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REPORT OF

THE CANADIAN ELECTRONIC MARKETING MISSION

TO GERMANY, SWEDEN AND BRITAIN

MAY, 1966

DEPARTMENT OF TRADE AND COMMERCE, OTTAWA, CANADA

CANADIAN ELECTRONIC MARKETING

MISSION

TO

GERMANY, SWEDEN AND BRITAIN

MAY 5 - 28, 1966

I N D E X

Introduction

Under sponsorship of the Department of Trade and Commerce, a Canadian Electronic Products Mission visited Germany, Sweden and Britain in May, 1966. Five representatives of the Canadian electronics industry, one from the Electronic Industries Association (EIA) and an officer of the Department of Trade and Commerce comprised the mission.

The industry members were selected from Canadian electronic firms engaged in the design and manufacture of a wide range of products. Because of this, the mission was able to investigate many fields of interest and provide information for the entire industry. A representative from the EIA was included to explore any opportunities which might be of interest to other members.

Mission Members

George F. Kempf	Vice-President, Electronic Industries Association of Canada, Toronto, Ontario.
W. C. Tate	Vice-President & General Manager, Garrett Manufacturing Limited, Rexdale, Ontario.
Dr. D. A. Anderson	President, National Semiconductors Limited, Montreal, Quebec.
Dr. George Sinclair	President, Sinclair Radio Laboratories Limited, Downsview, Ontario.
J. G. Macmillan	President, Northern Radio Manufacturing Company Ltd., Ottawa, Ontario.
A. M. Roulston	Manager, Instruments Division, Nuclear Enterprises Limited, Winnipeg, Manitoba.

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Mission Members (cont'd)

C. A. Fortier	Electrical and Electronic Equipment Division, Department of Trade and Commerce, Ottawa, Ontario. (Mission Secretary)

Objectives of the Mission

The primary objectives were to undertake market surveys in the countries visited and to acquaint prospective purchasers with the extensive range of communications and electronic products and services available from Canada. Mission members also studied local buying conditions, procedures and prices.

Mission Itinerary

Hanover, Germany	May 5 - 8
Bremen, Germany	May 9 - 10
Munich, Germany	May 11 - 12
Stuttgart, Germany	May 13 - 14
Stockholm, Sweden	May 15 - 21
London, England	May 22 - 28

The mission members met officials of transportation, communication and telecommunication organizations, agencies employing electronic communications equipment in marine work, and Government authorities. They also visited research establishments, organizations dealing with navigational and aircraft electronics, data processing establishments, manufacturing plants employing electronic equipment, and electronics manufacturing and assembling firms. They met with professional research and engineering associations; technical papers being presented by mission members Dr. Sinclair and Dr. Anderson.

The material and recommendations contained in this report were prepared by the mission members. The opinions expressed are those of the members from industry and may not necessarily reflect the opinion of the Department of Trade and Commerce.

Summary and Recommendations

There is little information on Canada's electronic industry in Germany, Sweden and Britain. In many instances, the Canadian industry is regarded as tributary to that of the United States. The mission made it clear that there is a native industry in Canada, turning out unique Canadian designs, some of which are in use by major airlines in the world. It was emphasized that while many companies are subsidiaries of U.S. firms, they are conducting their own research programs independent of the parent organizations and their achievements have been substantial.

This lack of knowledge concerning Canada's industry can only be overcome by a greatly increased flow of information to European electronic circles. Their trade and technical publications contain European and American articles and advertisements; Canadian content is usually nil.

To penetrate the European market, the following is suggested:

1) Send your catalogues to as many European firms as you think might be interested. Keep them on your mailing list. Show prices including taxes, exchange, and duty in "their" currency. Include enough information so they can estimate the cost of transportation. Do not forget to state delivery time. Although English is acceptable in most technical circles, it is distinctly advantageous to provide material in their language. The same applies to the use of the metric system.

2) Advertise in European trade magazines and journals. As in America, this will reach the inner industrial design circles. Only long term advertising will establish your name in people's minds. Whenever your product is used in some well-known European products or project, proclaim it loudly in your advertising. Participation in trade fairs will also help you become known.

3) Provide European publications with articles on new products and developments or present papers on some technical subjects to professional groups.

4) If possible, establish personal contact. This will enable you to become acquainted with the distinctive business practices of the country.

5) Consider appointing an agent as agents are often the best medium for initially becoming established in Europe. Their knowledge of the commercial and the defence markets, as well as the business practices of the country, will be helpful and may be very difficult for you to acquire otherwise.

6) Consider licensing agreements with European manufacturers as these offer advantages. Many requests for names of Canadian firms interested in such arrangements were addressed to the mission.

