of large corporate families.

Northern Telecom is by far the largest telecommunications supplier, with sales of \$3+ billion per year, approximately half of which is produced in Canada. The size of company then drops rapidly to the \$300 million per year range typified by Microtel and Minal. The remainder of the 400 odd firms manufacturing in this area are much smaller and generally supply a narrow range of niche products, or supply components and subassemblies to the major suppliers. Geographically they are concentrated primarily in Ontario and Quebec, with only Northern Telecom represented with plants in

all regions. The industry is primarily Canadian owned with the major exception of Microtel, an indirect subsidiary of U.S. based GTE, through I.C. Tel. However, both Northern Telecom and Mital have located manufacturing facilities in other parts of the world, either to manufacture more economically or to be closer to their major markets for political reasons.

Northern because of its size has credibility in international bidding but some of the smaller firms suffer in trying to sell into a rather conservative world market.

Performance

Telecommunications shipments by Canadian firms have grown at an average rate of 15% within the past decade, with the exception of a 1% recession induced decline in 1982-83, while the apparent domestic market has been growing at roughly 9% per year. Employment has grown to approximately 43,000, from a low of 37,000 in 1977, with a similar recession induced dip in 1982/83.

The major structural change affecting the Canadian supply industry has been moves in the U.S. regulatory environment which affects the market most important to Canada. Historically, subscribers were obliged to lease their terminal equipment such as telephones and Private Automatic Branch Exchanges (PABX). This meant a higher than necessary customer cost due to lack of competition which tended to curtail market demand, along with a deliberately slow introduction of new technology to protect the leased equipment base. With the establishment of the interconnected environment in the U.S. (and to a lesser extent in Canada) customers can now own their terminal equipment, and obtain it from any supplier. This change opened up a large new market for equipment suppliers such as Mital, to replace a largely obsolete equipment base, as customers were able to obtain state-of-the-art technology while simultaneously reducing cost.

Similarly, the break-up of AT&T into a manufacturing entity, AT&T Technologies (formerly Western Electric), and independent operating companies, has enlarged the available market for Northern Telecom and other Canadian suppliers, as the independents are now free to buy from anyone in the market place. The deregulation of U.S. long distance services has also provided extra market opportunities for Canadian suppliers as new carriers equipped themselves to enter the market. If deregulation becomes a fact in Canada, a similar demand increase can be expected here, along with a shift to a more competitive environment for suppliers.

Canadian broad-line suppliers have profits of the order of 3% of sales, leading the rest of the major world suppliers with typically 2%. Selected segments such as customer owned PABX's and key-telephone systems are becoming much more competitive with reduced margins, impacting for example Mital and their subsidiary Trillium.

The smaller growing firms have a perennial need for investment capital to fund expansion, development, and marketing efforts in the growth phase, and are not very profitable until reasonable size is reached.

2. Strengths and Weaknesses

a) Structural

Northern Telecom, Mital, and to a lesser extent Microtel operate on a scale which compares well with their respective worldwide competition. Each has in-house integrated circuit (IC) design facilities representing access to the major cost reduction technology available to the electronics industry. Northern and Mital go one step further in vertical integration with in-house IC production capability. In addition to cost control, the IC design capability enables these suppliers to rapidly move a new design to production with the speed necessary to compete in the marketplace, which is a key strategic factor in this industry.

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There is no direct industrial adjustment taking place in the telecommunications manufacturing sector, but the regulatory changes which have taken place or are contemplated in the U.S. and Canada will have important implications for Canadian suppliers. In general the marketplace is opening up to competitive forces and the introduction of technology is proceeding at a much faster pace than during the pre-international era of captive supply to operating companies. North American based suppliers are automating their production processes as far as possible to remain competitive with offshore production in the far east with their much lower production costs.

Canada's long established suppliers were unionized early in their history, and have experienced the same labor difficulties as other Canadian industries. Their recent expansions into the U.S. are complicated, with states in the U.S. having less stringent labor code requirements than the pro-labor orientation of Canada's provincial labor codes.

The established electronics industry in the U.S. is largely not unionized, and there is a belief that the necessarily closely-coupled design-production process can only have the required flexibility in a non-union environment. Future expansions by Canadian telecom suppliers, or attempts to encourage foreign investment will have to recognize this major difference between countries.

There have been important changes in the type of demand which must be faced by the Telecom supply industry. The slow implementation of new technology which characterized the uncompetitive era is finished. Operating companies are replacing older central offices with digital switches, and gradually will move towards fibre-optic transmission lines to replace other forms of transmission. End users, both companies and consumers, are demanding and getting increased performance and reduced cost from direct terminal equipment suppliers.

b) Trade Related Factors

Western Europe and Japan have well developed telecom supply industries, and nation-wide monopoly telephone operating administrations. Penetrating these markets from a Canadian base has been very difficult for Canadian suppliers due to nationalistic procurement policies, and the failure to get agreement on the inclusion of this market in the GATT procurement code.

Furthermore, equipment standards in North America are different from the rest of the world causing additional complications for suppliers.

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Only the U.S. forms a truly open market for Canadian suppliers. Independent operating companies buy equipment essentially on a price-performance basis, although there is still a benefit to maintaining a local manufacturing presence. Lesser developed countries also represent an opportunity for Canadian suppliers but these countries often make purchasing decisions on the basis of financing availability on favorable terms, as well as colonial ties.

Canadian suppliers are competitive in these markets with large systems, and responded well to the recent opening up of the U.S. market due to interconnect and deregulation decisions. Canada is not very competitive at the low end of the market in such products as telephones and small telephone key systems, compared to suppliers in the far east.

c) Technological Factors

A major boost to the change from branch plant status in the telecom industry toward an independent industry was the U.S. consent decree resulting in the divestiture of Northern Telecom from Western Electric.

Now large Canadian suppliers are on a par with their U.S. competition in the use of the latest very large scale integrated circuit (VLSI) techniques, and have a competitive edge in the digital switching and packet switching areas. Canada is also well advanced in the use of satellites and fibre optics for transmission purposes. This level of technological advance has not been acquired cheaply and expenditures on R&D continue at about 10-11% of annual sales, with R&D costs more than double capital expenditures.

The leading edge of technological development still remains in the U.S., concentrated in the Boston area in the east and California in the west, and all major world suppliers maintain a laboratory in the California area to maintain contact with the latest developments.

d) Other Factors

Historically, the telecommunications industry has not been affected by swings in interest rates and economic activity due to the relatively low level of competition. This did not hold true during the 1982 recession, when the correlation between economic activity and industry sales increased. As the market becomes more competitive, it is reasonable to expect economic factors to have an increasing effect on the industry.

3. Federal and Provincial Programs and Policies

On the operating side, telephone companies not owned by a provincial government are regulated through the Department of Communications and the CRTC, and the level of vertical integration and monopoly which has led to a strong supply industry has been recognized by the regulatory policies.

Large Canadian suppliers are dependent on EDC financial assistance in bidding on major international projects. The smaller companies engaged in product development are users of the government programs such as IRUP and FEMD although the large companies have generally relied on internally generated funds and the private capital markets for their investment needs. The telecom industry is the major performer of R&D in Canada, and a beneficiary of tax policy incentives which promote R&D investment.

Current discussions with the U.S. on free trade, either on a sectoral basis or across the board, would certainly have an impact on the telecom supply sector. The current DOC policy review on telecoms also affects the supply industry indirectly, as do the regular decisions of the CRTC.

The Informatics Task Force organized by the Department may make recommendations which affect the industry.

4. Evolving Environment

It is unlikely that Europe or Japan will become a major market for Canadian suppliers. In their pursuit of U.S. and Canadian markets, regulatory decisions have had a large impact on the Canadian industry, and the expected move toward increasing competitiveness in North America will continue to fuel demand.

