

ERICSSON Management Contact

INFORMATION FOR ERICSSON EMPLOYEES WORLDWIDE NO. 4 / SEPTEMBER 1987

**Executive
Meeting
Reports**

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Joint Program With IBM On Intelligent Networks

Ericsson and IBM have announced a joint study to explore ways in which IBM expertise in database and data network management can be combined with Ericsson's AXE switching technology.

The objective is to provide customers with a wide range of new or improved services, using a concept known as the "feature node" approach to the "intelligent network."

This approach involves the use of dedicated central facilities through which the services can be managed more efficiently, offering users greater flexibility and the potential for lower costs. The concept represents an advance, compared with providing services by using the technology of today's digital networks.

Today, many enterprises use leased lines to link offices and other facilities in private telephone networks. With the intelligent network, they could enjoy the benefits of a private network by using a "Virtual Private Network" (VPN) service. The intelligent network



would recognize specific calls by users as private communications and would automatically connect such calls over a normal switched line to the other business locations.

Other services which could be managed more efficiently with the support of such an intelligent network include free telephone calling (toll-free or "800" service) and credit card calling.

The objective of the joint IBM-Ericsson study is to develop technical solutions for the intelligent network concept, specifically for advanced network functions, which are also known as "features." These solutions will be based on standard IBM and Ericsson systems and specialized software developed by the two companies to implement the intelligent network concept.

The agreement, which is nonexclusive, calls for architecture definition activities related to IBM systems and Ericsson switches, connectivity tests of IBM equipment and the AXE switch using standard interfaces, and an evaluation of "product opportunities." Studies will also be made of interface implementations to allow for the provision of competitive services by telecom administrations and other service providers.

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Big Order For Large U.S. Bank

The seventh largest thrift institution in the United States, 1st Nationwide Bank, based in San Francisco, has contracted to purchase Ericsson's integrated branch automation system. The system will be installed in 109 branches of

the Bank and 14 administrative offices.

The computerized banking system, which is being delivered by Ericsson Information Systems, consists of terminals for teller operations and computerized sup-

port functions for back-office administrative routines.

Upon completion of the installation nearly 300 1st Nationwide branches throughout the U.S. will be equipped with the EIS systems.

Portuguese PTT Picks MD 110 For Its Offices

The Portuguese Telecommunications and Post Administration (CTT), which is noted for its advanced technical standards, has selected Ericsson to supply a private voice-and-data communi-

cations network that will link six of CTT's main buildings in central Lisbon. The Administration's two head offices will be included in the network that will be based on Ericsson's MD 110 digital com-

munications system.

The order, described by Stig Larsson, president of Ericsson Information Systems, as "a very important contract," is estimated at \$2.1 million.

EARNINGS DOWN FOR FIRST HALF But Interim Report Notes Encouraging Trends

Ericsson's sales and income in the first half of 1987 were below the figures posted in the first six months of 1986 but earnings during the second half of the current year are expected to be higher than in the first six months, the Company reported in its interim report issued August 24.

The statement accompanying the figures on first-half operations noted several encouraging trends. The return on capital employed was slightly higher, as a result of more efficient capital management. Net interest expense declined sharply. And operating results in Information Systems, which has sustained heavy losses in recent years, improved somewhat.

Net sales for the six months ended June 30 amounted to \$2,301 million, off 3 percent from sales of \$2,375 m. in the first half a year ago. Orders booked during the 1987 period totaled \$2,369 m., as against \$2,511 m. a year earlier, a decrease of 6 percent, and the order backlog at the end of the period declined marginally, from \$3,793 m. to \$3,709 m.

AFFECTED BY EXCHANGE RATES

The trend of order bookings and sales, relative to the first six months last year, was affected adversely by the declining rate of exchange for the U.S. dollar and by the divestment of certain operations.

Income before appropriations and taxes in the first half of 1987 was \$64 m., compared with \$72 m., 11 percent below comparable income in 1986.

Adjusted net income per share after taxes paid was \$0.99 in the 1987 period, as against \$1.19 a year earlier, a decrease of 17 percent.

Adjusted net income per share after taxes paid and estimated deferred taxes on appropriations was \$1.34 in the 1987 reporting period, up 29 percent from \$1.04 a year earlier.

The performance of the Mexican subsidiary had a strong negative impact on Ericsson's net financial expenses and the economic situation in Brazil also affected earnings adversely.

Ongoing structural changes and continuing aggressive programs in a number of markets were charged against in-

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NEC CORPORATION
Far Eastern Competitor

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**CONVERTIBLE
DEBENTURES**

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TEXAS INSTRUMENTS
'Blue Chip' Supplier

Page 2

Six Months' 1987 Interim Report

(Millions of U.S. dollars
except share data)

	Six months ended June 30, 1987	Six months ended June 30, 1986	Six months ended Dec. 31, 1986
Net sales	\$2,301	\$2,375	\$2,574
Order bookings	2,369	2,511	2,617
Order backlog, end of period	3,709	3,793	3,694
Income before appropriations and taxes	64	72	70
Net income after taxes paid*	37.7	45.5	43.5
Net income after taxes paid and estimated deferred taxes on appropriations	\$51.1	\$39.6	\$62.7
Adjusted net income per share after taxes paid	\$0.99	\$1.19	\$1.15
Net income per share after taxes paid and estimated deferred taxes on appro- priations	\$1.35	\$1.04	\$1.66
Number of shares outstanding, millions	38	38	38

* Portion, applicable to period, of estimated taxes payable for full year.
U.S. \$1.00 = SEK 6.3950.

SALES BY BUSINESS AREAS

(Millions of U.S. dollars)

	Six months ended June 30, 1987	Six months ended June 30, 1986	Six months ended Dec. 31, 1986
Public Telecommunications	\$872.9	\$821.7	\$977.5
Information Systems	684.4	736.4	760.3
Cables	261.7	332.0	267.4
Defense Systems	232.1	206.9	262.2
Radio Communications	190.3	204.1	226.3
Network Engineering and Construction	161.2	161.2	203.6
Components	132.8	123.7	112.3
Other operations	46.4	52.5	49.4
Less: Intersegment sales	-280.8	-264.1	-286.4
	\$2,301.0	\$2,374.7	\$2,573.5

TREND OF OPERATIONS IN BRIEF

Public Telecommunications. Orders booked rose 3 percent and invoiced sales were 6 percent higher. The market shares for Ericsson's AXE switching equipment have increased, notably in Europe. While the efficiency measures being implemented have not yet offset the increased pressure on prices and continuing high development costs, they are expected to have a favorable impact on profitability as early as the end of the current year.

Information Systems. Order bookings were up 6 percent but invoicing declined 7 percent, due to the planned reduction in the scope of operations. The full effect of the program of corrective measures introduced two years ago has not yet been achieved, but the work force has already been reduced by about one third.

Cables. Order bookings declined 19 percent, and invoicing 21 percent, but these figures are not fully comparable with 1986 results since the Brazilian cable company is no longer consolidated. The market for telecom cable decreased in the U.S.

Defense Systems. Sales were 12 percent higher than a year earlier but order bookings declined by one half, due to delays in receiving certain contracts and the unexpectedly high order bookings at year-end 1986. High project costs for control systems depressed earnings.

Radio Communications. Order bookings were up 7 percent, but sales declined 7 percent. Sales of terminals for the NMT 900 system were lower than expected. High development costs for a new generation of mobile telephone terminals were charged against income for the period.

Network Engineering and Construction. Orders rose 14 percent and the level of invoicing was unchanged.

Components. Orders booked were 33 percent higher and invoicing rose 7 percent.

Ericsson/Texas Instruments

STRONGER LINK WITH A LEADER

Ericsson's new agreement with Texas Instruments (TI) (Contact Management, June 1987) strengthens a relationship with a U.S. company that has been a pioneer in computing technology for three decades and which is now widely regarded as one of the most advanced companies in the expanding field of artificial intelligence.

TI, best known today as a world leader in semiconductor technology, has posted an impressive list of firsts since its founding in 1938. It developed the first commercial production of silicon transistors, invented the integrated circuit, designed the first single chip processor and has produced what Personal Computing magazine calls "the optimum personal computer."

Total sales: \$5 bn.

The company's total sales of approximately \$5 billion in 1986 were distributed roughly as follows: components, \$2.1 b.; defense electronics, \$1.7 b.; digital products, \$900 million; services (primarily related to petroleum exploration) \$300 m., and metallurgical materials, \$200 m.

TI reported losses in two of the

past five years, due in part to overcapacity in the semiconductor industry, price pressure from Far East competitors and weak demand in several sectors of the company's business.

With cost-cutting as a first priority, the company turned a loss of \$119 m. in 1985 to a profit of \$29 m. in 1986 — a swing of \$148 m. — and first-half 1987 income



was \$145.7 m., compared with a loss of \$11.5 in the first six months a year earlier.

As part of the aggressive program to control costs, the number of TI employees has been reduced from a high of 86,600 in 1984 to 77,300 in 1986.

A 1986 U.S.-Japan trade treaty, designed to end Japanese dumping of semiconductors in the U.S. and open Japan's domestic market to U.S. suppliers, may prove beneficial to TI. "It remains to be seen if this agreement can be made to work," President Jerry K. Junkins told stockholders at the

company's annual meeting in April. "Government intervention, by itself, is not the long-term answer to the overall competitive challenge."

Noting that India and the People's Republic of China will join Far East nations in the world electronics marketplace in the future, Mr. Junkins said TI's strategy for competition on a global scale was based on:

- Technology leadership
- Focused, market-driven thrusts
- Manufacturing excellence
- Close ties with customers, and
- Worldwide deployment of resources.

Strategy defined

TI has estimated that the U.S. semiconductor market will grow 15 percent this year, to \$9.8 billion, and that the total world market will rise 14 percent, to \$30.1.

To retain its leadership in this highly competitive environment, the company expects to spend about \$400 million on research and development during 1987, roughly the same as in 1986, and customer-funded R&D is expected to account for an equal amount.