7) If you have export problems, consult the Electrical and Electronic Equipment Division of the Department of Trade and Commerce, Ottawa, or the Canadian Commercial Counsellor in the relevant country.

G E R M A N Y

The German Electronic Market

The German market for electronic products is a large and growing one, with considerable potential for Canadian components. It is estimated at about four to five times the size of the Canadian market. Although there may be some short-term relaxation in the rate of growth, over a long period the market will continue to expand at a rapid rate.

There is currently a serious shortage of workers in the electronic industry and it has been necessary to bring in foreign workers, particularly from Greece and Turkey. In an effort to prevent the "hoarding" of workers not immediately needed, the government has instituted a tax on companies employing more than what is considered a reasonable number for the firm's immediate production requirements.

The prospect for sales in Germany of Canadian electronic products depends very much on the particular segment of the market which is involved. The German electronic market is dominated largely by four huge industrial complexes:

1. Siemens & Halske Aktiengesellschaft
2. Allgemeine Elektricitats Gesellschaft (AEG)
   a) Owns Telefunken 100%
   b) Owned 10% by G.E. Co., U.S.A.
3. Standard Elektrik Lorenz AG (SEL)
   Owned 93% by ITT
4. Philips Industrie Elektronik GMBH
   Owned by Philips of Holland

These companies each produce relatively complete lines of equipment and are largely self-sufficient in the production of components.

It would appear somewhat difficult at present for Canadian companies to sell complete non-specialized equipment and systems in competition with the large companies. However, there is a large market for specialized equipment and components, particularly components of MIL spec types. There are also indications of a growing shortage of specific components, which cannot be met immediately by fully-committed German companies; this should offer opportunities for the sale of Canadian components.

The German electronic industry is behind the United States in electronic technology, but the gap is rapidly being reduced. The lag in technology was particularly evident in the areas of integrated circuits and microminiaturization.

Representatives of management and of the purchasing departments of companies visited all stated there were no restrictions on purchase of components from other parts of the world. The main considerations were "landed" prices and quality. Small valuable items should be shipped by air freight.

There appears to be a strong preference for British and, to a lesser extent, U.S. products, over those of other countries. It is felt that this preference for sterling, where Government research money is being spent, is to help offset the costs of maintaining the British Army of the Rhine in Germany.

The Canadian electronics industry is virtually unknown in Germany. When its capabilities were outlined, there were immediate requests for additional information.

To sell effectively in the German market it helps to have advertising material, catalogues, etc. published in German, although English will be accepted. However, several of those interviewed said it was important that dimensions be expressed in metric units. If German is to be used, the translation must be done by someone not only competent in the technical field, but also familiar with colloquial German. This is noticeably different from the German of five to ten years ago. In many cases, Canadian Commercial Counsellors in Germany can assist in locating good translators.

If a company has a representative in Germany, he will often assume the responsibility for providing the translation.

It should be noted that the normal supply voltage is 220 volts, and the frequency is 50HZ. There is a move towards a mechanical standard DIN (Deutsche Industrie Norm), but where specialized equipment is being sold, this is unlikely to provide a barrier.

Antennas, Transmission Lines and Associated Equipment

None of the firms visited showed much interest in the standard types of components and equipments. The German industry is quite capable of designing and producing radar and TV antennas, and it would be difficult for a Canadian company to penetrate the market. None of the firms indicated any great interest in VHF or UHF antennas.

There was considerable interest in unique and specialized antennas. Germany is now engaged in some space projects in co-operation with several other European countries. It was apparent that Canadian know-how in designing and producing components for space use will be of definite interest.

Telephone and Telegraph Equipment

All telephone and telegraph communications systems, including the Telex network, are controlled by the Bundespost (Post and Telegraph Department). There are no private systems. The Bundespost writes specifications and approves companies after exhaustive testing of products. The generally accepted time for approval is two to three years. They do not buy anything outside Germany.

Siemens, AEG and SEL supply almost all the telephone and telegraph requirements of Germany. The equipment is fairly bulky, although well built and somewhat old fashioned by North American standards. It is about 30 to 40 per cent higher in price, even after including import duty and taxes on a competitive foreign product.

To sum up, Germany is not a potential market for Canadian telephone and telegraph equipment. It would appear impossible for a Canadian company to penetrate this market.

Nuclear Electronic Instruments

Information concerning the nuclear instrumentation market was obtained from scientists engaged in nuclear research, Government departments providing funds for research programs, and agents for nuclear electronic instruments.

The German market is a generally sophisticated one, demanding high quality. Items with a large sales volume are invariably manufactured in Germany. For instruments used in radiation measurements, approval must be obtained from the Ministry of Radiation Protection in Bad Godesberg. Equipment for research may enter Germany duty free. There are several large research centres in Germany using nuclear equipment, as well as medical laboratories and chemical laboratories.