There is a widespread blurring of the lines between the telecommunications and data processing with the adoption of common digital technology. Telecom suppliers are trying to expand into areas which have been traditionally the province of data processing suppliers, with the major market being electronic office support functions.

The long term market growth area is expected to be the newly industrialized countries as the North American market becomes saturated with digital technology. There is also a long term trend toward fibre optic land lines as a replacement for satellite transmission in densely populated areas, which may affect Canada's suppliers of earth station and satellite equipment.

3. Competitiveness Assessment

Canadian industry is very competitive in the telecom equipment sector, having grown to a position of strength by initially serving essentially a captive domestic market. The larger suppliers are of sufficient size to be credible in major project international bidding, but in many cases, in Third World countries, success depends on the availability of financing at subsidized rates.

These large projects often involve establishing offshore assembly of equipment to meet local content requirements. However there is still the potential for employment increase in Canada in designing the system and manufacturing the parts needed for the system. As these larger companies are geographically spread through Canada, regional employment prospects are enhanced.

Smaller companies in the growth phase are constantly in need of investment to expand or develop new products. Government programs such as IRDP or FMD are valuable at this end of the spectrum.

These two forms of assistance are necessary to compete with similar assistance available under various guises from other governments, and cannot be supplied by industry alone.

In assisting the established larger firms to grow, and attracting new investment to Canada, the incentives available through tax policy measures, and the general investment climate must be both stable and attractive compared to other countries if Canada is to obtain the benefits of manufacturing in this industry.

APPROVED: 

FACT SHEET

NAME OF SECTOR: TELECOMS SIC COVERED: 333

1. PRINCIPAL STATISTICS

	1980	1981	1982	1983	1984
Establishments	411	427	443	459	
Employment	43300	46300	43600	44600	47200
Shipments (\$ millions)	2329	2786	3055	2958	3120
Gross Domestic Product (Constant 19713 millions)	607.8	662.7	643.4	669.7	
Investment (\$ millions)	139	214	220	237	
Profits after tax	162.2	216.2	218.3*	217.3*	
Total Exports (\$ millions)	1140	1470	1540	1800	
Domestic Shipments (\$ millions)	1288	1418	1631	1302	
Imports (\$ millions)	1690	2040	1876	2280	
Canadian Market (\$ millions)	2882	3360	3391	3440	
Domestic Exports - % of shipments	45%	49%	47%	56%	
Imports - % of domestic market	59%	61%	55%	67%	

*ESTIMATED

2. REGIONAL DISTRIBUTION - Average over the last 3 years

	Atlantic	Québec	Ontario	Prairies	S.C.
Establishments - % of total	2%	20%	59%	9%	10%
Employment - % of total	1%	27%	62%	2%	4%
Shipments - % of total	1%	29%	60%	3%	3%

3. MAJOR FIRMS

	Ownership	Location of Major Plants
1. Northern Telecom	Bell Canada, Public	Across Canada
2. Microtel	GTE, US	S.C., Ontario
3. Mical	Public	Ottawa Region
4. Spar Aerospace	Public	Montreal, Ottawa

4. FEDERAL AND PROVINCIAL GOVERNMENT PROGRAMS

Program	Type	Amount	Purpose
Office Communications Systems Program	Field Trial	\$12 million	Industrial Development/ Departmental Efficiency

5. MAJOR REPORTS AVAILABLE

Name	Type of Report	Year
"The Telecommunications Equipment Demand of the Canadian Telecommunications Carriers, 1981-1984"	Department of Communications	Oct. 1983

1) Structure and Performance

Structure: -

The major appliance sub-sector product lines include refrigerators, ranges, washers, dryers, dishwashers, freezers, microwave ovens, air conditioners, humidifiers, and dehumidifiers. There are three full line manufacturers who have eleven large manufacturing operations, three in Québec and eight in Ontario and seven smaller firms serving parts of the market. CANCO Inc. (an amalgamation of C.G.E., Westinghouse, and G.S.W.) is the largest producer, accounting for 33% of total Canadian factory shipments. Ownership is 49% Canadian, 51% foreign. Inglis Ltd. (an amalgamation of Inglis and Canadian Admiral) is next with 32% of total Canadian factory shipments. Ownership is 48% Canadian, 52% foreign. W.C.I. Canada Ltd., 8% Canadian 92% foreign owned, has a 15% share. The industry is sheltered behind a 15.5% tariff protection that will be reduced to 12.5% in 1987. If free trade were introduced however, Canada's competitive position would be in jeopardy. The industry has survived mainly because of the high tariff, although the high quality of our Canadian made products, our NTB's including stringent electrical standards, the fact that the bulkiness of the product incurs high transportation costs has helped.

Performance

1973 - 75 were boom years, shipments were at an all time high and employment was strong. 1976 to 1981 saw a steady decline in shipments and employment, with a disastrous drop in 1982. In 1983 the industry bounced back with shipments approaching 1976 levels but with employment down from 11,000 to 9,000. The recovery was due to tighter management, increased production efficiencies, and increased investment in capital equipment. Because of severe internal domestic competition and potential threats from the U.S., price increases were minimal during this period, well below the inflation rate, with the result that profit after tax was a marginal 2 to 3%, debt equity ratios increased and retained earnings decreased. In order to attain economies of scale there has been an ongoing consolidation and closing of plants. The 23 manufacturers of 1964 have been reduced to ten in 1983. This has been accompanied by product rationalization by plant for increased efficiency. This sub-sector was hard hit by the recession, which caused high unemployment, high interest rates, and low housing starts, and influenced people to conserve their savings, and refrain from buying expensive consumer products. To offset this situation the sub-sector put more emphasis on exports, attaining \$179M in 1983, mostly to the U.S.A. Exports, however, represent only 18.6% of the total production of the industry which was \$925M in 1983.

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2) Strengths and Weaknesses

(a) Structural

The U.S. market, and U.S. manufacturing operations are on a scale of 10:1 with Canada. Because of these long U.S. production runs, Canada cannot compete head to head with the major U.S. companies (many of whom are shareholders in the Canadian firms). However, there are niche markets in the U.S. for shorter runs, and Canadian firms with improved setup techniques for line changes, are trying to adapt to this opportunity. Material costs are generally cheaper in the U.S. but Canada has an edge in the price of steel, although there is now a trend to move from steel to plastic where practicable. Labour is readily available but the industry's strike record is not reassuring. Quality is important to the success of this sub-sector, but also a problem since the products have a life expectancy of 15 to 20 years. Market saturation levels are high, with refrigerators 99%, ranges 91%, washers 77% and dryers 66%, therefore the greatest potential is in the replacement market. Dishwashers at 34%, freezers at 35%, and microwave ovens at 20% offer a potential for new sales. Microwave oven sales are increasing steadily at 30% per annum. The sector like all consumer "big ticket" industries is very susceptible to fluctuations in interest rates.

(b) Trade Related Factors

Canadian firms satisfy most of the domestic market although Japanese firms compete aggressively in small laundry items and microwave ovens. The three full line manufacturers have U.S.A. parents that have essentially assigned the domestic market to their Canadian subsidiaries because of the Canadian tariff, and now tariff barriers. Foreign non-tariff barriers (e.g. foreign electrical standards, the large size of North American products, and foreign cultural tastes) are impediments to export, but excellent Canadian quality is a big plus in export competition. Tariffs generally are not a serious problem, but some countries (e.g. Australia) with a local manufacturing capability, have a prohibitive tariff barrier. The GATT agreement to lower tariffs on major appliances to 12.5% on imports over a five year period, starting 1983, has added impetus to the need for improved manufacturing efficiencies. The industry feels that it can assimilate this level, but is opposed to any further reduction.