TI's R&D has paid off handsomely in terms of customer satisfaction. In the past three years alone, the company has received more than 70 major quality awards!

New Venture For EIS In Norway

In anticipation of deregulation of the local market for private telecommunications exchanges, Ericsson and A/S Electrisk Bureau in Norway have formed a new company, EB-Ericsson Information Systems, to market and service all products built around the advanced MD 110 subscriber exchange.

The new company, representing a merger of Ericsson's subsidiary in Norway and the Information Systems Division of ED Telecom, began operations July 1. The managing director is William Svedberg, formerly head of Ericsson's Norwegian subsidiary, and Peter Pay, managing director of EB Telecom is chairman of the board.

"It is the aim of EB-Ericsson Information Systems to continue the cooperation with the Norwegian PTT after the deregulation of the market for private exchanges," the parent companies said in a joint statement. The new company, which is expected to have net sales of approximately SEK 110 million this year, started operations with 450 employees.

EARNINGS DOWN IN FIRST HALF

Continued from page 1

come during the first half of 1987, the report said. Capital gains accounted for \$43 m. of income in the first six months of this year, compared with \$25.5 m. in 1986.

The report said the 6-percent decline in income after depreciation was due mainly to the sharp decline in the market for telecom cable in the United States, costs of introducing new products in Radio Communications, and high project costs in Defense Systems.

The exceptionally high investments that Ericsson has made have been costly but will gradually pay off, Hans Werthén, chairman of the Board of Directors, noted in a comment on the interim report.

STOCK QUOTATIONS

1987	Stockholm Stock Exchange			NASDAQ		
	SEK		VOLUME	USD		VOLUME
Week of:	HIGH	LOW		HIGH	LOW	
June 15	269	259	189,150	42 1/8	39 3/8	252,000
June 22	258	249	76,234	40 1/4	39 1/4	89,100
June 29	253	238	141,200	39 3/8	37 3/8	170,100
July 6	256	250	139,100	39 1/2	38 1/2	334,700
July 13	259	255	124,666	39 7/8	39 1/4	84,800
July 20	256	250	48,600	39 3/8	38 1/4	89,000
July 27	256	252	90,050	39 1/4	38 5/8	125,800
Aug 3	266	247	143,160	40 1/8	38 1/4	162,900
Aug 10	264	254	208,875	39 3/4	38 1/2	192,200
Aug 17	273	257	399,700	41 1/2	34 1/4	254,200

The tables above show the highest and lowest prices paid for LM Ericsson Class "B" shares on the Stockholm Stock Exchange, and the highest and lowest quotations reported by NASDAQ for these shares (represented by American Depository Receipts) in the United States. The quotations are reproduced only to indicate the general trends of Ericsson share prices in two countries.

THE NEW CHALLENGE IN BRAZIL

Minority-Owned Companies Are Still Market Leaders But Problems Are Tough

Most of the economic and financial news from Brazil has been discouraging during the past decade and a half. An expanding, booming economy was suddenly stricken by the oil crises of the Seventies. International headlines painted a drab picture for foreign-based companies trying to survive within the country. Chilling phrases recurred: Nationalization. Increased protectionism. Galloping inflation. Price ceilings. Import restrictions. Suspension of payments on foreign debt. Uncertain economic and social priorities.

But Ericsson today still accounts for about 50 percent of the market for telephone exchanges and Gerhard Weise, Chilean-born managing director of minority-owned Ericsson do Brasil (EDB), is "rather optimistic" about the company's prospects for the near future.

In the cable sector, where Ericsson holds a 30-percent interest (recently reduced from 92 percent) in FICAP (Fios e Cabos Plasticos do Brasil), Managing Director Jan-Erik Andersson has reason to be even more enthusiastic. Earnings have never been higher.

The story of Ericsson's survival and continuing strong presence in Brazil is one of adjustment to drastic changes in the way the Company has had to operate in one of its oldest and most important markets.

'Intend to stay'

"We have a long-term involvement and a long-term strategy in Brazil and we intend to stay," Gerhard Weise of EDB says. Mr. Weise was named managing director of the company, with headquarters in Sao Paulo, in 1986. The company's main plant is at Sao José dos Campos, about 120 kilometers from Sao Paulo. ITT, once a serious contender, no longer operates in Brazil. But NEC, with 30 percent of the market, and Siemens, with 15 percent, remain to challenge Ericsson's strong position.

In the mid-1960's Ericsson had full control of EDB, which then employed more than 10,000 per-

sons. Today, Brazilians own 51 percent of the company and the number of employees has been reduced to 5,700, including 400 in a telephone instrument plant in Manaus.

Shares offered

The new majority owners are headed by a large investment company, based in Rio de Janeiro, and Bradesco, Brazil's largest private bank. After these two institutions acquired control, they made 20 percent of EDB's shares available to the general public.

Despite fluctuations in the volume of orders from year to year, the Brazilian market for public telephone exchanges continues to be impressive. EDB had sales of slightly more than a billion Swedish kronor in 1986, but this was not much higher than the 1976 figure.

"We were the largest telecommunications manufacturer in Latin America," Gerhard Weise recalls.

Great uncertainty

"At the same time, there is great uncertainty about the future," Mr. Weise notes. "The priority assigned to expansion of telephony has fluctuated in the past. We also have to contend with galloping inflation and troublesome price ceilings. Last year, with ceilings on our selling prices, we had 40-percent wage increases and price increases of 20 percent on components. You cannot do any real long-term planning. We look ahead one quarter at a time."

While he is optimistic about the outlook for sales of public exchange equipment, Gerhard Weise is distressed by developments in the private market.

"It is unfortunate that we cannot participate in this exciting market," he says, noting 1984 legislation requiring, in principle, that all operations involving computers had to be controlled by Brazilian capital.

As a result, EDB cannot produce or sell Ericsson's key private-market system, the MD 110 subscriber exchange. The MD 110 is now being manufactured on license by a new company in which the majority owners of EDB have an 80-percent interest.

When the impact of the oil crises forced the Brazilian authorities to reduce the scale of their telecommunications in-



Ericsson do Brasil's headquarters in Sao Paulo.

vestments, EDB also had to cut back operations. This, combined with sharply higher tariffs on the company's imports from Sweden, resulted in losses for a number of years.

"We are in good shape today, however," Mr. Weise says. "We have kept our share of the market, very largely due to the fact that we have been able to contract production out to local subcontractors. We have also been able to increase exports from Brazil to about 10 percent of our sales. This has been a 'must'. The Brazilian authorities require that we offset all our imports with exports."

New expansion

Mr. Weise's optimism for the near future is based in part on last year's decision by the Brazilian authorities to invest in a new major expansion of telecom services. A total of 900,000 lines of equipment were ordered in 1986. The average number of lines ordered annually during the first half of the 1980s ranged between 400,000 and 500,000.

Plans call for 4.3 million new lines to be ordered during 1986-1980 period. This would mean continuing orders at a rate of 900,000 lines a year.

To hold its share of the Brazilian market, EDB has plans for a major expansion of capacity that may require adding 700 more workers.

'Members of the Family'

CABLE COMPANY FOCUSES ON ATTRACTIVE MARKETS

In Rio de Janeiro, where a Brazilian group, Paribuna de Metais, is now the major shareholder in FICAP, Jan-Erik Andersson, says: "We feel like members of the Ericsson family. We work together in areas where this is required, and now operate rather independently."

Ericsson's involvement in FICAP began in 1967 when the Swedish company acquired a 45 percent interest, with Anaconda holding an equal interest. Ericsson later acquired a substantial majority holding.

Despite the fact that it has only about 10 percent of the total market, FICAP is today the second largest cable manufacturer in Brazil. "But we have 15- to 30-percent shares in the attractive and profitable markets we really concentrate on," Mr. Andersson emphasizes. As a result, earnings are higher than those of competitors, he says.

The company has not always been as profitable as it is today. There have been sharp swings in sales and earnings in recent years, due largely to unstable national economic policies. In 1982, for ex-

ample, the company had record sales of \$92 million. A year later, sales had dropped to \$57 m. and the company recorded a substantial loss. Last year's invoicing was approximately \$80 m.

The number of employees, which had dipped from 1,800 to 1,200 during the difficult years, is now about 1,430.

Power cable accounts for about 50 percent of FICAP's sales, which total about \$100 m. Telecom cable and enameled wire each contribute about 25 percent of invoicing.

Mr. Andersson says that much of the company's recent success is due to the emphasis on training and education of employees. "Last year, 936 employees attended courses outside the company. They are allowed to study as much as they want, as long as it benefits the company."

This policy seems to be paying off. During the first quarter of 1987, FICAP's earnings were more than 50 percent higher than full-year 1986 profits.

(Article based on reporting by Mats Halvarsson, "Affärsvärlden")



Senior Officers Meet Analysts In 3 Cities

Executive Vice President and Chief Financial Officer Carl Wilhelm Ros and Executive Vice President Lars Ramqvist headed the Ericsson management team that met with professional in-

vestors in three key financial centers following release of the Company's six-months interim report August 24.

The first meeting was held in Stockholm two days later. It was

followed by presentations to financial analysts and others in London on August 28, and in New York on September 10.

The presentations are part of a continuing program.

EXECUTIVE MEETING • EXECUTIVE MEETING

C.W. Ros

Individual Managers Responsible

The responsibility of individual managers for the financial results of their units and the urgent need to reduce unit costs were the twin themes of the presentation by Carl Wilhelm Ros, Ericsson's Executive Vice President and Chief Financial Officer.

Despite the encouraging progress in strengthening the Company's balance sheet during the past year, Mr. Ros said Ericsson still faced a major challenge to achieve a satisfactory return on equity and minimize exposure to political, commercial and currency risks.

An improved return on equity is necessary to generate the earnings and cash flow required to support the sound financing of growth and development of a satisfactory earnings-per-share ratio, he said.

(Operating results for the first six months of the current year were not available at the time of the Executive Meeting. See interim report story on page 1.)

Mr. Ros said unit costs can be reduced through three approaches:

1. Increased organizational effectiveness and management development.
2. Business orientation.
3. Asset and liability management.