It appears that the majority of imported nuclear instruments is being bought from Britain, The Netherlands and the United States. There are some German manufacturers and these companies will greatly increase their share of the market in the next few years.

The prospects for sales of Canadian nuclear instruments of a special or unique nature are fairly good, providing the marketing is carried out efficiently. Where required, official approval must be obtained and the equipment backed by good services, both technical and repair. Mass-produced equipment is unlikely to find a market in Germany.

Aircraft and Aerospace Equipment

This industry has not grown as rapidly as the rest of the electronics area in Germany, but there are signs of an increase in both aircraft and space programs sponsored by the German Government.

Most of these programs are made up of a consortium of companies and quite often are undertaken in conjunction with other European countries. This makes it difficult to assess the right point of contact for the sale of specialized products without an intimate knowledge of the particular equipment area for which each company is responsible. This points up the need for direct representation in Germany, although the Canadian Commercial Counsellors and the Department of Defence Production representative in Bonn can be of valuable assistance in this regard.

A large percentage of all aircraft in Germany, both military and commercial, is of U.S. design. Consequently, the chances for sales to this market are not good unless the equipment is specified early in the program by the aircraft purchaser or the U.S.A. aircraft designer.

In the field of military products, either aircraft or industrial, there is a potential for Canadian electronic products where Canada has special technological skills and where price is competitive.

Semiconductors

The semiconductor industry in Germany is growing at least as fast as the electronic industry as a whole. Again, three large companies dominate the scene: Siemens, AEG and SEL. In addition, U.S. companies, by virtue of their technological lead, have made great inroads. Because of the development of the EEC, U.S. companies are turning to cross licensing, or building plants in Germany. For example, there is the new Texas Instrument Company plant near Stuttgart, which will employ 2,000 people.

Canadian suppliers in the component manufacturing business tend to assume that if a product is made in Germany, the Canadian equivalent cannot be imported economically by the Germans. This may not be the case because although there is stiff competition from the German makers of small mass produced items, the users of semiconductor circuit type components report that these items are sometimes in short supply and not of top quality. In addition, the more esoteric components are not at all available from German suppliers.

Costs and Prices

Exports from Canada will bear freight, duty, and a "turn-over" tax of 6 per cent applicable to all domestic and foreign agents and manufacturers. The representative must then add his commission which will depend on what the market will bear, the degree of sales and service effort needed, and quantity. On standard components shipped in large quantities, the order may go directly from supplier to customer, the representative receiving 5 per cent. On small quantities, a good representative will buy, stock and sell, taking 15 per

cent. On instruments and rarer devices, he may want up to 50 per cent of the final selling price - from which he may pay duty, etc.

A product introduced into Germany with duty paid may be returned and duty reclaimed with the reason "not saleable in Germany".

Components

Component manufacturers and agents will find it difficult to satisfy the huge demands of the German market.

There is some demand for components from various entertainment type equipment manufacturers providing the price is competitive, the quality good, and the delivery excellent.

A less competitive area for Canadian components is in the military and specialized types. Most military purchasing is done to MIL-NATO and IEC specifications. German manufacturers of components are having difficulty and will require some time to standardize to these specifications. Some of the specialized products required are unique semi-conductor devices, resistors, capacitors, filters, relays, etc.

There were indications that quality and delivery are deteriorating in Germany due to the overload on production, thus presenting opportunities for Canadian suppliers. The common variety of components for radio and TV are facing some competition from imports, and prices are very competitive. As German manufacturers know so little about Canadian electronics, much could be done by EIA and larger companies in advertising Canadian products in this area.

If a component manufacturer wishes to sell in Germany, he must have a representative. German scientific personnel are quite bilingual, whereas the buyers and trades people are primarily German-speaking.

Several companies visited are willing to start off dealing directly with Canadian companies and will have their purchasing agents send requests directly to EIA, which will forward them to manufacturers of the specific products.

Companies particularly interested are the:

1. Standard Elektrik Lorenz AG (SEL),
   Hellmuth-Hirth-Strasse 42,
   Stuttgart, Zuffenhausen.

2. Robert Bosch GMBH, (Central purchasing
   Breitscheidstrasse 4, at this address)
   Stuttgart, W. Germany.

   Its subsidiaries are:

   a) Blaupunkt-Werke GMBH,
      Einbaufsleitung,
      32 Hildesheim,
      Robert-Bosch-Strasse 200, Germany.

   b) Fernseh GMGH,
      Einkauf,
      61 Darmstadt,
      am alten Bahnhof 6,
      Postfach 429, Germany.

Information on diodes, resistors, wires, etc. may be sent directly to each subsidiary of Robert Bosch. SEL will send in their requests as they arise.

There are many opportunities to sell components in Germany but it will take considerable effort.