There is a long range import threat from the Japanese who historically target a specific market, and then "buy it" over a period of years. The fact they are now competing so aggressively in the Canadian market with compact laundry, and the fact T.C.I. is using a Japanese distributor to sell its products in Canada is seen by some competitors as a Japanese dry run for a market penetration. They are expected to offer small 10 cu. ft. and less refrigerators which are essentially

"niche" products in the Canadian market. On the positive side Canadian manufacturers are gaining market share with dishwashers and microwave ovens against the strong U.S./Japanese threat respectively.

The competition from LDC's and NIC's is in the area of the very small 3 cu. ft. bar type refrigerators from Poland, Italy and the Orient. The laid down cost of the Polish product is cheaper than the Canadian material cost alone. There is some evidence of dumping but the industry does not feel it is worth contacting. There is a general world saturation of major appliances, so manufacturers are tailoring their products to specific world markets. For example Canadian industry has designed a small 11 cu. ft. 240V 50 Hz refrigerator aimed at the European market, for which it has high hope, but as yet has had only limited success.

(c) Technological Factors

With the exception of microwave ovens, Major appliances are not high technology products. Technology is received from the U.S.A. parent and is state-of-the-art. To cater to European markets, the use of microprocessor controls is important, whereas the Canadian housewife does not yet feel this is a particularly attractive feature. This will undoubtedly change as microwave ovens increase their market penetration and appliance users sense the usefulness of micro processors. Since one of the major problems in the industry is high cost production, process technology is becoming very important in all facets of manufacturing. Canadian manufacturers are beginning to show an interest in CAD/CAM but have not yet installed any systems. As the market approaches saturation, companies may be forced to move more quickly in this direction to maintain market share even though the large investment required may not be fully recouped.

3. Federal and Provincial Programs and Policies

The government offered \$15M TRIF assistance in 1980 but only \$7M was drawn down. Some companies were quite unhappy about the offer feeling that it distorted the market and helped uncompetitive companies survive.

Recent government policy has been to let the industry motivate itself and perform without interference. It is the stated position of industry that it does not want government handouts. The industry uses the PMD program to assist in export promotion but has available assistance under IZDF should it choose to use it. It would be receptive to an "earned" duty remission program by which the duty-free entry of components presently imported would be permitted, in

proportion to the value of products exported, in areas where the present duty drawback arrangement does not apply. It would encourage accelerated depreciation on capital equipment, and would be in favour of receiving R & D assistance to partially recoup expenditures after the investment has been made by the company. Two substantial sector assessments have been made. The first a major appliance sub-sector profile by Louw and Maher 1981 U.I.T.C., and a second "The Major Appliance Industry in Canada", a study for U.I.T.C. by Harold Crookall, Professor, School of Business Administration, the University of Western Ontario.

A. Evolving Environments

The major issue is the existence of three full line manufacturers, any two of which have the capacity to satisfy the entire domestic market. This suggests that over the next three to five years companies will continue to rationalize production and close one remaining inefficient plant involving 200 employees. In the next five to ten years two more plants may close with 900 employees involved. This is likely to have political and economic repercussions as choices are made, production is transferred and employees laid off. The industry is in something of a dilemma since it needs to improve its productivity through investment in new capital equipment if it wishes to improve its export performance, but its profit margins are not sufficient to generate the necessary returns to warrant the investment.

A watchful eye by government is required and adjustment assistance may be justified, although industry spokesmen feel that government intervention at this time would be premature. The market in the next ten years will grow slowly, perhaps 1-12 per annum, mostly in the replacement market as appliances purchased by the "baby boom" generation in the 1960's wear out. This higher level of replacement might provide the opportunities for the industry to modernize. Profits are expected to be about 1-4%, due to the low pricing caused by tough domestic competition, and the threat of imports, and employment will stabilize. (Lower due to production efficiencies and higher due to increased export). Export activity will be a challenge due to non-tariff barriers such as foreign electrical standards and local tariffs. Lower housing starts, demographics, and changing lifestyles will be a challenge to the industry.

B. Competitiveness Assessment

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(a) The Canadian industry produces a high quality product but without its tariff protection would be vulnerable to competition from the U.S. with its long production runs and economies of scale except in possible niche markets. The industry expects to maintain its status quo and present approximate domestic market share as long as the tariff does

not drop below 122. If however there is a definite move toward freer trade, major adjustments would be required. These adjustments could take the form of further rationalization of the Canadian industry with plant closures and perhaps the reduction of the number of full line manufacturers from three to two. A political accommodation along the lines of the autopact may be necessary to reduce the possibility that U.S. manufacturers would elect to supply the Canadian market from U.S. production sources. The latter form of adjustment would require a degree of government intervention that might be difficult to implement in that it would imply a continental as opposed to a national industry.

Prepared by: *Lawrence*

Approved by: *[Signature]*

APPROVED BY: *[Signature]*

NAME OF SECTOR: Major Alliances SIC(s) COVERED: 332

1. PRINCIPAL STATISTICS

	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>
Establishments	39	67	34	2.4
Employment	13824	12343	9872	2.4
Shipments (\$ millions)	863	877	737	929
Gross Domestic Product (Constant 19713 millions)	183.3	170.3	123.4	156.9
Investment (\$ millions)	18.7	16.3	16.3	21.3
Profits after tax	6.7	12.6	2.3	6.0
Total Exports (\$ millions)	141	158	136	179
Domestic Shipments (\$ millions)	728	725	389	734
Imports (\$ millions)	234	277	241	283
Canadian Market (\$ millions)	976	996	822	1032
Domestic Exports - % of shipments	13.6	17.2	23.2	18.6
Exports - % of domestic market	25.0	27.3	29.3	27.6

Source: Statistics Canada

2. REGIONAL DISTRIBUTION - Average over the last 3 years

	<u>Atlantic</u>	<u>Quebec</u>	<u>Ontario</u>	<u>Prairies</u>	<u>I.C.</u>
Establishments					
% of total	12	22	70	2	12
Employment - % of total	12	22	67	2	12
Shipments - % of total	1	22	72	11	12

3. MAJOR FIRMS

<u>NAME</u>	<u>OWNERSHIP</u>	<u>LOCATION OF MAJOR PLANTS</u>
1. CANCO Ltd.	49%/Can - 51%/Foreign	Montreal; Hamilton; London; Orangeville.
2. Inglis Ltd.	43%/Can - 57%/Foreign	Montreal; Toronto; Port Credit; Stony Creek; Cambridge.
3. V.C.I. Canada Ltd.	32%/Foreign - 68%/Can	S'Assomption; Cambridge.

- 4. Kaspina Inc. 100% Canadian Brantford.
- 5. W.C. Wood Co. Ltd. 100% Canadian Guelph.
- 6. General Freezer Ltd. 100% Canadian Woodbridge.

4. FEDERAL AND PROVINCIAL GOVERNMENT PROGRAMS

Programs IIAF Type: Industry Specific (Major Appliance)
Amount: \$7m Purpose: Modernization

5. MAJOR REPORTS AVAILABLE

<u>Name</u>	<u>Type of Report</u>	<u>Year</u>
A major Appliance Sub-Sector Profile and Strategy	Konow - Mahar - I.T.C. Industry Sector Overview and Analysis	1981
The major Appliance Industry in Canada	Prof. E. Crookall, University of Western Ontario Industry Sector Overview and Analysis	1983

SECTORAL COMPETITIVENESS ANALYSIS AEROSPACE-HELICOPTERS

1. INDUSTRY DESCRIPTION

The helicopter industry in Canada is in the process of becoming established. The industry will have the capability to design, develop, manufacture, market and service the family of light twin engined helicopters. It is expected that this industry will generate sales of \$11.2 billion over 20 years and will maintain an average annual employment of 4,535 jobs in this high technology sector.

- Bell Helicopter Textron Canada will have a complete aircraft facility which is expected to count for 33% of the sales. Projections are that more than 85% of these sales will be exports.