He described the latter as an area of continuing highest priority for Ericsson managers. The immediate task for each manager is to take steps to improve cash flow in his or her operating unit and increase its rate of return on equity.

A major aim for Ericsson as a whole is to hold working capital at 1986 levels for the full year 1987 despite an anticipated increase in net sales.

Mr. Ros said the Company had two basic long-term objectives.

"We shall reduce consolidated working capital to 40 percent of net sales, and total assets must be less than total consolidated net sales."



'THE ERICSSON WE WANT TO SEE'

CEO Björn Svedberg Presents Stirring Vision; Unit Cost Reduction 'Absolute Requirement'

Unit cost reduction is an "absolute requirement" if Ericsson is to achieve its proper level of profitability, CEO Björn Svedberg told managers attending the Executive Meeting.

Mr. Svedberg defined costs as "all costs we have along the entire chain to final delivery to the customer" and emphasized that a "unit can be a product from a manufacturing plant, or software developed in an office"

At the close of his remarks summarizing Ericsson's problems, successes and challenges, the CEO offered a stirring, sharply defined vision of "the Ericsson we want to see in the future"

Stronger Ericsson

"I see a stronger Ericsson — maintaining the integrity of our key technologies and products — operating as an independent, integrated organization.

"I also see an Ericsson that recognizes its limitations and has learned to cooperate productively with others.

"I see a sound, progressive Ericsson that has gained increased stature among the world's outstanding companies.

"I see a mixture of confident strength and instructive humility.

"I see a market with great potentials for a mixture of networks and services for the public and private sectors. And I see a

great potential for fixed and mobile communications via systems in which mobile telephony will offer advanced mobile terminals.

"I see, as a result of these developments, great gains from cooperation among all our Business Areas, but I also see new demands upon them.

"I see a market that moves more rapidly and is increasingly volatile. And that means that we, too, will have to move faster, and become more efficient.

Growing market

"I see a growing market, parts of which we will have to acquire through purchase"

To be able to expand successfully into new markets, Ericsson must achieve higher earnings combined with efficient capital management, Mr. Svedberg said.

He stressed that Ericsson has a comprehensive strategy that is proving successful.

"Briefly stated, it involves concentrating our efforts on telecommunications and electronic defense systems (largely telecommunications products), as well as on continued expansion of our marketing in Europe and the United States, and maintenance of our strong position in other regions.

As part of this strategy, Mr. Svedberg declared, "We will maintain and refine our strong points: our systems know-how, our international operating experience, our



Björn Svedberg

customer relationships and our flexibility."

Ericsson has to concentrate on the markets, customers and technologies "where we are large enough and good enough to achieve the profitability required for continuing growth," Mr. Svedberg said.

Concentration

"This necessary concentration, and the demand for growth that will assure long-term favorable development of earnings, impose a need for cooperation and alliances with other companies," he noted. "We need such cooperation and alliances to gain secure access to new technologies and/or new markets."

EXECUTIVE MEETING: An International Gathering Of Managers From 52 Countries

Nearly 320 persons took part, in one form or another, in the first Ericsson Executive Meeting held in two "sessions" in Stockholm the last two days of June and the first two days of July.

Senior Ericsson executives, managers and a number of key technical representatives from more than 52 countries outside Sweden, participated in Meeting sessions. Administrative, service and staff personnel accounted for the remainder.

Representatives of Ericsson operations on five continents — Europe, North and South America, Asia and Australia — attended the Meeting.

CEO Björn Svedberg's opening address at the afternoon session of each two-day gathering was followed by presentations by Carl Wilhelm Ros (Ericsson's Financial Performance), Lars Ramqvist (Ericsson Technologies for the 90's) and Rolf Skillner (Organizational Effectiveness/Management Development). A question-and-answer session and the presentation of the Ericsson Management Tournament prize concluded the first day's business session.

Most of the second day was devoted to presentations of "key issues" by the heads of Ericsson's seven Business Areas. Other segments featured addresses by Magnus Lemmel and Lennart Grabe (Business Orientation with Views from the General Counsel), Nils Ingvar Lundin (Corporate Relations), and Michele Schmidt (Executive Communication). The Meeting concluded with a second question and answer session and summary remarks by Mr. Svedberg.

Magnus Lemmel

Constructive Thinking Necessary

The "Business Orientation" program, one of Ericsson's top corporate priorities this year, offers managers a vehicle for thinking in constructive terms and seizing opportunities, Magnus Lemmel, senior vice president-market coordination, declared in his presentation to the Executive Meeting.

Mr. Lemmel and Bo Landin, senior vice president, corporate market coordination and strategic planning, are responsible for the market coordination function at the corporate staff level.

Managers must increasingly sharpen their focus on aggressive, external action and demonstrate to the market that Ericsson is back on the right track, Mr. Lemmel emphasized during his presentation.

With the ultimate objective of achieving higher profits, managers should concentrate on deals that "fit" Ericsson's products and systems, Mr. Lemmel said.

This calls for increased business efficiency, better customer orientation, an enhanced entrepreneurial spirit and more creativity in selling, the market coordinator pointed out.

Stressing the need for increased "commercialism," he urged managers to be creative in customer relations, to use imagination in the choice of products offered, and to use pricing aggressively. Terms of payment can also be an important instrument in business orientation, he suggested.

Mr. Lemmel cited the strong business orientation programs under way in Information Systems Business and said that programs were under discussion and implementation in all the other Business Areas. "Hundreds of current projects — including EOT, EISA and LOTS — will create the EIS of tomorrow," he predicted.

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Magnus Lemmel

EXECUTIVE MEETING • EXECUTIVE MEETING

Lennart Grabe

Legal Experts Can Help In Five Priority Areas



"It's nice to have a bucketfull of money, but it's even nicer when there are no holes in the bucket," General Counsel Lennart Grabe told the managers. And one way to mend — or prevent — holes, he said, is to use the legal advice that is available within Ericsson.

Mr. Grabe said the Company was losing money each year in potentially avoidable penalties, payments for damages, poor deals and poor contracts. He suggested that many of these losses could be eliminated or minimized by consulting legal experts.

"Lawyers are the engineers of business," Mr. Grabe said. "They

design and build the bridges that are essential to build sound commercial agreements. But if you give lawyers the wrong specifications, you will get the wrong bridge," he warned.

The Ericsson counsel acknowledged that lawyers, with their insistence on detailed information and cautionary approach to contracts, may be regarded by some managers as "problem makers." On the other hand, he indicated, "amateurs" who try to handle contracts and other legal matters on their own may be charming "but they are dangerous."

Mr. Grabe cited five "areas of priority" where "holes in the bucket" can be avoided through proper use of legal expertise:

- Cooperation agreements, with special reference to flows of know-how and definitions of marketing rights.
- Acquisitions and divestments
- Contracts involving development commitments
- Software protection, notably copyrights, documentation of development work, and matters involving patents.
- Business in the U.S., and with U.S. companies.

Managers are paid to make business decisions based on professional assessment of risks, Mr. Grabe said. "Making a decision without assessing the risk in a professional manner is gambling. It's OK if you win, but if you lose, you cannot expect to be excused."

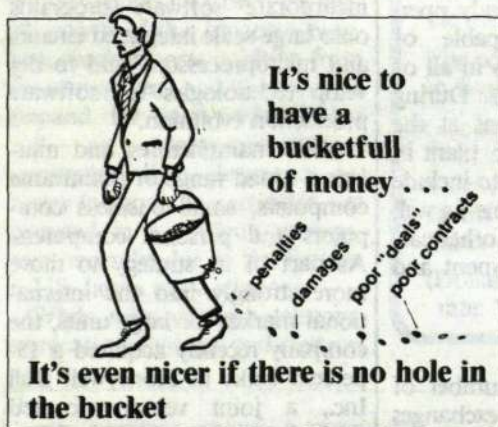


Illustration used by Lennart Grabe

Michele Schmidt Named To Head Executive Communication Service

Michele Schmidt, who joined Ericsson in the U.S. in 1981 and who has been a member of the Corporate Strategic Planning Department in Stockholm since 1985, reporting to Senior Vice President Bo Landin, has been named Manager of Executive Communication in Corporate Relations.

The executive communication program provides senior management throughout the world, via the MEMO electronic mail system, with flash news and other messages related to Ericsson operations. The messages alert managers to sources of more detailed information.



In the U.S., Ms. Schmidt was Manager of Administration at Ericsson, Inc.

Nils Ingvar Lundin

THE NEED TO BE KNOWN

To sell its products and systems today, Ericsson has to be known by "almost everyone," Nils Ingvar Lundin, Senior Vice President-Corporate Relations, reminded managers attending the Executive Meeting.

Noting that almost anyone in the world could be a potential client for the Company's wider range of products, Mr. Lundin declared:

"Today, we have to be known not only by all our former clients, not only by all our new clients and potential clients, not only by all politicians who are decision-makers, but also by all those who support the politicians."

Mr. Lundin noted that, while Ericsson is widely known and respected by technicians in telecom administrations throughout the world, the heads of these administrations, "who used to be our only important clients," are now increasingly dependent on politicians in making procurement decisions.

Politicians have to listen to public opinion if they are to be perceived as wise decision-makers, the Ericsson information officer declared.