Duty

Germany is a member of the European Economic Community (EEC). Consequently, Canadian goods are charged higher duties than are those of the members of this group. At present, the rate charged Germany's partners in the EEC is two to three per cent, but this will be eliminated entirely by 1968. Canadian goods currently bear approximately eight to fourteen per cent duty, but this varies with the products.

Trade Fairs in Germany

There are two main technical fairs in Germany of potential interest to Canadian exporters. These fairs are well organized and attract visitors from most of Europe.

The mission visited the annual "German Industries Fair" in Hanover, the largest and most complete trade fair in Germany. It covers nearly all technical fields including consumer, industrial, commercial and military areas. The displays range from massive oil-well drilling rigs, to aircraft, to miniature components. The electrical and electronic products and components exhibits were extensive, covering about 30 per cent of the floor space, (excluding the aircraft display space at Hanover Airport). By and large, there were three divisions to the electronic displays: components, equipment and systems, and consumer products. The larger manufacturers, who participate for prestige, were all represented. It is a very large fair and might not be suitable for Canadian electronic component manufacturers unless a Canadian section of some size could be organized.

Another show, the "Elektronika Components Fair", was held in Munich for the first time in 1964. It is devoted entirely to components and test equipment for components, and does not accept the participation of equipment or system manufacturers. There is an accompanying program of technical papers. It appears that "Elektronika" was started partly or largely by the agents and subsidiaries of U.S. companies and did not attract large manufacturers who displayed at the Hanover Fair. The "Elektronika 66 Components Fair" was held in Munich in September, 1966. While the larger companies were again missing, it seems improbable that they will continue to pass up a fair as successful as "Elektronika" appears to be.

"Elektronika 66 Components Fair" offered to provide a free booth to the Electronics Industries Association of Canada to disseminate information on the Canadian electronic components industry. It is hoped that the EIA will be able to accept if the offer is renewed in 1968. It would be highly desirable to have Canadian presentations in the technical sessions of future fairs. "Elektronika" seems well suited for Canadian component manufacturers to exhibit and study potential markets.

Representation in Germany

German buyers have had considerable experience with foreign suppliers who have had representation in Germany. On occasion they have been disappointed with delivery, and as a result, turned to making their own devices whenever possible. There appears to be a resentment over some foreign firms "dumping" representatives who have built up a business for them. Good representation is the most essential requirement if one is to export successfully. German engineers are very skeptical of dealing at great distances when technical information must be transmitted back and forth.

Consequently the following conditions are suggested for adequate representation:

1. Agents: It is necessary to have an active and technically competent agent to maintain contact, provide return information of customer reaction and requirements, and provide service. He will also have to provide the necessary liaison when approval is being sought.
2. One man cannot cover all Germany. Representatives should probably be around: Frankfurt, Munich, Stuttgart, Duesseldorf, at the very least, with better coverage if Hamburg, Berlin, Hanover and Bremen areas are included.

3. For products normally delivered by air, such as small valuable items, an advantage is gained if customs clearing representatives are stationed at Frankfurt.
4. Agents normally clear customs and check out the equipment prior to trans-shipment to the customer.

S W E D E N

The Swedish Electronic Market

The Swedish market for electronic products is less than half the size of the Canadian market, but due to similarities in geography and climatic conditions our electronic requirements are often quite alike.

The industry is growing at a rate of 10 - 15 per cent annually. A shortage of technical and skilled workers has developed in Sweden as in Germany. This shortage of labour is a dominating factor in the country's economy.

An inflationary tendency in the economy has driven pay scales up rapidly. At present a project engineer earns $10 - $14,000 per year, while lab technicians with an engineering degree will earn up to $10,000 per year. It appears as though this inflationary trend would continue for some time.

Although the market is much smaller in Sweden than Germany, it is not nearly as self-sufficient, and therefore opportunities for the sale of Canadian components and equipment are much greater. The total electronic market (exclusive of aircraft) is approximately $400 million, of which approximately $160 million is imported.

The market is a difficult one to penetrate because of established trading patterns particularly with Britain and Germany. However, Swedish users are always looking for specialized components and equipment, as well as for competitive prices on all products. There are no obstacles or reluctance to trade with Canada. In fact, some individuals would appear to prefer dealing with Canada rather than the U.S.A.

To penetrate this market it appears advisable to appoint an agent. This should be done with care since a Swedish agency may have under its control a multitude of subsidiary companies all in the representation business and the mission noted a tendency to take on competitive lines.

An "Electronic Buyer's Guide" was published late in 1966 and is available at about $18 a copy. It is in Swedish and will contain listings of agents, manufacturers and products. If you wish to buy a copy or space in the next year write to:

Forlags AB Svensk Elektronikmarknad,
Box 19117,
Stockholm 19, Sweden.