- MBB Canada Ltd. will have a capability to develop and produce an updated version of the light twin model 30 135 LS. Exports will account for 80% of these sales.

2. INDUSTRY STRENGTHS AND WEAKNESSES

Bell and MBB have the ability to establish a commercially viable product line in the light twin engined helicopter. Both contractors are providing a world product mandate and have a potentially excellent marketing program. Technically, the sector is expected to be extremely competitive as both Bell and MBB are recognized as world leaders.

The Aerospace Sector is dominated by the small and medium size firms. A new sector will have to develop an aggressive program to educate new businesses on the quality control, delivery schedule and pricing policy of the sector. In general, these firms will be required to make substantial investment but all remain extremely vulnerable to shifts in the buying practices of the two (2) manufacturers.

3. POLICY AND PROGRAM INSTRUMENTS

DRIF is supporting Bell and MBB in the establishment of a helicopter industry in Canada. These programs provide the link with Pratt & Whitney to launch the PW200 Engine Program. They also provide a timely opportunity to broaden the Canadian Aerospace Industry and indicate a strong commitment to support the Helicopter Industry.

The helicopter sector operates within a framework that is driven by markets, industrial capability and investment opportunities. The sector is still in its infancy and will require systematic development of supplier firms through Government funding assistance programs (predominantly DIPF) to establish a strong Canadian suppliers linkage with Bell and MBB.

On the demand side, U.S. market access through the Defence Production Sharing Agreement and international market access through the Agreement on Trade in Civil Aircraft under GATT are the key ingredients to provide the market base to develop a strong helicopter industry.

4. EVOLVING ENVIRONMENT

Canada will continue to be a major user of non-military helicopters in the Western Hemisphere; however, the types will be diversified by model and category. Thus, to be viable, the new Canadian industry must have access to world markets and it will be necessary to ensure that product mandates are safeguarded.

Government's intention to expand the light helicopter industry into the medium weight will provide a strong industrial base for suppliers to participate in this sector. It also provides opportunities for the sector to participate in military and NATO programs. Thus, for political and economic reasons, manufacturing in Canada will be of the utmost importance to maintain a strong technology transfer.

Typical of the Aerospace Sector, technology must continually evolve to maintain market share against strong international competition.

5. ADJUSTMENT REQUIRED

The helicopter industry is in the process of establishing its facility. At this time, there is no substantial adjustment required to ensure the long-term success of the sector.

6. KEY POLICY ISSUES

The U.S. Defence Production Sharing Agreement (DPSA) and a concentrated effort by Canada to sell helicopters to the U.S. Defence Department could bring substantial benefits to the helicopter industry. One major potential opportunity available to the industry is the Light Observation Helicopter which Canada can manufacture a world class helicopter with subsequent potential for civilian market.

The helicopter industrial sector is new to Canada and it should bring substantial structural changes and linkages with other subsectors. Attention should also be given to the transfer of technology, the development and the competitiveness of the support industries.

PREPARED BY: Serge Morin
DATE: *[Signature]*

APPROVED BY: *[Signature]*



COMPETITIVENESS PROFILE

AEROSPACE - AIRFRAME SUB-SECTOR

1. STRUCTURE AND PERFORMANCE

The airframe sub-sector of the Canadian Aerospace Industry develops and manufactures complete aircraft in highly select categories, sub-system components on a proprietary basis and structural components on a sub-contract basis. 1983 sales were \$1 billion and employment 12,000. Over recent years, its sales have represented from 30-40% of the total industry and is made up of:

- Dominant firms Canadair and de Havilland Canada which produce complete aircraft;
- A world class wing manufacturing facility at McDonnell Douglas Canada in Malton;
- A helicopter industry which is in the process of becoming established (Bell and MBR/Fleet) but it is too early for any results to be available for competitiveness analysis;
- A group of medium and small size firms specializing in sub-systems and accessories (Howty - landing gear, Menasco - hydraulic components ...);
- A sub-contractor group, firms which are wholly or partly devoted to the sub-contract manufacture of airframe structures and parts (Fleet, Bristol, Boeing ...);
- A further activity evident across a number of the foregoing segments is the repair and overhaul of aircraft and parts.

The airframe sub-sector is served by a number of small businesses which perform machining and processing on a sub-contract basis, this being the most prominent domestic linkage. Elsewhere, forward linkages are predominantly offshore (approx. 87% of total turnover was exported in 1983), with U.S. air operators and prime manufacturers representing 62% of the total market in 1983. Excluding small businesses, the sub-sector consists of some sixteen firms; ownership of which is approximately 50% state, 25% foreign and the balance Canadian. It reflects a roughly equal regional balance between Quebec and Ontario, with a smaller presence in the Maritimes and the West.

A review of financial results for the last five years, conducted on a sampling basis and excluding Canadair and de Havilland, indicates that the financial performance of the sub-sector compares favourably both with U.S. aerospace and Canadian manufacturing as a whole. As an average over that period, pre-tax profit was - 6.5% on sales, 25% on equity and 7.5% on assets.

2. STRENGTHS AND WEAKNESSES

The competitive strength of the airframe sub-sector - and Canadian aerospace as a whole - is that it has become well established as a world trader in an essentially free trade sector. This is demonstrated by its record which shows from 76% to 88% of annual sales going for direct export over the last ten years. The proportion has not been below 70% since 1967.

Sector free trade with the USA in defence products under OPDA and with most of the world in civil products under GATT is the formal environment within which this export performance has proceeded. Canadian operators have long been free to make the purchases of their choice largely through imports and without domestic preference, while the Canadian manufacturing export performance has achieved a rough balance of trade over the years.

In practice, the industry is well equipped and experienced in responding to the complex technical, contractual and marketing requirements of international customers. Over the years, it has progressively evolved from a price maker (when most of the firms were recipients of cost plus Canadian defence contracts) to its present calibre as a commercially orientated price taker.

Possible weaknesses are masked by the favourable rate of U.S. exchange and the large contribution made by Government in the form of funding support and services. Technically and functionally, therefore, the sector may be deemed competitive: the cost/price aspect is less clear.

EXEMPT 15(1)

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For its part, Canadair has a much better international bidding record, particularly on a sub-contract basis, so here the task would be to maintain competitiveness. This is again true for the other firms in the sector engaged in airframe sub-contracting; they have performed well to date, the task will be to maintain that standard.

3. GOVERNMENT PROGRAMS AND POLICIES

Following the fundamental policy change in defence procurement - which introduced the "off-the-shelf" purchasing freedom in Canada as distinct from domestic preference - the Canadian aerospace industry has come to function as a free trader with the Government offering a number of ways to assist the process.

The industry operates within a framework which is fundamentally a economic development strategy, driven by world markets, industrial capability and investment opportunities. On the demand side, international market access has been the key - notably the Defence Production Sharing Agreement with the U.S., for defence products and the Agreement on Trade in Civil Aircraft under GATT, for civil products. A number of supplier linkages with foreign prime companies have been thus established with specialization and international competitiveness being the dominant characteristic.

Exploitation of this access has been through the systematic development of supplier firms through Government funding assistance programs (predominantly NIPP, which focuses, inter alia, upon modernization and the removal of competitive disparity). Airframe has benefitted from these sources of funds proportionally but in addition has been given access to substantial sums in the form of guaranteed loans from commercial banks. Another instrument has been the negotiation of industrial benefits secured as part of the offshore defence procurement process where plant establishment on the basis of world product mandates has been sought wherever possible. More recently, the Memorandum of Understanding medium has been employed as the basis for future government/corporate planning; the agreements with Bell and MBB are recent examples of this latter process.

4. EVOLVING ENVIRONMENT

The evolution of the world industry since WWII has resulted in a steady reduction of individual firms - mainly resulting from amalgamation and rationalization - coupled with a steady elevation of standards and technical performance required of the products. These trends can be expected to continue, perhaps resulting in some corporate retrenchment in Canada.