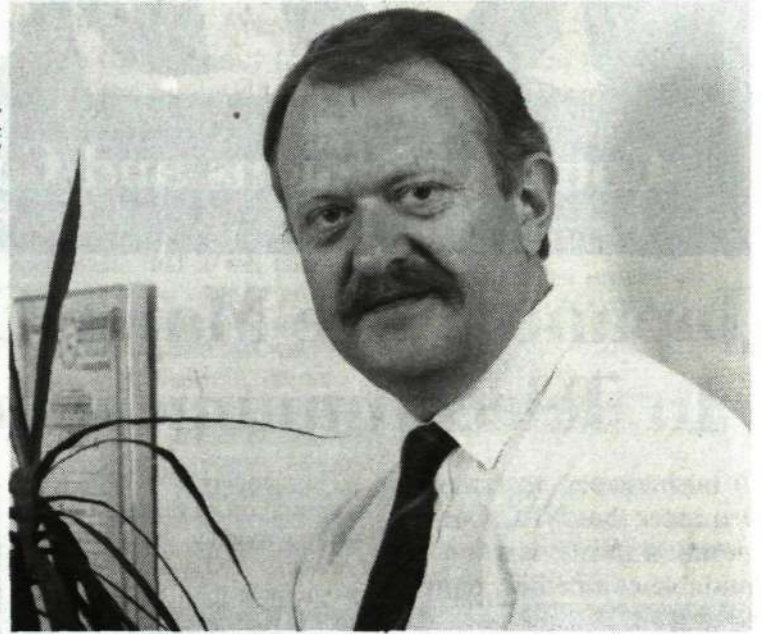
He suggested that the French PTT's decision to sell CGCT to the consortium headed by Ericsson would not have been possible "politically" if the French media had not accepted Ericsson as a qualified competitor. French reporters had originally been skeptical about the Company's qualifications, Mr. Lundin said, and it took time and effort to develop an accurate image in France.

Five fields

Ericsson's information program is targeted to reach audiences in five specific fields: internal relations, media relations, investor relations, market communications and public affairs.

Mr. Lundin said the program is guided by the following principles:

1. **Reliability.** All information must be factual, accurate and not misleading. We should never lie. Lies could ruin our public image. If situations arise where we cannot tell the truth, it is better to say nothing.
2. **Openness.** We should always inform, unless there are special rea-



Nils Ingvar Lundin

sons for not providing information. If we are regarded as an "open" company, we will be trusted as being reliable. Reporters normally understand that some information cannot be given out for competitive reasons. But they do not understand reluctance to issue information unless we tell them why it is being withheld.

3. **Speed.** We should take the initiative in providing first-hand information on our own activities. An initial report very often sets the tone for continuing reports. We cannot change the ways in which journalists operate, but we can learn how they work and adjust our routines in order to assure accurate coverage of Ericsson.

4. **Foresight.** We must anticipate and take into account the information aspects of all decision-making. How are stories that are based on our decisions likely to be handled by the media?

5. **Ethics.** There are rules prescribing ethical conduct in all businesses and professions, including journalism. We should respect all such ethical rules as a basis for demanding respect for our policies, rules and agreements.

Decentralized

Mr. Lundin emphasized that the information function within Ericsson is decentralized. In each Business Area, an information manager is responsible for keeping employees informed and for working with the media on Business Area matters, in coordination with Corporate Relations. The

B.A. information manager is also responsible for the content of market communications programs, even if this work is carried out at the divisional level at Headquarters, or in the marketing organization.

All financial relations activities are coordinated at the Corporate level, Mr. Lundin stressed. These activities are important to assure realistic evaluation of the Company and its shares in the international financial community, he said. Clients and potential clients, as well as investors, also study financial analysts' reports on Ericsson, he noted.

Right to know

In accordance with Ericsson policy, employees have a right to be informed before news is issued externally, to the extent that this can be done without violating stock market regulations or rules imposed by governmental agencies.

Mr. Lundin noted that many of the executives present had been designated as Country Coordinators. "You are our international corporate spokespersons," he said, assuring his listeners of complete support from Corporate Relations "at any time of the day or night."

Mr. Lundin urged his listeners to be sensitive to media coverage of world events and aware of what constitutes "news." "When the world media is carrying negative stories about a certain country or region, reports identifying Ericsson with those markets may not be perceived accurately," he said.

Ericsson Management Tournament

ERA, RIFA, ARGENTINIANS WINNERS

Teams from Ericsson Radio Systems, RIFA and Ericsson/Argentina carried off the top prizes in the Ericsson Management Tournament that ended June 15. They topped a total of 60 four-to-six-person teams that "managed" computer-simulated companies over a period of five months. The objective was to

achieve the highest possible return on capital employed (ROCE).

"Deadline, Inc." (Team 112), representing ERA/Sweden, was the winner, with an ROCE of 45.1 percent. Åke Persson headed the four-man team, with Anders Norin, Mats Halvorsen and Mario Orlucci as co-managers.

"Kings Bend Corporation"

(Team 85), a RIFA/Sweden unit, ranked second with an ROCE of 43.1 percent.

"Manutech, Inc.," the Argentinian entry, was not far behind, posting an ROCE of 42.5 percent.

The winners were announced at the close of the first-day sessions of the Executive Meeting.

NEC

Communications and Computers

Japanese Are Major Competitors In Telecommunications Market

If businessmen need any reminder that NEC Corporation (NEC) is a formidable competitor, representatives of the Japanese-based communications and computer giant would probably be happy to remind them, extremely politely, of course, that a good part of Sweden's mail is being processed by automatic NEC systems. Two additional NEC systems, in fact, were delivered as recently as last March.

NEC's aggressive marketing has made it a force to contend with in telecommunications, too, and its impact is likely to be intensified in the future.

The company is the only player in the field that ranks among the top ten world suppliers in three critical markets: computers, communications systems and semiconductor devices. Many companies have strengths in one of these markets, sometimes in two, but only NEC has achieved a workable balance of all three, the company noted in the annual report for its fiscal year 1987 that ended March 31.

Impressive strengths

The strengths of the 88-year-old Japanese company's operations are indeed impressive. It had total sales of \$16.8 billion in fiscal 1987, with a work force of approximately 100,000. The parent company and its affiliates operate 53 plants in Japan alone, and 25 more in 12 other countries. There are manufacturing, marketing, service and research facilities in a total of 22 countries.

While communications systems and equipment account for only 29 percent of net sales — down from 36 percent in fiscal 1983 — their volume, \$4.8 billion, is more than enough to qualify NEC as one of the leaders in the market for telecommunications systems.

The following Ericsson competitors have been profiled in earlier issues of "Contact Management":

Siemens (April 1987)
Northern Telecom
(June 1987)

The company's NEAX61 series of central office digital switching systems, roughly comparable to Ericsson's AXE, are now in service in more than 1,000 locations and the volume of orders for this system recently passed the 10-million mark. (Ericsson has sold nearly 19 million lines of AXE equipment, excluding systems for cellular radio.)

PABX systems

NEC is also a major supplier of PABX systems. During the past year it introduced Japan's first large-capacity system, aiming for the market in travel agencies, financial services companies and others with high-volume telephone traffic. A new series of PABXs now being marketed outside Japan can be linked with integrated services digital networks. In addition to Communications Systems and Equipment, NEC is active in three major product sectors: Computers and Industrial Electronics Systems (41% of total sales), Electron Devices (17%), and Home Electronics Products (8%). "Other Operations" account for the remaining five percent.

Strong domestic market

NEC's operations have traditionally been based on its strong domestic market, and sales outside Japan account for only 29 percent of total invoicing. (NEC does not report detailed data on segment operations, a deficiency noted in

the Price Waterhouse 1987 auditors' report, so it is impossible to determine the exact percentage of overseas telecommunications sales).

The Tokyo-based company has long been the dominant supplier

One
of a series
on
Ericsson's
Competitors

to the Nippon Telegraph and Telephone Corporation (NTT), and this relationship is likely to continue in the future. NTT was privatized in 1985 and the domestic market for telecommunications was simultaneously liberalized, resulting in the formation of several new common carriers. This has created "numerous business opportunities," NEC says.

Speaks to 'globalize'

NEC's intention to further "globalize" its telecommunications operations is clear, however. The company already has a strong position in Southeast Asia and in

Latin America (where it received large orders for expansion projects in Argentina, Brazil and Venezuela during the past year. It is also making aggressive moves into the United States.

In Europe, in February this year, NEC established a new plant to manufacture VCRs, printers and color TV sets in Birmingham, England and has said that this facility will be expanded to include communications equipment. In another move that will strengthen its presence in the European market, the company started integrated production of advanced semiconductors (256 K bit dynamic random access memories, DRAMs) at Livingston, Scotland, and announced that the manufacture of 1Mbit DRAMs is scheduled to begin there before the end of the year.

During the past fiscal year the company also strengthened its marketing facilities in West Germany. And it continues to compete strongly in Africa, where it recently received orders to supply a large turnkey fiber optic transmission system in Kuwait and digital switching systems and telephone sets in Zambia.

Office in PRC

In addition, the company has sharpened its focus on the People's Republic of China, where it has opened an office in Guangzhou "to capitalize on expected long-term future growth in demand for telecommunications and computer systems in China."

NEC — along with Ericsson, Siemens and Plessey — is making strenuous efforts to become an alternate supplier — after AT&T and Northern Telecom — to the regional Bell operating companies in the U.S. In this market the Japanese company already operates nine plants capable of manufacturing products in all of its major product areas. During the past year, operations at the new NEC America, Inc. plant in Oregon were expanded to include mobile telephone systems as well as fiber optic and other carrier transmission equipment and microwave systems.

Test orders in U.S.

NEC has received a number of test orders for public exchanges and late last year installed its first

WIDELY TRADED

NEC's shares are traded on eight stock exchanges in Japan, on the London Stock Exchange and in the U.S. market through the NASDAQ system. Other overseas listings are on the Amsterdam exchange (in the form of Continental Depository Receipts), in Basel and Zurich (in the form of Swiss Bearer Depository Receipts), and in Frankfurt (in the form of Global Bearer Certificates).

NEAX61 digital switching system in a Bell company central office, in Shakopee, Minnesota. Northwest Bell was the customer.

Since 1977, Ericsson's Japanese competitor has been committed to what it calls its "C&C (Communications and Computers) Concept" as it pursues its quest for a larger share of the world market. Within the framework of this concept, NEC is placing heavy emphasis on the development of innovative software, artificial intelligence systems and automatic telephone interpretation (ATI) systems. The ATI systems, for example, will enable any person to speak in his or her native language while the person at the other end of the line can listen in the language he or she prefers.