Care should be taken in selecting an agent to assure that a representative is financially sound. Assistance in this matter can be obtained from the Commercial Counsellor for Canada in Stockholm.

Although agents are accepted and welcomed throughout Swedish industry they sometimes have difficulty in reaching senior officials involved in the numerous government programs. However, senior level visitors from Canada will usually be granted a meeting without hesitation.

A Canadian firm must establish contact with the Swedish government if it wishes to be considered for bid purposes. This is not difficult if sufficient technical information is provided to show competence.

It would not be easy to establish a Canadian subsidiary factory in Sweden. Workers are very hard to find in Stockholm due chiefly to the lack of housing, caused again by the lack of workers. There are indications that funds for working capital are difficult to get from the banks. There is no shortage of electronic engineers in Sweden, due to the popularity of this field among students in the technical institutes and universities.

Technical papers appear to be of considerably more interest in Sweden than in Canada and would be an acceptable manner of introducing Canadian companies and products to Sweden. The leading technical journals for electronics are Elteknik, Elektronik and Radio och Television.

Mission members, Dr. Sinclair and Dr. Andeŝson, presented papers to the Association of Electrical and Electronic Engineers (Svenska Elektroingenjorers Riksforening) which were very well received. These were the first technical papers presented to this group by Canadians and did a great deal to show Canada's competence in electronics. The mission recommends continuation of presentation of technical papers on future technically oriented missions.

Antennas, Transmission Lines and Associated Equipment

There is a reasonably large market in Sweden for military antennas, towers and associated equipment; a large portion of it appears cornered by one manufacturer. Allgon Antennspecialisten AB in Akersherga started as a manufacturer of car radio antennas (and still supplies the bulk of this market) but branched out into the commercial and military market for standard and special antennas. Sweden has a competent staff of antenna engineers for designing the usual types of antennas, but experience in sophisticated antenna design is lacking.

All the representatives contacted said it would be very difficult to compete in the Swedish market. However, a German manufacturer of antennas, Her Kathrein, seems to sell some through Teleapparat, an agent in Stockholm. Both the Kathrein and Allgon antennas are expensively constructed in comparison

with those made in Canada or the United States. Allgon antennas have many machined parts where Canadian antennas would use castings or designs which avoid their use.

Most persons contacted said they were looking only for new and unique products not available from Swedish suppliers. For such items, there is quite a good market. An important factor in this regard is the ambitious program of development in the aircraft industry, which has created a demand for many sophisticated components and devices. In many cases, these items are possibly available through representatives of U.S. companies, but there is a lack of response, probably because the market is not large in relation to the design effort needed to meet specifications. Canadian companies could do much to fill this demand.

Telephone and Telegraph Equipment

Sweden's internal communication systems are controlled by the government-owned Posts Telephone and Telegrapn (PTT).

The PTT buys its requirements annually. It issues specifications and requires type approval, but claims it will buy from any approved source if the price is right. However, there is a strong tendency to purchase from Swedish manufacturers even, in some cases, if the price is higher. It appears that the best way to sell to Sweden is to have products made under license. In doing so, the licensor should check for competitive products, as Swedish companies tend to conceal their broad activities.

Nuclear Electronic Instruments

Sweden and Canada have reached a similar, and approximately equal stage of development in Nuclear Technology. It is estimated that their requirement for nuclear instruments is less than half that of Canada. Although this market is currently small, it is expected to increase rapidly in the next

two years. The main requirement in research laboratories is for test equipment. Medical and chemical laboratories require the more simple counting systems, and although this equipment is readily available from several sources, high quality, modern design and a good service organization would attract sales. It is essential that a Canadian manufacturer have an active agent selling in Sweden. He should be technically equipped to provide assistance and service to the customer, and advise the manufacturer of important trends or developments. A competent British sales engineer, located in the London area, would be able to provide adequate coverage in the Scandinavian countries.

Equipment must be supplied for 220 volt, 50 cycle supply which is standard in Europe and Scandinavia.

Duty is applied to the "cost plus freight" at the first port of entry. The rate from Canada may be 10 per cent, while similar equipment from the EFTA currently enters Sweden at about two per cent.

The EFTA duty will be eliminated by the end of 1966. A sales tax of 10 per cent is charged on the selling price on all items, although the duty may be recovered if the equipment is used for research.

There are several technical publications suitable for display of advertising material. Of these "Elektronik" and "Elteknik" are considered the most suitable.

Aircraft and Aerospace Equipment

In accordance with Swedish Government policy, any product significantly connected with the country's defence must be built in Sweden unless economics dictate otherwise. If the product is of importance, the Government will attempt to establish manufacturing rights through licenses.