Major projects are seldom attempted by individual firms nowadays and international joint ventures have become the rule. These characteristics can be expected to continue in vogue but it should be noted that there is no evidence (as yet) of positive economic results although project accomplishment in the technical sense has on the whole been good.

The industry has always been capital intensive and the anticipated trends in advanced materials and production practices - notably reinforced carbon composites, CAD/CAM and survivability/

airworthiness requirements - can be expected to place added financial strain, in order for member firms to remain competitive.

The technological demands required of the industry are therefore expected to reflect a continually increasing high standard. There is also a shift towards the greater development and employment of electronics systems in aircraft with a corresponding lesser role for the airframe manufacturer, particularly in the defence field.

5. COMPETITIVE ASSESSMENT

In terms of its demonstrated ability to consistently serve diverse foreign markets and particularly in view of the commercial/civil predominance of sales turnover, the Canadian airframe industry can be judged as competitive - certainly in technical terms and those of meeting essential qualifications to bid.

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It should be noted that significant governmental involvement is a worldwide phenomena in aerospace. In this regard, Canada is no exception.

Ownership and strategic roles for Canadair and de Havilland must be established from both a corporate and overall sector strategic standpoint. A near-term priority is the formation of long term corporate plans for both these firms in order that they maintain and hopefully improve their world market shares, while reflecting far better financial returns than of late. The recent government priority to return these firms to private ownership is premised on the belief that it will strengthen management and competitiveness.

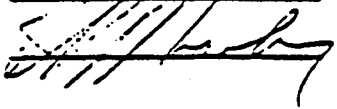
For Airframe as a whole, the quality and variety of R&D should be restored to previous high levels and there is broadly a basis for more attention to be paid to rationalizing and selectively upgrading production capacity and capability - particularly as there is a probable state of conventional manufacturing excess capacity world wide.

The U.S. Defence Production Sharing Agreement which was designed to compensate for "off-the-shelf" government procurement has worked well in terms of work quantity, much less so in terms of quality. Canada has not been sufficiently effective in selling complete aircraft to the U.S. Defence Department and trade, while substantial in terms of dollar volume has been at a correspondingly subordinate level. One major potential opportunity available to the industry would be the further development and application of Augmentor Wing Technology leading to a major Canadian share in a world class military STOL utility transport, with potential for subsequent civilian application.

The continuing trend towards trade liberalization in the civil sector suggests that corresponding development is appropriate in the defence field by for example, making NPSC/NDSC work more effectively.

The Canadian sector is undergoing structural change with its entry into the helicopter field and the expansion this will afford in the several size ranges selected and under negotiation. It is too early to comment upon this particular activity as there are no results available as yet for analysis.

Prepared by: A.J. Barker

Approved by: 

FACT SHEET (PER STATS CANADA)

NAME OF SECTOR: AIRFRAME/PROPULSION SIC(s) COVERED*: 321

1. PRINCIPAL STATISTICS

	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>
Establishments	162	153	151	N.A.
Employment	39,641	39,029	33,256	N.A.
Shipments (\$ millions)	1,849	2,462	2,193	N.A.
Gross Domestic Product (Constant 1971\$ millions)	N.A.	N.A.	N.A.	N.A.
Investment (\$ millions)	111	97	117	N.A.
Profits after tax (\$ millions)	124	191	N.A.	N.A.
(1) Exports (\$ millions)	1,403	1,797	1,732	1,519
Domestic Shipments (\$ millions)	446	665	461	N.A.
Imports (\$ millions)	1,774	2,287	1,523	1,734
Canadian Market (\$ millions)	2,220	2,952	1,984	N.A.
Exports - % of shipments	76	73	69	N.A.
Imports - % of domestic market	80	77	77	N.A.

(1) Excluding re-exports

2. REGIONAL DISTRIBUTION - Average over the last 3 years

	<u>Atlantic</u>	<u>Québec</u>	<u>Ontario</u>	<u>Prairies</u>	<u>B.C.</u>
Establishments - % of total	3	29	33	18	17
Employment - % of total	1	48	41	9	1
Value of production - % of total	1	51	40	7	1

Shipments, unavailable by province, represented 95% of the value of production over the three years 1980/81/82.

3. MAJOR FIRMS

	<u>Ownership</u>	<u>Location of Major Plants</u>
1. Canadair Ltd.	Crown	Montreal
2. Pratt & Whitney Canada	U.S.	Montreal
3. De Havilland Canada	Crown	Toronto
4. McDonnell Douglas Canada	U.S.	Toronto

4. FEDERAL AND PROVINCIAL GOVERNMENT PROGRAMS (as appropriate)

See attachment "A".

5. MAJOR REPORTS AVAILABLE

See attachment "B".

FACT SHEET (Based Upon Branch Survey of Companies)

NAME OF SECTOR: AEROSPACE

1. PRINCIPAL STATISTICS

	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>
Shipments (\$ millions)	2,609	2,769	2,580	2,930
Exports (\$ millions)	2,297	2,456	2,048	2,254
Exports - % of shipments	88.0	88.7	79.4	77.3
Domestic Shipments (\$ millions)	312	313	532	666
Imports (\$ millions)	2,350	1,523	1,841	N.A.
Employment (thousands)	41.0	39.8	37.1	38.5
Investment (\$ millions)	143.2	119.3	89.9	144.8

2. REGIONAL DISTRIBUTION - Average over the Last 3 years

	<u>Atlantic</u>	<u>Québec</u>	<u>Ontario</u>	<u>Prairies</u>	<u>B.C.</u>
As percentage of sales	0.4	49.85	42.5	7.25	

3. MAJOR FIRMS

	<u>Ownership</u>	<u>Location of Major Plants</u>
1. Pratt & Whitney Canada	U.S.	Montreal
2. Canadair Ltd.	Crown	Montreal
3. De Havilland Canada	Crown	Toronto
4. McDonnell Douglas Canada	U.S.	Toronto
5. Lincor Systems Canada	U.S.	Toronto
6. SPAR Aerospace	Canadian	Toronto

4. FEDERAL AND PROVINCIAL GOVERNMENT PROGRAMS

See attachment "1".

5. MAJOR REPORTS AVAILABLE

See attachment "3".

DECLASSIFIED = DECLASSIFIED CONFIDENTIAL
EXTERNAL AFFAIRS = AFFAIRES CONFIDENTIEL

ANNEX A

SUPPORT PROGRAMS

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DECLASSIFIED = DÉCLASSÉ
EXTERNAL AFFAIRS = AFFAIRES EXTÉRIEURES

CONFIDENTIAL
CONFIDENTIEL

ANNEX B

SECTOR STUDIES AND REVIEWS

- Report by the Sector Task Force on the Canadian Aerospace Industry (Chairman - J.C. Lowe) 30 June 1978
- Evaluation of the Defence Industry Productivity Program (DIPP) (Peac, Marwick and partners) 1981
- Report of the Advisory Committee on Aerospace Development 30 June 1983
- Development Strategy for the Canadian Aerospace Industry (HC) 3 October 1983
- Canada's Aerospace Industry - Capability Guide 1983/84

COMPETITIVENESS PROFILE

AEROSPACE - AVIONICS SUB-SECTOR

1. STRUCTURE AND PERFORMANCE

The Avionics (i.e. airborne electronics) sub-sector of the Canadian aerospace industry is involved in the development, manufacture and repair and overhaul of proprietary systems (Navigation, Radar, Cockpit displays...). 1983 sales were \$460 million and employment approximately 5300. In recent years, its sales have represented between 15% - 20% of the total Canadian aerospace industry and consists of:

- five medium sized firms, would class in specialized component development (largest is Litton with 1983 sales of \$180 million).
- World class flight simulator company in C.A.E.
- Other firms with a partial involvement in Avionics (Honeywell, Rockwell...).
- A number of small business performing specialized machining and processes on a sub-contract basis - this being the most prominent form of domestic linkage.