Software packages

In the software sector, NEC says that about 600 packages have become available for NEC computers through software development or conversion by users and third-party software houses. The company is stepping up efforts to incorporate software programs onto large-scale integrated circuits and microprocessors, and to develop technologies for software production evolution.

NEC manufactures and markets a broad range of mainframe computers, small business computers and personal computers. As part of its strategy to move more strongly into the international market for large units, the company recently acquired a 15-percent stake in Honeywell Bull Inc., a joint venture formed through the merger of the computer operations of Honeywell Inc. in the U.S. and Bull in France, both of whom are NEC customers. A jointly owned subsidiary, Honeywell-NEC Supercomputers Inc., will market the Japanese company's supercomputers in the U.S.

Personal computers

NEC is a leading supplier of personal computers in Japan but the competition in this field is intensifying. Despite better than average sales growth last year, the company added 10 new models to its line. More than one million NEC 16-bit computers have been sold since they were introduced five years ago.

While the company has occasionally been faulted for the quality of its telecommunications technology, relative to that of other giants in the field, NEC appears to be making significant strides in this area.

SELECTED FINANCIAL DATA

NEC Corporation and consolidated subsidiaries
Fiscal years ended March 31

Thousands of U.S. dollars, except per-share figures

	1985	1986	1987
Net sales	15,460	15,980	16,770
Income before income taxes	955	806	397
Income taxes	535	670	311
Net income	459	186	102
Per share of common stock			
Net income	\$.3246	\$.1327	\$.073
Cash dividends	.055	.062	.062
Total assets	18,569	17,713	18,944
Shareholders' equity	3,269	3,411	3,522
Capital expenditures	2,530	2,008	1,326
Employees	90,102	95,796	101,227

As in the NEC Annual Report, dollar figures are translated from Yen, at the rate Y146 = \$1.00, solely for convenience.



Major R&D achievements related to communications during the past fiscal year included the following:

- A 720Ghz semiconductor laser to be used as the light source for frequency division multiplexing, optical heterodyne transmission systems and optical switching systems.
- An expert system, based on artificial intelligence, for diagnosis of telephone switching systems
- A real-time operating system to operate with AT&T's non-real-time UNIX(TM) operating system.
- A 4-gigabit-per-second optical regenerative repeater, the first of its type in the world, that permits the fiber optic transmission of 60,000 voice signals or 100 video signals.

New system

In addition, the company last year delivered to NTT a new supervisory system for a long-span digital microwave system, featuring the world's first four-multi-carrier switching technology.

In fiscal 1987, NEC spent \$2.63 billion, equal to 16 percent of net sales, on R&D and engineering projects, up from \$120 million, or 12 percent, five years earlier.

Financially, NEC has experienced difficult times lately. Despite modest increases in sales in each of the past three fiscal years, net income has declined from \$459.8 m. in 1985 to \$102.9 m. in the 1987 fiscal period. The primary causes have been the mixed growth of the Japanese economy, weak exports resulting from the strong yen, and the sluggish demand for semiconductors as well as telecommunications equipment. The electronics industry in Japan, in particular, has operated in a difficult environment recently, due to the friction in U.S.-Japan trade relations.

While sales of both telecommunications systems and electron

devices (semiconductors) both declined 6 percent in the past fiscal year, invoicing of computers and industrial electronic systems, NEC's largest sector, rose 18 percent, largely due to strong domestic demand.

Despite its 45-percent drop in earnings in the year ended March 31, NEC remains a strong, tenacious competitor. Its total assets and shareholders' equity both rose last year, and the company has strengthened its cash position through two issues of convertible debentures totaling nearly \$1.1 billion during the past year and a half.

NEC's recent capital expenditures have been designed mainly to enhance the company's production capacity in the fields of communications and computers, and to achieve more cost-efficient operations. In contrast, investments in electron devices have been cut as a result of the prolonged slump in the semiconductor industry.

Total capital expenditures in fiscal 1987 declined 34 percent, to 1.3 billion, following a decline of 21 percent in fiscal 1986 and an increase of 77 percent in fiscal 1985.

As noted, investments to expand the company's R&D and engineering programs have continued to rise, calculated in monetary values and as a percentage of net sales. Total R&D expenditures in fiscal 1987 (\$2.6 billion) were up 17 percent from fiscal 1986.

Anticipating little positive growth in general economic conditions until the second half of its current fiscal year, NEC is currently concentrating on an intensive campaign to expand sales, reduce costs, improve asset management and promote international procurement to take advantage of the strong yen.

Confident

"We are confident that by achieving these objectives we will be able to regain momentum and, as an industry leader, capitalize on the potential of the computer and communications markets," Chairman Koji Kobayashi and President Tadahiro Sekimoto told the stockholders in June.

Ericsson can expect to meet NEC as a challenging competitor in a growing number of markets in the future.

DIVERSIFIED PRODUCTS COVER BROAD RANGE

NEC is one of the most diversified of Ericsson's major competitors, with a product mix that ranges from sophisticated telephone switching systems to color TV receivers and microwave ovens, and from giant mainframe computers to bubble memories and aircraft electronics.

The company's \$16.8 billion in sales were distributed as follows in fiscal 1987:

Communications systems and equipment	\$4.8 bn (29%)
Computers and electronic systems	\$6.9 bn (41%)
Electronic devices	\$2.8 bn (17%)
Home electronics	\$1.3 bn (8%)
Other operations	\$1.3 bn (5%)

(Dollar amounts translated from Japanese yen at the following rate: Y146 = \$1.00.)

INTEGRATED TECHNOLOGY FROM NEC.



Combined strengths.
The power of modern technology is the power of combined strengths. NEC is a world leader of long standing in four vital areas: communications, computers, electronic devices, and home electronics.
Our innovative merging of these separate areas isn't surprising if you consider our experience.
More than 30 years in computers, with products ranging from super computers to personal computers. Over 65 years in communications, from business communications to satellite communications systems. NEC microwave communication links alone are extensive enough to circle the globe 45 times.
And intensive research and development efforts have made NEC the world's top-ranked producer of the sophisticated semiconductors so crucial to the integration of computers and communications.
Our commitment to an integrated "C&C" - computers and communications - technology provides answers to the networking and office automation needs of modern business. It also brings the power of integrated technology to the home. There are NEC products - from TV sets to home computers - designed to increase your enjoyment and understanding of the modern world.
In all, NEC manufactures over 15,000 products that are used in more than 140 countries. All are part of our integrated C&C technology.
Just as important as our wide range of products, NEC offers an unsurpassed combination of reliability, quality, and service. And a determination to make the NEC products you buy today a sound investment for the future.



Doing Business in China:

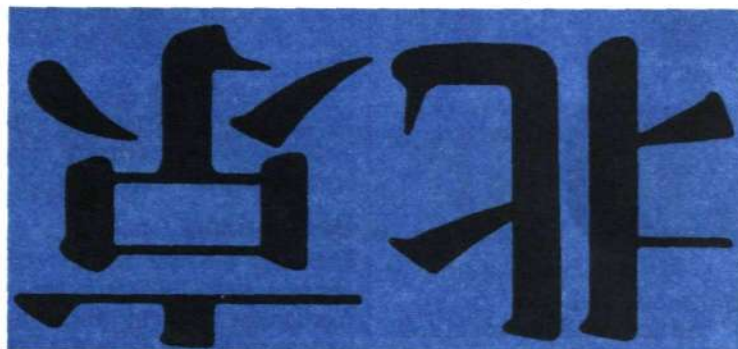
Time, Patience Needed To Win Those Orders

The new Service Center being opened this year in Beijing (Peking) by Ericsson Radio Systems (ERA) should enable the company to hold its own against the competition in the potentially attractive Chinese market for land mobile radio installations.

That's the view of Kjell Tronders-Larsson, ERA's "man in Hong Kong" since last year. But Kjell warns that it will take patience, time and superior product performance to establish a strong presence in the land that was once known as the Celestial Empire.

In a recent issue of "ERA Nyheter," the Swedish-language newspaper of the Radio Systems Business Area, Kjell summarized some of his experience in dealing with customers in the Peoples' Republic of China.

- The government purchasing organization
- The end user
- The bank that supplies the currency for the purchase and the agency that authorizes the expenditure
- The government research institute that evaluates technology
- The politician behind the scenes who can support or hinder a project at key stages of the negotiations



"Cautiousness, patience and the least possible risk-taking characterize the Chinese customer," he writes. "The Chinese are never in a hurry; instead they assure themselves, in detail, that the system they intend to buy is the best choice, technically and financially. The Chinese customer strives for security and doesn't want to take risks, so he would rather buy something that other Chinese have purchased, and preferably from companies that are already accepted in China. As a result, it is highly important to be regarded as reliable, to live up to your commitments, and to solve problems."

Commercial negotiations involve dealing with a number of persons representing various organizations and functions, the ERA marketing executive points out. These include:

Kjell cites the following steps as part of the normal routine in procuring a contract in the PRC:

1. Presentation of ERA products and systems.
2. The customer studies the proposal and consults other ERA customers.
3. A new meeting is arranged to define the specifications in detail and to discuss technical details.
4. The bid and system proposal are prepared by ERA and presented.
5. The customer withdraws to study the proposal.
6. A new meeting, involving comprehensive discussion of details, is held. At this point, a "loop" - consisting of a several repetitions

Continued on page 8

TWO 'MOBILE' CONTRACTS

Ericsson has been awarded two more contracts to supply cellular radio systems in the United States. The new systems, to be installed in Madison, Wisconsin and Oxnard, California, will make it possible to enhance cellular radio service in the two regions.

Under terms of the contracts, valued at \$3.8 m., Ericsson will supply its CMS 8800 cellular system, providing one AXE switch and four cell sites at each location. The two systems will serve a total population of more than 1,300,000.

Cellular systems installed earlier by Ericsson in the U.S. are concentrated in the California and Great Lakes regions. Manfred Buchmayer, general manager of Ericsson Radio Systems in Rich-

ardson, Texas, says the new contracts demonstrate Ericsson's commitment to create large regional networks in the two regions, where the company's products are already well accepted.