The defence budget is $900 million, of which $360 million is spent annually for new equipment. Approximately 70 per cent of the new equipment is manufactured in Sweden.

The major manufacturers of electronic equipment for air defence are Saab, L.M. Ericsson, AGA, Standard Radio and Telefon, Philips Teleindustri and Arenco Electronics.

Although Sweden is aware of and uses advanced technology, it appears to have no objection to the use of older technology if the equipment is less expensive and/or more reliable and easier to maintain.

Imports in this area are primarily from the United States and Britain, with the United States having the major portion. Unlike many European countries, Sweden designs and builds its own military aircraft. Consequently, a market exists in Sweden for the sale of aircraft/aerospace components and equipment, although it may be a difficult one to penetrate.

Semiconductors

Domestic production provides about five per cent of the consumption. L.M. Ericsson started a few years ago to make ordinary diodes and transistors but ceased operation after a brief period; they now only make silicon diodes. The only company of any consequence is ASEA, which makes precise instrumentation thermistors and high-power thyristors (SCRs) for use on railroads, etc. This company has certain license agreements with General Electric on silicon products, but not on thermistors. Fairchild Semiconductors of California is establishing a plant north of Stockholm to manufacture silicon planar transistors and diodes as well as integrated circuits. Semiconductors made in Sweden and Canada are able to compete on equal terms with present sources

of supply in the EEC and the United States. The duty into Sweden is 10 per cent on semiconductor components including photocells.

The Swedish market for semiconductors is approximately 40 per cent of the Canadian market. It is expanding rapidly and currently amounts to about $10 million per year.

Military Requirements

The Swedish Army, Navy and Air Force Boards are interested in buying on a price and quality basis from anywhere in the world. It would appear that agents are not very well received. Senior board officials will deal only with principals. As a matter of interest, all three services have requirements (May, 1966) for a military packaged Speech + 3 Channel telegraph equipment. The Swedish Air Force is contemplating the use of Action Data Recorders.

To sum up, the civilian market can be penetrated by cross licensing; the military by direct contact with senior personnel from Canada.

EIA Publicity

The current EIA brochure was quite well received in Sweden, but it must be revised with more details and specifically edited as a buyer's guide. This guide must give the name of the company, list products with description and indicate what personnel to contact. Canadian firms with associated U.S.A. companies often confuse Swedish buyers. When looking at the present EIA company listing they can see about three names that are not those of American concerns and feel that these are the only Canadian firms worth writing to.

It is of great importance that future EIA listings should state specifically what items are exported exclusively from the Canadian firm. It would also be of great value to indicate what companies have distinct export

sales organizations and identify those exporting through associated or parent companies.

Duty

Sweden is a member of the European Free Trade Association (EFTA). Consequently, Canadian goods are charged higher duties than are those of the members of this group. At present, the EFTA rate is two to three per cent but this will be eliminated in 1967. Canadian goods bear approximately 10 per cent duty, but this varies with the products. The duty is based on CIF.

Trade Fairs in Sweden

St. Erik's Technical Fair is held in Stockholm each year in the fall (September 28 to October 4, 1966). The 1966 show was largely restricted to electronic test and measuring equipment. Although no technical papers are given, the show is open only to technical and industry people. It would appear to offer a good opportunity to publicize Canadian electronic products. If the EIA or the Canadian Government wished to participate, a free booth might be made available by the Fair authorities during the first year for trial and information purposes.

The electronic section of the Fair covers some 75,000 square feet. The rental is $30 per square yard (approximately) including standardized booths. Local manufacturers have first choice, followed by manufacturers' representatives. Although there are no technical papers given, the exhibits are attended by important purchasing people, engineers, and technicians.

Meetings with Professional Groups

1. A meeting was held between a representative of the EIA of Canada and Overingenjor Gosta Knall, president, and C.G. Gabrielsson, secretary of the Association of

Graduate Electrical and Electronic Engineers (SER).

The conversation centred around the exchange of information between the respective professional groups.

2. A meeting between the mission, and the Royal Academy of Engineering Sciences, with Mr. Sven Malmstrom, president, as chairman, was held. The subject was a general discussion of the co-operation between industry and government and in particular the program of Canadian Government assistance to Industry for R. & D. As the Trade Mission had no authority to speak for industry or government as a whole, mission members could only express their personal opinions.

B R I T A I N

The British Electronic Market

The British electronic industry is enjoying a high rate of expansion due to the shifting of emphasis from the entertainment field to capital electronic equipment. The latter now accounts for about two-thirds of the total electronic output and should reach three-quarters or more by 1970.