This sub-sector has grown from virtually nothing to its present turnover of approx. \$500 million annually - in avionics products alone - in just over two decades.

A review of financial results for the last five years, conducted on a sampling basis, indicates that the financial performance of the sub-sector compares extremely well with both U.S. aerospace and Canadian manufacturing as a whole.

As an average over that period, pre-tax profit was - 7.5% on sales, 24.2% on equity and 10.1% on assets.

Evolution and diversification have been most pronounced in this sub-sector to the point that non-aerospace activities now constitute the bulk of the volume in some of the firms. The mix of civil and defence products is also more an even one here.

Forward linkages are predominantly offshore (approx. 97% of total turnover was exported in 1983). Regionally, the Avionics industry is 35% Quebec and the balance in Ontario. Ownership is totally foreign (US and UK).

2. INDUSTRY STRENGTHS AND WEAKNESSES

Over and above the conventional measurements of price, quality and delivery, competitiveness in avionics is the subject of

responsiveness to rigidly specific requirements, technological parity and preferably - superiority, compliance with complex contractual terms and conditions and to an increasing extent - product reliability. Attributes which constitute world leadership have to be demonstrated by anyone aspiring, to surely Boeing or the U.S. Military for example.

The strength of the Canadian avionics industry, as a whole, is that it has learned to compete directly in world markets and has gained select footholds on the basis of specialization and concentration. It was Canada's initiative for example, which led to the inclusion of flight simulators into the 1980 GATT Civil Aircraft Agreement.

Less a weakness than form of vulnerability, the avionics sub-sector will be hard-pressed to maintain "state of the art" technology - which it must do to survive in its present form.

Canadian aerospace lacks a viable domestic market and this includes a lack of adequate technical stimulus from defence spending. The U.S. Defence Production Sharing Agreement which was designed to compensate for this has worked well in terms of sales volume much less so in terms of quality. Canada has been only partially effective in selling complete systems to the U.S. Defence Department and trade, while substantial, has been at a correspondingly subordinate level.

Avionics is the most defence market oriented segment in Canadian aerospace and, therefore, more sensitive to the limitations imposed by DND procurement policy, in that few direct acquisitions are made. Similarly, U.S. technological and trade restrictions in the defence field constitute a major issue for this sub-sector.

Such shifting as the industry has undergone has involved the reduction of its business linkages with DND and with it, a loss of essential stimulus to new technology development from that source.

3. GOVERNMENT PROGRAMS AND POLICIES

Following the fundamental policy change in defence procurement - which introduced the "off-the-shelf" purchasing freedom in Canada as distinct from domestic preference - the Canadian aerospace industry has come to function as a free trader with the Government offering a number of ways to assist the process.

The industry operates within a framework which is fundamentally a economic development strategy, driven by world markets, industrial capability and investment opportunities. On the demand side, international market access has been the key - notably the Defence Production Sharing Agreement with the U.S., for defence products and the Agreement on Trade in Civil Aircraft under GATT, for civil

products. A number of supplier linkages with foreign prime companies have been thus established with specialization and international competitiveness being the dominant characteristic.

Exploitation of this access has been through the systematic development of supplier firms through Government funding assistance programs (predominantly DIPP, which focuses, inter alia, upon modernization and the removal of competitive disparity).

Avionics has benefitted from this proportionally. Another development instrument has been the negotiation of industrial benefits secured as part of the offshore defence procurement process. Plant establishment on the basis of world product mandates has been sought wherever possible and more recently, the Memorandum of Understanding medium has been employed as the basis for future government/corporate planning

EXEMPT - 20(1)(c)(4)

EVOLVING ENVIRONMENT

Flight deck automation is progressively diminishing crew work-load thereby placing an increasing importance upon the Avionics content of commercial aircraft.

In the tactical sector, systems management, detection and electronic counter measures requirements are placing avionics in a more prominent light to the point where the traditional weapons system prime contractor - an airframe firm - may have to yield to one in the electronics field.

A major challenge in this area will be to harness new technologies with respect to the evaluation of (semi-conductor) integrated circuits, an example of which is the defence field being Very High Speed Integrated Circuitry (VHSIC) Canadian firms are concerned at the threat posed by mammoth electronic firms (IBM, ITT, ...) in assuming larger roles in aerospace.

These are just some of the factors which will continue to underline the importance of R and D and advanced manufacturing processes. The need for heavy investment in these areas is axiomatic with the survival of the industry.

A survey of member firms indicates that the entire aerospace sector is confident of real growth over the next five years. A doubling of annual sales is forecast by the end of that period and Avionics expects a proportional share.

5. COMPETITIVE ASSESSMENT

The Avionics sub-sector has effectively demonstrated its ability to serve diverse and highly competitive international markets - including the US defence market. This is no slight achievement

given that each element of the market is dominated by a mere handful of firms throughout the world; in chosen areas, one of these is often Canadian.

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A re-examination of the industry's relationship with DM new equipment requirements is warranted and an upgrading of the manner in which the US/OPSA functions as full market access is also called for - of a kind which would enable Canada to market complete sub-systems to U.S. Government agencies. This could provide the means whereby a systems integration capability becomes restored.

Prepared by: A.I. Barker

Approved by: [Signature]

FACT SHEET (Based Upon Branch Survey of Companies)

NAME OF SECTOR: AEROSPACE

1. PRINCIPAL STATISTICS

	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>
Shipments (\$ millions)	2,609	2,769	2,580	2,930
Exports (\$ millions)	2,297	2,436	2,048	2,264
Exports - % of shipments	88.0	88.7	79.4	77.3
Domestic Shipments (\$ millions)	312	313	532	666
Imports (\$ millions)	2,350	1,523	1,841	N.A.
Employment (thousands)	41.0	39.8	37.1	38.5
Investment (\$ millions)	143.2	119.3	89.9	144.8

2. REGIONAL DISTRIBUTION - Average over the Last 3 years

	<u>Atlantic</u>	<u>Québec</u>	<u>Ontario</u>	<u>Prairies</u>	<u>B.C.</u>
As percentage of sales	0.4	49.85	42.3	7.25	

3. MAJOR FIRMS

	<u>Ownership</u>	<u>Location of Major Plants</u>
1. Pratt & Whitney Canada	U.S.	Montreal
2. Canadair Ltd.	Crown	Montreal
3. De Havilland Canada	Crown	Toronto
4. McDonnell Douglas Canada	U.S.	Toronto
5. Litton Systems Canada	U.S.	Toronto
6. SPAR Aerospace	Canadian	Toronto

4. FEDERAL AND PROVINCIAL GOVERNMENT PROGRAMS

See attachment "A".

5. MAJOR REPORTS AVAILABLE

See attachment "B".

ANNEX A

SUPPORT PROGRAMS

EXEMPT

15(1)

ANNEX B

SECTOR STUDIES AND REVIEWS

- Report by the Sector Task Force on the Canadian Aerospace Industry (Chairman - D.C. Lowe) 30 June 1978
- Evaluation of the Defence Industry Productivity Program (DIPP) (Peas, Marwick and partners) 1981
- Report of the Advisory Committee on Aerospace Development 30 June 1983
- Development Strategy for the Canadian Aerospace Industry (MC) 3 October 1983
- Canada's Aerospace Industry - Capability Guide 1983/84

COMPETITIVENESS PROFILE

AEROSPACE - PROPULSION SUB-SECTOR

1. STRUCTURE AND PERFORMANCE

The Propulsion sub-sector of the Canadian aerospace industry is involved in the development, manufacture and repair and overhaul of engines and accessories on a proprietary and sub-contract basis. 1983 sales were in the region of \$900 million and employment at approximately 11,000. In recent years, it has represented from 30 - 40% of the total industry in terms of sales and consists of:

- Dominant firm Pratt and Whitney Canada (PWC) which is world class in small gas turbines (1983 sales of \$503 million).
- Three medium sized firms in engine repair and overhaul (Orrenda, Rolls Royce, Standard Aero).
- Group of specialty firms in accessories (Lucas, AEL - fuel controls, Walbar - vanes).
- A number of small businesses in contract machining and special processing, which serve the above.