Interim Report

Ericsson's next interim report, covering operations during the nine months ending September 30, is scheduled to be released Thursday, November 12, following a meeting of the Board of Directors earlier that day.

Details of the report will be carried in the issue of *Contact Management* scheduled to be published around the middle of November.

It Takes Time To Get Orders In The PRC

Continued from page 7

of points 4, 5 and 6 — usually occurs.

7. When the project has been defined in the minutest detail, it is turned over to a government purchasing organization that handles the final negotiations on prices and terms. (Assuming that the necessary funds in foreign currency have been granted.)

Not noted for speed

"The import organizations in China consist of professional negotiators who are not noted for being in a hurry," Kjell observes.

"The final negotiations can take a week to ten days. Throughout the entire negotiating stage, the Chinese customer stays in contact with a number of suppliers who are skillfully played off against each other. The total purchasing process normally takes about a year."

Inspection of material delivered is rigorous, Kjell says.

"All material is checked in detail to be sure that it conforms to the contract and specifications. Deviations are noted immediately and lead to renegotiations and demands for compensation. The quality of the system supplied is followed up minutely.

Reports spread rapidly

"Reports about a supplier and its systems spread rapidly to other potential customers. A well-functioning system and a pleased customer are the best advertising you can have. The opposite can be just as damaging, destroying a supplier's reputation and its future in China."

There is a large market in China, Kjell believes, and Ericsson's field of operations, as well as Land Mobile Radio's market segment, are priority areas in China's planning.

"Our objective is to become established as one of the leading suppliers of mobile radio communications equipment in the Chinese market, serving primarily security organizations.

"While 1986 was a difficult year for China — due to excessively large imports, mostly consumer goods, during 1984 and 1985, resulting in tighter currency controls

NEW STRUCTURE

Ericsson Radio Systems AB is to be divided into two companies. Radio communication activities will be consolidated under Ericsson Radio Systems AB. Radar and microwave activities go to a second company, provisionally named Ericsson Microwave Systems AB.

HOW PERSEVERANCE WON IN ALGERIA

The detailed story of the many twists and turns on the path to the signing of a major industrial contract rarely finds its way into print.

The chronology of the events leading to Ericsson Telecom's \$60 million contract in Algeria, signed last March, is a notable exception. "Svensk Export," published by the Swedish Export Council, recently reconstructed the long trail that eventually led to success. Excerpts from the article, written by Ville Carlström, are reproduced below.

Thirteen years ago — in 1974 — the Algerian Government called for competitive bids covering local production of new telephone exchanges. The authorities had decided to "freshen up" the country's telecommunications. Ericsson submitted a bid but, in the end, the order went to ITT's Spanish company.

"We learned a great deal that we were able to use later," says Bo Wall, Ericsson's marketing manager for Africa.

Began to buy

Ericsson's bid was not in vain, however, since Ericsson's electro-mechanical telephone exchanges had caught the eye of the Algerian PTT. The Algerians began to buy, and continued to do so throughout the Seventies and a few years into the Eighties.

It gradually became clear that it was time for a change in technology. Electronic exchanges had made their entrance on the market.

Now, the Algerian Government decided to make a total change in teletechnology. As a result, it announced new competitive bidding in 1982. Ericsson sent in a new bid, in competition with the other giants in the world market — West German Siemens, French CIT-Alcatel, Canadian Northern Telecom, ITT Belgium and Japanese Fujitsu. The order at stake involved:

1. An international telephone exchange in Algiers
2. 170,000 lines (later trimmed to 90,000) in Algiers
3. Three trunk exchanges

and import restrictions, there are many indications that 1987 will be an attractive year."

Good start in China

Kjell says that ERA has made a very good start in China — eleven radio systems were in operation by the spring of the current year — and that a number of activities are planned in order to assure continuing favorable growth in this market.

The establishment of the Hong Kong office in 1986 represented an initial phase of this program, and there are plans to expand the marketing organization there. The new Service Center in Beijing will, of course, constitute a major step forward.

The Center will initially be



President Benjedid Chadli of Algeria (center) shown with CEO Björn Svedberg and Chairman Hans Werthén during the chief of state's visit to Ericsson in 1986.

4. 20,000 lines of local equipment in Blida.

The contacts between Ericsson personnel and Algeria's civil servants began to increase slowly. Bids were evaluated and discussions between Ericsson and the Algerian Government were carried on regularly.

At this point, parallel with the discussions about telephone exchanges, the construction of a factory in Tlemcen was also discussed.

Call from PTT

In the summer of 1985 came the news that it was time to really "accelerate" the cooperation with the Algerians. Representatives of the P&T (the Algerian telecom administration called and said they wanted to send a delegation of six to eight persons to Sweden for further discussions.

Ericsson prepared a program and, in the middle of the July vacation month, displayed its products for its esteemed guests. Visits to the Swedish Telecom Administration and to the Ministry of Communications were also arranged.

Contacts at the political level, incidentally, had already been established when Sweden's then prime minister, Olof Palme, visited Algeria. The Swedish Government was prepared to assist with favorable financing through BITS, the Swedish commission for international technical and financial cooperation. The financing involved a mix of credits and a contribution of 25 percent.

Now, an "accord cadre," a document indicating a mutual desire for continued cooperation, was also prepared.

"Things began to look promising," Bo Wall recalls.

Ericsson proposed that the Algerian representatives undertake a study trip to the Far East — more precisely, to Thailand and Malaysia. The company had delivered many AXE exchanges in this region and had instructed local people in the art of operating them. Accordingly, study visits were made to AXE exchanges and to Ericsson's factory outside Kuala Lumpur.

Many trips were made to Algeria during the autumn of

1985. At the end of the year the Swedish Government began to plan for an official state visit to Sweden by the Algerian president, Benjedid Chadli.

President Chadli came to Sweden in April 1986. During his visit, he also signed a framework agreement covering cooperation between Sweden and Algeria in the telecommunications field.

"We began to feel as that we would be able to get the order," says Bo Wall.

Now Ericsson labored on two fronts to obtain the contract. One group of employees concentrated on discussions related to the factory in Tlemcen. Another group took care of the negotiations involving direct deliveries of telecom material to Algeria.

Last barrier

During the autumn of 1986 Ericsson and the Algerians came increasingly closer to a definitive decision. Following a round of intensive negotiations led by Marketing Manager Knut Albertsson, the last barrier was removed.

Now only the finishing touches remained: adjustments of clauses in contracts and specification of the equipment to be delivered.

At the end of March this year, Hans Werthén, Ericsson's chairman headed a delegation to Algeria to meet with the Algerian minister for planning and the minister in charge of heavy industry. An industrial cooperation agreement covering local production of AXE exchanges was signed.

On April 8, the first two official contracts finally arrived at Ericsson headquarters. Mission accomplished. Nine years of work in an atmosphere of alternating hope and doubt were over. Many Ericsson representatives had made hundreds of trips together.

Why did Ericsson get the order in tough competition with the other giants in the market?

"A deal of this type involves a combination of price, technology and financing," Bo Wall says. "At least one of our competitors had offered financing that is competitive with ours. Personally, I think the reputation of our AXE exchanges was important in this case. We have, after all, delivered them to about 70 countries."

staffed by five Chinese engineers who are to be trained in Sweden. A service technician from Sweden will assist the native employees for several months.

Action plan prepared

ERA's predecessor, SRA, first sought to enter the Chinese market seven or eight years ago but deferred active efforts due to the uncertain political conditions.

Following evaluation of a market study several years later, a detailed action plan was prepared. ERA decided to concentrate primarily on the market segment that included police and other public safety organizations, and secondarily on tourist organizations, traffic control authorities and power companies.

Visits to Stockholm

As a result of the marketing efforts that got under way in 1983, several delegations from the PRC Ministry of Public Safety, as well as representatives of military and paramilitary organizations visited Stockholm. Other contacts with potential customers were made through participation in trade fairs in China.

The first contract for land mobile radio equipment was signed in May 1984. ERA now has approximately a dozen installations in service in widely separated areas of the PRC, from Heilongjiang Province in the far north to Guangdong in the south.

And the prospects for additional business now look promising.

Field Trials Set For ENS Unit In Latin Areas

ERINET, Ericsson Network Engineering's new termination system for telecom networks, currently being introduced in the Scandinavian market, has also been selected for field trials in several countries in South and Central America.

The new system, whose core unit is an ingeniously designed contact plate, comprises a distribution cabinet, two types of termination blocks and distribution boxes, and a new insertion tool that is used for all connections.

Convertible Debentures

SUBSCRIPTIONS OPEN SEPTEMBER 28

Monday, September 28, is the opening date for subscriptions for the convertible debentures to be issued to Ericsson employees, as approved by the stockholders at the Annual General Meeting May 19. Information material and subscription application forms are being sent to eligible employees in Sweden and foreign locations shortly before the opening of the subscription period, which extends through Friday, October 16.

SEPTEMBER 1987

28

MONDAY

All Ericsson permanent employees in Sweden, as well as employees in certain other countries where the offering is possible from a legal and practical viewpoint, are eligible to subscribe for the debenture certificates.

A debenture certificate is a security showing that the holder has loaned money to the issuer of the certificate, in this case Ericsson's Parent Company, Telefonaktiebolaget LM Ericsson.

Following a two-year waiting period, debenture certificates may be exchanged for Ericsson "B" shares.

The price of the the Ericsson debentures, and the price at which they may be converted, will be announced in the information material being distributed throughout the Group. Contact persons have also been appointed in Ericsson's Swedish units and in overseas locations to provide information about the debenture offering.

Eligible employees will be entitled to buy debenture certificates in a guaranteed amount of approximately SEK 15,000, but not exceeding SEK 300,000.

Financing will be available to all purchasers of the debentures who wish to take advantage of such facilities. Residents of Sweden will be able to arrange financing through Skandinaviska Enskilda Banken or Svenska Handelsbanken.

Residents of other countries will be offered financing arrangements through Svenska Handelsbanken in Luxem-

bourg. Swedish residents are not permitted to utilize the financing facilities in Luxembourg and residents of a country other than Sweden are not allowed to utilize financing in Sweden.