It was generally stated that there are no restrictions on purchases from Canada. However, it is evident that most purchasers prefer to buy in Britain. There are two important factors behind this. First, it is difficult for purchasing agents of large organizations to ignore the fact that Britain is facing a severe problem in its international balance of trade. Second, in the case of equipment or devices, it is necessary to have suitable facilities available in Britain. A Canadian company should consider either complete manufacturing in Britain, or at least arranging for a substantial British content to be added to the Canadian product.

At present, there is a 10 per cent surtax on all imports to Britain which gives local industry a substantial advantage. This surtax is to be removed shortly, but there is speculation that some other measures may replace it.

There appears to be some possibility for Canadian companies to obtain feasibility and development contracts on special devices for the military agencies. Such contracts would be available, provided the Canadian company has special competence to offer. There is a definite shortage of personnel and facilities for industrial research and development, offering an opportunity for Canadian companies in this field.

Antennas, Transmission Lines and Associated Equipment

Time did not permit a full study of the needs for antennas and associated equipment in Britain. At the "Instruments Electronics Automation Exhibition", there were very few antennas on display, mostly home T.V. antennas, and practically nothing of interest for commercial use. The exhibition catalogue had a long list of companies under the heading "Aerials", but they were mostly large companies with a capability for designing and manufacturing antennas on special order.

The mobile communication field has not been an important one in Britain until very recently. There is now a sizeable market developing in this field, creating a need for components of all types. Problems of intermodulation and interference are beginning to occur, producing requirements for selective filters, multicouplers, etc.

The defence requirements for equipment of all types are quite large, but in the antenna field seem to be adequately met by the large companies. However, there is a good chance to sell unique and specialized components.

Telephone and Telegraph Equipment

All internal telephone and telegraph systems are owned and operated by the General Post Office (G.P.O.). It is important to note that the "ring" agreements in purchasing have run out and are not being renewed.

Nevertheless, officials said that while they now buy on a competitive tender basis to specifications, only equipment made in Britain would be considered. Therefore, it would seem that the only way to penetrate the British market would be to cross-license with some suitable British company.

The G.P.O. is having difficulties expanding its Telex system, because there is only one manufacturer in Britain. The G.P.O. would like to purchase the No. 32 Teletype machine, but finds it expensive, particularly

with the 17 per cent duty. Canada has a market advantage here because it receives duty free entry.

Nuclear Electronic Instruments

The market in Britain for general nuclear electronic equipment is fairly large. However, there are many companies manufacturing this type of equipment and there is therefore no great demand for foreign manufactures.

The United Kingdom Atomic Energy Authority establishment at Harwell develops most of the instrumentation required for research laboratories, and some development is carried out by private industry. The trend in instrumentation for physics research is towards the extensive use of integrated circuits, the equipment being computer orientated, for eventual complete computer control of experiments. There is also considerable effort being made towards the eventual standardization of nuclear equipment. It is hoped that an international standard will be achieved between the E.S.O.N.E. (European Standard of Nuclear Equipment), Harwell, and the N.I.M. (Nuclear Instrument Module) in the United States.

In the geophysical area, the trend in portable instruments is towards simplicity of operation. It seems that activation analysis equipment for on-the-spot analysis will be the next major requirement.

Because there are adequate suppliers of the general line of equipment in Britain, no large sales volume should be expected by Canadian suppliers. However, there is a market for the more specialized equipment.

Equipment having a Commonwealth content exceeding 50 per cent may enter Britain duty-free. Also, equipment used for research purposes may enter duty-free. In this event, the Commonwealth preferential advantage held by Canada over other countries would be eliminated.

In selling to Britain, an active and technically qualified agent is necessary. The formation of a British subsidiary company for manufacture or final assembly in Britain is advisable when warranted.

Samples of equipment should be displayed and demonstrated by the agent. The Canadian Government Building at No. 1 Grosvenor Square, London, W.1., contains an area suitable for the display of equipment to which prospective clients could be invited.

Participation in fairs such as the "Instruments Electronics and Automation Exhibition" is highly recommended.

Aircraft and Aerospace Equipment

The aircraft industry is undergoing change due to government action to reduce employment from approximately 270,000 to around 150,000. Of the countries visited, Britain has by far the largest and most integrated military, commercial and private aircraft industry.

Although there are no restrictions on purchasing from outside Britain, the influential Society of British Aircraft Constructors continually urges procurement of British equipment.

The British industry is well advanced in technology, and consequently the potential for sale to Britain lies in specialized components and "advanced state of the art" equipment. In fact, it is possible to obtain funds for research and development and feasibility studies from the various Ministries for Air, Navy and Army where the Canadian companies can prove a unique capability or special competence.

Generally, the key to sales is through cross-licensing agreements or through associated companies if penetration of the market at all levels is to be appreciable.

Although duty applies on the import of aerospace products from non-Commonwealth sources, there is no tariff on Canadian products. However, if the importer is the Government, it may request special clearance to bring the goods in duty-free from non-Commonwealth sources.