Excluding small businesses, the sub-sector consists of some 10 firms wholly or partly in propulsion. The regional proportions are approximately: Montreal 72%, Toronto 1% and Winnipeg 17%; while ownership is about 95% foreign.

A review of financial results for the last five years, conducted on a sampling basis, indicates that the financial performance of the sub-sector compares very favourably with both U.S. aerospace and Canadian manufacturing as a whole.

As an average over that period, pre-tax profit was - 6.3% on sales, 17.4% on equity and 8.4% on assets.

2. INDUSTRY STRENGTHS AND WEAKNESSES

Over and above the conventional measurements of price, quality and delivery, competitiveness is the subject of responsiveness to rigidly specific requirements, technological parity and preferably - superiority, compliance with complex contractual terms and conditions - product reliability and demonstrable economic superiority - typically specific fuel consumption. The strength of the bulk of Canadian engine industry, is that it has learned to compete directly in world markets and has gained select footholds on the basis of specialization, concentration and esteem on the part of those it supplies. The dominant PWC market share in small gas turbines is a notable example in this respect. That the

propulsion sector as a whole reflects a commercial/export predominance says a great deal for its degree of competitiveness in practice.

There have been two forms of structural shift in the Canadian propulsion sub-sector. The former "chosen instrument" for Government procurement for aero engines - Orenda - is now barely surviving as an overhaul centre for engines it built originally under licence for the Crown. In contrast, the steady and impressive growth of PWC and its closest suppliers (with sustained sponsorship under OIPP) is a reverse manifestation - a graduation from branch plant R. and O. and domestic preference, to world stature in select products.

Some evidence of weakness is thus suggested by certain firms whose sales represent about 20% of the sub-sector who have yet to recover a stature in the industry which they once commanded but subsequently lost.

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3. GOVERNMENT PROGRAMS AND POLICIES

Following the fundamental policy change in defence procurement - which introduced the "off-the-shelf" purchasing freedom in Canada as distinct from domestic preference - the Canadian industry has come to function as a free trader with the Government offering a number of ways to assist the process. (This applies to Canadian aerospace as a whole.)

The industry operates within a framework which is fundamentally a economic development strategy, driven by world markets, industrial capability and investment opportunities. On the demand side, international market access has been the key - notably the defence Production Sharing Agreement with the U.S., for defence products and the Agreement on Trade in Civil Aircraft under GATT, for civil products. A number of supplier linkages with foreign prime companies have been thus established with specialization and international competitiveness being the dominant characteristic. This access has been exploited by the systematic development of supplier firms through Government funding assistance programs (predominantly OIPP, which focuses inter alia upon modernization and the removal of competitive disparity).

Propulsion has benefited from this proportionally but in addition has been the recipient of what business there is in the overhaul of engines for OMD on what amounts to an assured basis.

Another instrument has been the negotiation of industrial benefits secured as part of the offshore defence procurement process. Plant establishment on the basis of world product mandates has been sought wherever possible (the G.E. blade and vane facility at Bromont) and more recently, the Memorandum of Understanding medium

has been employed as the basis for future government/corporate planning. PWC has been prominent in both the WPM and the M of II process.

4. EVOLVING ENVIRONMENT

World industry is dominated by a handful of firms and even then the cost of a new engine development is so prohibitive, that joint ventures and teaming arrangements are increasingly in evidence.

Pratt and Whitney Canada has secured a major world market share in the small turbine category, on a genuinely commercial, competitive basis. The company is now operating, however, in a more complex league and the advent of ceramics may make Japan, (for instance) an additional long-term threat due to its pronounced initiatives in this field.

The industry has always been capital intensive and the anticipated trends in advanced materials and production practices - notably CAN/CAM and automated manufacture - can be expected to place added financial strain in order for member firms to remain competitive.

Major shifts depend upon the extent to which theoretical notions can be translated into practical propositions. High temperature tolerance from ceramic applications and increased reliability and productivity improvement from other new materials will exert a direct influence on conventional engines. Beyond this, nuclear and hydrogen fuelled power plants remain long term possibilities although the problems these alternatives bring with them are profound.

A survey of member firms indicates that the entire aerospace sector is confident of real growth over the next five years. A doubling of annual sales is forecast by the end of that period and propulsion expects a proportional share.

5. COMPETITIVE ASSESSMENT

In terms of its demonstrated ability to consistently serve diverse foreign markets and particularly in view of the commercial/civil predominance of sales turnover, the Canadian propulsion industry can be judged as competitive.

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The remainder of the propulsion industry, have a much less favourable outlook and some measure of adjustment may be required in the fullness of time. This is attributable to the advent of

modular construction, increased reliability and a resultant reduction in the requirement for Repair and Overhaul, both in terms of frequency and amount.

That portion of the sub-sector represented by PWC and its suppliers already functions effectively in a free trade environment. At over 70% of the whole, it is clearly the dominant element.

Those companies hitherto dependant upon after-sales branch plant business are less well positioned although some already operate on a North American as distinct from Canadian market mandate. Significant renewal initiatives are called for here given the predicted decline in repeat business in R and O. This is one of the few protectionist minded areas in Canadian aerospace however and one which reacted noticeably when OSS accentuated Air Canada bidding on recent engine overhaul. Sensitivity to change can therefore be anticipated in this minority area.

Prepared by: A.J. Barker

Approved by: [Signature]

FACT SHEET (PER STATS CANADA)

NAME OF SECTOR: AIRFRAME/PROPULSION SIC(s) COVERED*: 321

1. PRINCIPAL STATISTICS

	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>
Establishments	162	153	151	N.A.
Employment	39,641	39,029	33,256	N.A.
Shipments (\$ millions)	1,849	2,462	2,193	N.A.
Gross Domestic Product (Constant 1971\$ millions)	N.A.	N.A.	N.A.	N.A.
Investment (\$ millions)	111	97	117	N.A.
Profits after tax (\$ millions)	124	191	N.A.	N.A.
(1) Exports (\$ millions)	1,403	1,797	1,732	1,519
Domestic Shipments (\$ millions)	446	665	461	N.A.
Imports (\$ millions)	1,774	2,287	1,523	1,754
Canadian Market (\$ millions)	2,220	2,952	1,984	N.A.
Exports - % of shipments	76	73	69	N.A.
Imports - % of domestic market	80	77	77	N.A.

(1) Excluding re-exports

2. REGIONAL DISTRIBUTION - Average over the Last 3 years

	<u>Atlantic</u>	<u>Quebec</u>	<u>Ontario</u>	<u>Prairies</u>	<u>B.C.</u>
Establishments - % of total	3	29	33	18	17
Employment - % of total	1	43	41	9	1
Value of production - % of total	1	51	40	7	1

Shipments, unavailable by province, represented 95% of the value of production over the three years 1980/81/82.

3. MAJOR FIRMS

	<u>Ownership</u>	<u>Location of Major Plants</u>
1. Canada's Ltd.	Crown	Montreal
2. Pratt & Whitney Canada	U.S.	Montreal
3. De Havilland Canada	Crown	Toronto
4. McDonnell Douglas Canada	U.S.	Toronto

4. FEDERAL AND PROVINCIAL GOVERNMENT PROGRAMS (as appropriate)

See attachment "A".

5. MAJOR REPORTS AVAILABLE

See attachment "B".