The possibilities of purchasing foreign securities, transferring money to or from a foreign country, arranging loans in a foreign country, etc. vary from country to country. Accordingly, each person employed outside Sweden must, on his or her own account, determine which regulations and conditions apply in the country in which the employee resides or works.

The convertible debentures have been described as a low-risk way of eventually becoming a part-owner in Ericsson and sharing in the Company's future growth.

The holder of a debenture receives the full face value of the debenture — plus interest each year — if he holds the debenture to maturity in 1993.

However, if the price of Ericsson shares rises during the debenture period, the debenture holder will profit by converting the certificate into Ericsson shares. He or she will then have a holding with a value greater than his investment in the debenture. If desired, this holding can be sold, at a profit to the holder.

Employees who have not received information material and subscription application forms by September 28 should contact Eva Björenius in the Corporate Financial Control Department.

(Telephone: +46-8 719 96 85. Telex: 14910 ERIC S. MEMOID: LMEEBS).

OCTOBER 1987

16

FRIDAY

READY FOR TELECOM 87

CEO Björn Svedberg will be one of the featured speakers at the opening plenary session of the Technical Symposium of Forum 87, an integral part of the Fifth World Telecommunication Exhibition (TELECOM 87) organized by ITU, the International Telecommunication Union, in Geneva October 19-27.

Mr. Svedberg, who will address the question, "Where does technology go from here?", will share the platform at the October 22 session with six distinguished industry leaders from the U.S., Japan, France, Switzerland and Finland.

The theme of the Technical Symposium is "Telecommunication Services for a World of Nations." The general theme of TELECOM 87, which is expected to attract 250,000 visitors to more than 700 commercial and institutional displays, is "Communications Age: Networks and Services for a World of Nations."

Three Ericsson speakers in addition to Mr. Svedberg will present papers at technical sessions of the Forum. Håkan Jansson of Ericsson Telecom will discuss "Basic Technology Research" and Jöran Hoff and Jan Swerup of Ericsson Radio Systems AB will offer a presentation on "Mobile telephony in the next decade."

The theme for Ericsson's participation in the commercial sector of TELECOM 87 is "Open-ended business communications for the world."

Ericsson will be well represented in Geneva. All Business Areas except Defense Systems will have exhibits in the Company's 460-square-meter, two-story stand, which is expected to be one of the focal attractions in Palexpo, the giant exhibition hall.

Ericsson will also have a reception desk in the Swedish area of the Scandinavian Pavilion. Other Ericsson companies — Perwira Ericsson Sdn Bhd (Malaysia), LM Ericsson Pty Ltd (Australia) and FATME (Italy) — will have exhibits in the national pavilions of their countries.

Following are brief descriptions of products, services and concepts

REMINDER

Personal invitations to the Ericsson reception at TELECOM 87 Thursday evening, October 23, are being mailed to all customers and friends of the Company. Managers who have not yet proposed names for the invitation list are urged to do so without delay.

Advance information about customers who plan to visit Geneva should also be sent to Business Area headquarters, or to LME/DM/DY or LME/K/AC as soon as possible.

Ericsson at TELECOM CONF

ERICSSON

Stand 4.190

Hall 4

PALEXPO / GENEVA

scheduled to be promoted by the various Business Areas at TELECOM 87.

Public Telecommunications

- Significant new enhancement of the AXE digital switching system, as part of the new Business Group Services subsystem.
- Late-model "working" AXE exchange that will enable visitors to sample subscriber services.
- New line of transmission equipment
- Pre-production display of optical switch

Information Systems

- SYSTEM EIS integrated communication system
- New MD 110 digital PABX for small-business applications
- MD 110 PABX with Eripax
- Workstations linked to MD 110 with terminals of various types (Ericsson PC, WS 286, ASC11-S62)
- Local Area Network
- TOPAS telephone operator support systems
- Laser printer

Radio Systems

- Demonstration of "live" traffic with portable telephones via Swiss NMT 900 system using ERA equipment
- Hotline telephones for NMT 900 system
- Radio base hardware, mobile telephones
- Advanced radio communication equipment for speech, text and data
- 2-8 Mbit/s digital microwave radio in 10-18 GHz bands (Minilink)
- Satellite earth stations
- Digital SCPC earth terminals

Cables

- Ericsson Cabling Systems using optical fiber cable in trunk net and opto-electronic devices between the trunk net and distribution networks.
- FSU 850 fusion splicer

Network Engineering & Construction

- Graphic presentation of telecom network planning, designing, construction process
- New Erinet distribution cabinet and other new network materials

Components (Power Systems)

- (Will power all working systems in Ericsson's exhibit)
- New telecommunications power supply systems

"Ericsson's objective at TELECOM 87 is to display a unified company, strong technically and commercially, that has the resources, worldwide experience and vision to guide and support public and private telecom operators and users throughout the world," Gustaf O Douglas, Ericsson "Telecom 87" Project Leader, declares.

STEERING COMMITTEE

The six-man Steering Committee responsible for Ericsson's Telecom 87 project is chaired by Hans Johansson, information manager of Ericsson Telecom (ET). Lars-Åke Bjäremark of ET is also a member.

The other members are Bengt Wikander (information manager of Ericsson Radio Systems), Bengt Fourong (Group Staff-Market Coordination), and Gustaf O. Douglas (Visitors Services), who also serves as project leader. He is assisted by Ann-Marie Olsson, also a veteran of several ITU Telecom world exhibitions.

ADDITIONAL MD 110 ORDERS FROM U.S. UNIVERSITIES IN CALIFORNIA, OKLA.

Ericsson has received two additional contracts from American universities covering large campus installations of the Company's MD 110 integrated digital communications system. This brings to 15 the number of U.S. institutions of higher learning that have selected the Ericsson system. The two orders are valued at nearly \$14 million.

In California, Ericsson was awarded a contract, valued at approximately \$7.6 million, to supply a voice-and-data MD 110 communications network at California State University in San Diego (Cal State).

The second contract, from Oklahoma State University (OSU) at Stillwater, covers delivery of a similar MD 110 communications system.

The system designed for Cal State, which will initially be equipped to handle 7,000 stations, is being wired to accommodate more than 11,000 stations over the next ten years. The network on the San Diego campus will consist of 58 line interface modules distributed among four sites, with fiber optic links connecting the individual nodes. The system will serve the communications needs of the university's administration office, student housing facilities and medical units.

Ericsson's system was selected by the Cal State authorities because of its low life-cycle costs, minimal floor-space requirements and efficient cable system for voice and data.

At Oklahoma State, more than 7,000 users of telephones and other terminals in many buildings in several locations will be able to communicate via the private network being built around the MD 110.

PC's needed

Many university students in the U.S. now have to have personal computers in order to make effective use of an institution's data bases, Lennart Detlefsen, MD 110 marketing manager, says. "Ericsson has been successful in solving the communications problems in the universities. We have learned how to work with a most demanding category of customers."

526 Delegates Attend Intelec Conference

Senior Ericsson and RIFA AB executives and technical experts played a significant role in the success of INTELEC 87, the Ninth International Telecommunications Energy Conference, held in Stockholm June 14-17 under the sponsorship of IEEE, the Swedish Society of Electrical Engineers and the City of Stockholm.

INTELEC meetings are highly regarded international forums for the presentation of research and development in energy systems for telecommunications, computers and related areas.

A total of 526 delegates from 41 countries (a record high) registered for all or part of the four-day meeting at which a total of 115 technical and scientific papers were presented. The ten countries represented for the first time were Algeria, Bulgaria, Chile, Iceland, Indonesia, Pakistan, the Philippines, Taiwan, Thailand and the U.S.S.R.

Headed delegation

The Ericsson delegation was headed by Gösta Lindberg, Corporate Vice President-Technology & Development, who served as vice general chairman of the Conference, and much of the responsibility for Conference arrangements was in the hands of RIFA Power Systems personnel.

Tadeus Wolpert chaired the Management Committee, J. Adler was Conference treasurer, D. Björk served on the important Technical Program Committee, and G. Lagerberg was in charge of Conference publications.

Ericsson Power Systems' facilities at Kungens Kurva, on the outskirts of Stockholm, proved to be the most popular plant tour attraction offered during the Conference. More than 80 persons registered for this excursion.

Eight of the 21 technical papers presented during the meeting were prepared by Ericsson experts. The subjects covered the broad scope of continuing R&D work within RIFA:

FAULTY FORECAST

INTELEC Conferences are normally held in the autumn. Because Swedish weather, as the Conference program stated, "is at its best in June," the 1987 meeting was scheduled for June 14-17.

For the first time in many years, these dates proved to be among the wettest and chilliest of Sweden's unusually wet, chilly summer!

ERICSSON, FUJITSU WIN SWEDISH CABLE ORDER

Ericsson and Fujitsu, the Japanese company, have jointly received orders from the Swedish Telecommunications Administration to supply electronic equipment to be used in the new fiber optical network linking major cities in Sweden. The value of the contract

received by each company is approximately \$6.25 million, it was announced.

The fiber optical network will be used to supplement the existing conventional cable link.

Thirteen other companies competed for the contracts.

AXE: MORE THAN 18.9 M LINES IN SERVICE OR ON ORDER

Excluding mobile subscribers, more than 18.9 million lines of Ericsson's AXE exchange equipment were in service or on order at midyear 1987, according to the most recent AXE World Survey.

A total of 1,234 AXE exchanges were in service in 69 countries. The distribution of sales and installations in the 20 major AXE markets is shown in the table below.