Semiconductors

The semiconductor segment of the electronic industry in Europe is probably the one which is changing most rapidly and is the most volatile. Due to a "catching up" process, it is growing much faster than its counterpart in North America.

Approximate 1966 values of the semiconductor markets in the major European countries are as follows:

Country	Market	Imported Portions
United Kingdom	$70,000,000	34 per cent
France	60,000,000	50 per cent
Germany	50,000,000	unknown
Italy	18,000,000	unknown
Sweden	12,000,000	98 per cent

The general pattern is a rapidly increasing market for industrial applications, including such categories as computers, as compared with domestic and military uses.

The demand of telephony for diodes and transistors, with the impact of the Reed Electronic Exchange (REX) system being introduced into the U.K., will tax the suppliers of semiconductors, so that 12-month delivery schedules can be expected. It is estimated that the demand will double next year, and triple in each of the next two years. Integrated circuits are unlikely to have any effect on the telephony requirements for many years to come due to the very conservative approach to design in the General Post Office which dictates telephone engineering in the U.K.

Buyers in the government sector of industry tend to favour strongly the domestic supplier.

This is less true in the private sector. In devices such as computers, buyers express eagerness to buy from Canada if the right semiconductors are available. The new generation of computers is leaning heavily towards integrated circuit techniques. Grave doubts were expressed that Canada has developed sophisticated facilities in these techniques which would allow it to compete in this market. Canada, along with Europe, is judged to be five years behind the United States in this area of development.

In the United Kingdom a few large companies share most of the semiconductor market:

	Approximate Share
Mullard (Philips)	55 per cent
Standard Telecommunications Co.	15 per cent
Texas Instruments	10 per cent
Ferranti & Marconi	5 per cent
Foreign companies	5 per cent
A.E.I.	3 per cent
Hughes, Transistions, I.R.E., Newmarket, Lucas, etc.	7 per cent

Over the last two or three years, Mullard has had to buy from other U.K. manufacturers to meet the demand.

The companies expected to be users and major purchasers of semiconductors are:

Telephone	Computers (digital)
A.T.E.	I.C.T. - Ferranti
Ericsson	Honeywell
G.E.C.	English Electric - Marconi
A.E.I.	Elliots
S.T.C.	E.M.I.
	N.C.R.

Some statistics on this industry are available from the Board of Trade Journal and the Standard Industrial Classification, both published by the Government. However, these usually lump valves and semiconductors together.

In summary, the demand for semiconductors is increasing at a very rapid pace in Britain, outstripping supply. This provides an opportunity for the export of Canadian medium power devices, particularly to the private sector of the industry. It is the opinion of the mission that Canada is not competitive in either the high volume field or in the advanced field of integrated circuits.

Military Requirements

The Services are finding it increasingly difficult to find sources for small development contracts (£ 10,000 - £ 50,000) and would not be averse to placing work in Canada, providing Canadian industry can prove it is competent in specialized fields.

This method of doing business seems the most promising and will probably lead to reasonable production contracts.

Resistors

Resistors are imported in great quantities from the Continent. Spain can sell metal film resistors for about 1¼ cents each.

Capacitors are imported also in great quantities. Home industry is centered in:

T.M.C. - Spragne - Plessey	Many types
Hunts	Electrolytics
Mullard	Electrolytics
S.T.C.	Mica, Tantalum

For additional information on matters contained in this report or assistance in investigating and developing export opportunities mentioned in the report, please contact:

Director,
Manufacturing Industries and
Engineering Branch,
Department of Trade and Commerce,
Wellington Street,
Ottawa, Ontario.

or

Commercial Counsellor,
Canadian Embassy,
Kennedy-Allee 35,
Bad Godesberg, West Germany,
(Territory: States of Baden-Wuertemberg, Bavaria, Hesse, Rhineland-Palatinate, Saar, West Berlin.)

or

Consul,
Canadian Consulate,
Koenigsallee 82,
4 Duesseldorf 1, West Germany,
(Territory: State of North Rhine-Westphalia.)

or

Consul General,
Canadian Consulate General,
Ferdinandstrasse 69,
Hamburg, West Germany,
(Territory: City States of Bremen and Hamburg; States of Lower Saxony and Schleswig-Holstein.)

or

Minister (Commercial),
Office of the High Commissioner for Canada,
One Grosvenor Square,
London, W.1, England.

or

Canadian Government Trade Commissioner,
Martins Bank Building,
Water Street,
Liverpool, England,
(Territory: Midlands, North England.)

or

Canadian Government Trade Commissioner,
Cornhill House,
144 West George St.,
Glasgow C.2, Scotland,
(Territory: Scotland.)

or

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Skeppsbron 24,
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