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FACT SHEET (Based Upon Branch Survey of Companies)

NAME OF SECTOR: AEROSPACE

1. PRINCIPAL STATISTICS

	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>
Shipments (\$ millions)	2,609	2,769	2,380	2,930
Exports (\$ millions)	2,297	2,456	2,048	2,254
Exports - % of shipments	88.0	88.7	79.4	77.3
Domestic Shipments (\$ millions)	312	313	332	666
Imports (\$ millions)	2,330	1,523	1,341	N.A.
Employment (thousands)	41.0	39.8	37.1	38.3
Investment (\$ millions)	143.2	119.3	89.9	144.8

2. REGIONAL DISTRIBUTION - Average over the Last 3 years

	<u>Atlantic</u>	<u>Quebec</u>	<u>Ontario</u>	<u>Prairies</u>	<u>B.C.</u>
As percentage of sales	0.4	49.85	42.5	7.25	

3. MAJOR FIRMS

	<u>Ownership</u>	<u>Location of Major Plants</u>
1. Pratt & Whitney Canada	U.S.	Montreal
2. Canadair Ltd.	Crown	Montreal
3. De Havilland Canada	Crown	Toronto
4. McDonnell Douglas Canada	U.S.	Toronto
5. Lincor Systems Canada	U.S.	Toronto
6. SPAR Aerospace	Canadian	Toronto

4. FEDERAL AND PROVINCIAL GOVERNMENT PROGRAMS

See attachment "A".

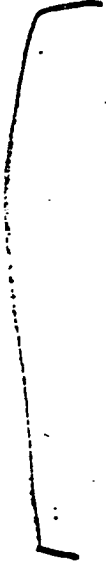
5. MAJOR REPORTS AVAILABLE

See attachment "B".

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EXTERNAL AFFAIRS = AFFAIRES EXTÉRIEURES **CONFIDENTIEL**

ANNEX A

SUPPORT PROGRAMS



DECLASSIFIED = DÉCLASSÉ
EXTERNAL AFFAIRS = AFFAIRES ÉTRANGÈRES

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ANNEX B

SECTOR STUDIES AND REVIEWS

- Report by the Sector Task Force on the Canadian Aerospace Industry (Chairman - B.C. Love) 30 June 1978
- Evaluation of the Defence Industry Productivity Program (DIPP) (Peac, Marwick and partners) 1981
- Report of the Advisory Committee on Aerospace Development 30 June 1983
- Development Strategy for the Canadian Aerospace Industry (MC) 3 October 1983
- Canada's Aerospace Industry - Capability Guide 1983/84

COMPETITIVENESS PROFILE

AEROSPACE - SPACE SUB-SECTOR

1. STRUCTURE AND PERFORMANCE

The space sub-sector of the Canadian aerospace industry is involved in the development, systems engineering and manufacture of select areas in satellites and ground based systems. In recent years, it has accounted for between 5% - 10% of the total aerospace industry with 1983 sales of just over \$200 million annually.

- Dominant firm is SPAR (1983 sales of \$215 million of which \$140 million was space) - over half of the sub-sector total.
- Nearly 40 other very much smaller firms with either a total or a partial involvement in space activities.
- Highly knowledge intensive with a correspondingly high ratio, sales: employee.
- Domestic expenditures typically represent a higher proportion of total sales than is the case for the Canadian aerospace industry as a whole.
- This is the sub-sector with the most pronounced evidence of entrepreneurial initiative in Canadian aerospace - in terms of new business establishment.

Regional representation is widespread for this sub-sector with some business entity present in the majority of Provinces. Ownership is predominantly Canadian.

The statistical database for this industry is not yet fully developed; Stats Can does not separately classify space so that information has to be specially gathered.

Such information as does readily exist is presented in Annex A.

2. INDUSTRY STRENGTHS AND WEAKNESSES

The strength of this sub-sector lies in the fact that it is an accredited participant in the world industry. SPAR has been involved in the production of over 50 satellites beginning with Alouette in 1962 - the world's third to go into orbit.

Export market successes include BrazilSat - Latin America's first domestic communications system - with SPAR as prime contractor; SED (Saskatoon) for the design and installation of the Satellite Control facility for the Brazilian Telecommunications system and

Fleet (Fort Erie) as a supplier of structures to Hughes. Bristol reflects a notable capability in upper atmosphere rockets and propulsion.

Underscoring this is the technological triumph of the CanadArm and Canada's highly publicized involvement with the Space Shuttle Program. Against this, the cost of the industry must be reckoned, with Government expenditures of \$1 billion to date - excluding Telesat procurements.

The small size and limited resource depth of most of the firms which make up the industry might in some instances prove to be a factor but there is evidence of a willingness to form consortia and joint venture relationships.

A basic characteristic of this business is the high proportion of research and development costs in relationship to overall project cost totals. There is little opportunity for series production on a scale comparable with other industries. Economic returns are adversely influenced accordingly.

Unlike the remainder of aerospace, the space sub-sector does not operate either under the GPSA umbrella or the GATT Aircraft Agreement. Although Canada was prepared to consider the inclusion of space products in the MTN of 1979, neither the USA, the EEC or Japan had a mandate to pursue such negotiations. If there is to be trade liberalization in this sector, the full legislation process remains to be undertaken.

3. GOVERNMENT PROGRAMS AND POLICIES

The Government's commitment to Space has been pronounced since the establishment of Telesat and the entry of SPAR into the field of satellite component manufacture. Support to SPAR as a "chosen instrument" has been consistent over the period.

While the firms have availed themselves of all appropriate support programs, it has been under the aegis of 'national interest' that the major funding contributions have been made.

It is in this sub-sector, that non-commercial benefits rank prominently aside from conventional economic measurements, given the obvious social and strategic considerations that communications and remote sensing evoke.

Over the fifteen year history of the Canadian Space industry, Government expenditures have totalled about one half the overall revenues. Administration of these allotments has been through twelve different departments, past and present, dominant among these being the Dept. of Communications and the National Research Council.

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4. EVOLVING ENVIRONMENT

There are indications that the world market will continue to demonstrate spectacular growth with major opportunities being provided by the U.S. and European long term plans. This growth would include both civil and defence programs and include possibilities for Canadian participation, reinforced by past association.

The United States has resolved to establish a manned space station by the year 2000. This represents an opportunity for Canadian space firms to share in the \$8.2 billion capital expenditure by NASA over that period. Canadian firms such as: SPAR Aerospace, MDA, SED, CAL, have participated in past space programs, and have thus demonstrated their ability to compete.

Similarly, the European Space Agency (ESA) is planning to spend approximately \$1.5 billion over the next 5 years on competing space programs.

Both NASA and ESA have proposed to use their space satellites and space platforms for the following purposes: scientific experiments in the fields of technology and life sciences, remote sensing, telecommunications, material processing in space, and microgravity research. Canada along with other countries have much smaller space programs to launch communication, weather, navigation, and other satellites for domestic use.

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Many countries are seeking greater autonomy in space systems, e.g. Europe and Japan. Increasing difficulties and delays in securing a line position for satellite launching are stimulating the development of independent capabilities.

5. COMPETITIVE ASSESSMENT

SPAR has progressed to a point where it is now able to act as a prime contractor in the development of satellite systems. Recent major export successes include the European Olympus program on a sub-contract basis, repeat orders for Intelsat VI and the total system order from the Government of Brazil.

A notable technological achievement was realized with the successful deployment of the CanadArm - the Remote Manipulation system for the NASA Space Shuttle.

Elsewhere, Canadian firms have become established as successful suppliers of sub-systems and structural manufacturers and are steadily consolidating these external linkages having demonstrated the requisite competence in meeting the special standards required by this industry.

A prominent small business activity is the provision of consultancy services in overseas markets on space related issues.

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ANNEX A

SPACE SUB-SECTOR HISTORIC RECORD
(expressed in \$ million)

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