	On order			Installed		
	Multiple capacity			Multiple capacity		
	No. of new exch.	Local	Transit	No. of exch.	Local	Transit
Sweden	32	420 234	74 000	72	1 496 624	116 432
Mexico	72	400 256	431 104	91	372 608	259 584
Korea Republic of		160 256	512	89	925 802	242 176
United Kingdom	74	933 174	180 224	15	90 116	57 856
Australia	>7	325 524	137 530	127	554 503	240 272
Brazil	73	637 022	175 081	39	395 584	26 740
France				69	892 579	
Malaysia	3	64 256		54	725 128	32 360
Italy	9	165 000	14 280	47	520 023	67 200
Denmark	14	136 176	91 500	75	303 808	184 492
Saudi Arabia	3	21 216		60	466 140	183 360
Netherlands	19	153 680	30 494	67	445 440	25 885
Spain	16	89 500	48 128	57	312 148	173 568
Colombia		56 500		43	348 048	88 268
Yugoslavia	31	196 654	57 086	29	156 678	28 688
Kuwait	1	22 272	9 740	20	326 144	37 376
Finland	8	37 528	24 064	35	200 156	96 000
Ireland	3	52 864	10 970	18	223 360	49 620
Thailand	2	118 144		28	168 984	2 050
China	12	136 064		12	119 680	7 436
Other countries (46)	162	1 176 917	304 711	129	625 376	234 955
Grand Total	>541	5 303 237	1 589 424	1 176	9 869 085	2 154 318

'MEMO' ELECTRONIC SYSTEM TO LINK UP WITH IBM'S

The utility of the MEMO electronic mail system marketed by Verimation AB, owned jointly by Ericsson and Volvo, has now been greatly enhanced, the sales company announced in August.

Users of the MEMO system, developed originally by Volvo for internal use, can now communicate directly with users of IBM's SCREENMAIL and PROFS message exchange systems. Access is achieved via a gateway to IBM's DISOSS (Distributed Office Support System).

The connection between MEMO and DISOSS is established via a SNADS (System Network Architectural Distribution Ser-

vices) gateway. This gateway makes it possible for a MEMO user to communicate directly with SCREENMAIL and PROFS terminals without having to worry about problems of compatibility.

International linkage

IBM will offer the new facility within its international electronic message network. With the recent introduction of IBM program products that permit DISOSS users to use the X.400 service, electronic messages can now be exchanged between IBM-system users and users of non-IBM systems.

Verimation AB estimates that approximately 300,000 persons in 300 companies in Europe, the U.S. and Australia are already using the MEMO system.

Ros Stresses Responsibility

Continued from page 4

among other approaches. And he proposed that customers be offered various financing options during periods of restricted cash flow.

Mr. Ros cited the trend of a number of balance sheet ratios to illustrate the financial progress made by Ericsson since 1984. The equity ratio, expressed as a percentage, rose from 27.0 to 30.5. The ratio of debt to equity declined from 1.5-to-1 to 1.1-to-1. Net working capital, as a percentage of net sales, was reduced from 58 percent

to 46 percent — six percentage units above the targeted objective.

Mr. Ros also showed that there had been a significant increase in Ericsson's rate of capital turnover, from 0.79 in 1984 to 0.92 last year. But the rate of capital turnover at Northern Telecom in 1986 was 1.11, Ericsson's managers were reminded.

Improved financial performance, increased market shares and higher margins can be important factors in developing and maintaining satisfied customers, Mr. Ros pointed out.

'MOBILE' AXE EXCHANGE UPDATE

A total of 63 AXE exchanges for mobile telephony had been installed at midyear and an additional 22 exchanges were on order, Ericsson Telecom reported in its July AXE World Survey. The largest number, 14, had been installed in the U.S.

The latest AXE mobile telephony scorecard:

	Number of exchanges				
	On order	Installed			
Australia	3	4	Norway	3	4
Canada	1	5	Oman		1
China	1		Saudi Arabia		6
Denmark	2	2	Spain		2
Faro Islands	1		Sweden	3	5
Finland	1	2	Switzerland	3	1
Iceland		1	Thailand		1
Indonesia		1	Tunisia		1
Ireland		1	United Kingdom	3	4
Malaysia		5	U.S.A.		14
Morocco		1	Total	22	63
Netherlands	1	1			
New Zealand	1	1			

CLARIFICATION

Through an inadvertent mistranslation, an article in the June issue of *Contact Management* stated that it was particularly important for "employees who travel outside Sweden" to be informed about AIDS and the manner in which the disease is transmit-

ted. The phrase in quotation marks should have read: "employees who travel outside their home countries."

The translator regrets any unintended inferences that may have been drawn from the inappropriate wording of the text as translated.

Constructive Thinking Necessary

Continued from page 4

"The corporate market coordination function can be a valuable asset in strengthening the business orientation program," Mr. Lemmel advised his listeners. "The Business Areas are responsible for action, primarily through marketing, sales and service personnel, but we can all contribute."

Nine specific ways

Mr. Lemmel listed nine specific ways in which corporate staff personnel are assisting in the area of business orientation:

1. Development of Ericsson marketing policies and guidelines.
2. Dealing with special marketing activities, assigned by the CEO or Executive Committee.
3. General supervision of market activities.
4. Managerial responsibility for certain CEO activities.
5. Responsibility for corporate contacts with agents, consultants and others.
6. Arrangement of market meetings.
7. Contacts with national and international organizations.
8. Analyses of new business opportunities and market penetration.
9. Advisory role to the Business Areas.

Mr. Lemmel emphasized the importance of a marketing strategy that permits "aggressive ventures." Unprofitable products should also be "weeded out," he said.

BRITISH AXE PLANT IS EXPANDED

A £14 million expansion of Thorn Ericsson's plant at Scunthorpe in northeast England was completed during the past summer, doubling the factory's manufacturing space and providing capacity to produce 700,000 lines of AXE digital equipment annually, operating on a two-shift basis.

The expansion is directly related to the large orders for AXE exchanges from British Telecom and other customers during the past two years.

Sir George Jefferson, chairman of British Telecommunications, formally opened the new facilities on July 9. Others who participated included Sir William Barlow, chairman of Thorn Ericsson, Elliott Morley, Member of Parliament for Scunthorpe, Councillor Denis Keedle, Mayor of Scunthorpe and Roy Sanderseron, national officer of labor union represented in the plant.

About 500 employees

Expansion of the Thorn Ericsson factory has provided employment for an additional 200 workers, raising the total to approximately 500 and making the company probably the largest private-sector employer in the area.

Duncan MacDougall, Thorn Ericsson's managing director, noted: "We're very pleased to be involved with British Telecom's modernization plans — and to be able to bring new jobs to an area of high unemployment."

The investment in automated production and test equipment at Scunthorpe has made the plant one of the most advanced telecommunications manufacturing centers in Europe. More than 60 telecom engineers are being trained at the facility annually, and the number is increasing.

Operations at Scunthorpe are

organized in two main groups. The first manufactures digital PABX equipment — MD 110 and Phoenix systems — and the second concentrates on digital public telephone exchanges. The recent expansion has occurred in the latter sector, where 80 percent of the value of AXE exchanges installed in the U.K. is added.

'Capability and adaptability'

In his address, Sir William noted that the Scunthorpe plant has the "capability and adaptability" to supply a very diverse range of products for private industry and public telecommunications in the U.K. and abroad. "We are busy dealing with the new BT contracts but we are also anxious to obtain more business for export."

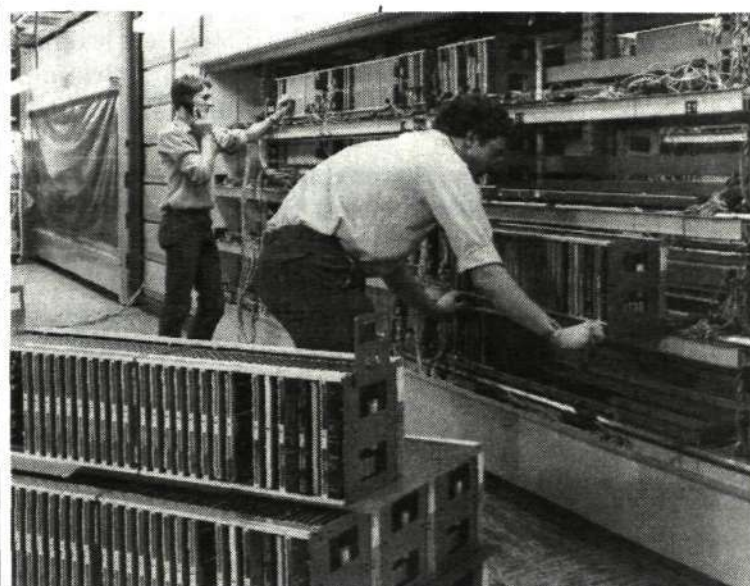
All test and production equipment at Scunthorpe is linked into an international Ericsson computer network that acts as a world database for switch design and manufacturing techniques. The network makes software design expertise available wherever it is needed. It permits an expert in Scunthorpe, or in Thorn Ericsson's software development facility in Brighton, on the southeast coast of England, to solve a problem in another country without leaving his desk. The computer network also makes it possible to implement hardware design changes in Scunthorpe and other locations in a matter of hours.

'Just-in-Time' deliveries

A "funnel" system of manufacture that utilizes advanced computer control and which places emphasis on a continuous flow of production has been installed at Scunthorpe.

Thorn Ericsson also utilizes "Just-in-Time" (JIT) deliveries of components and materials, releasing working capital by practicing very tight control of inventories.

Scunthorpe claims the record for the speediest build-up of any plant producing AXE switches. Managing Director MacDougall attributes the rapid "re-tooling" to the way "employees have enthusiastically and speedily adapted to revolutionary working practices".



Assembled magazines for AXE digital exchanges being tested in new Scunthorpe facility.

During the first half of 1987 alone, 140 employees at Scunthorpe attended extended in-house training courses supervised by five full-time trainers. British Telecom engineers also receive instructions covering maintenance of the AXE exchanges being delivered to BT. In addition, a local institution, North Lindsey College of Technology, offers a special course tailored to Thorn Ericsson's needs. Thorn Ericsson Telecommunications Ltd., jointly owned by Thorn EMI (51 percent) and Ericsson (49 percent), was established in 1974, with headquarters at Horsham, Sussex. In

addition to the Scunthorpe plant, the company develops software in a facility at Brighton. The company, with annual sales of approximately £59 million, currently has more than 1,500 employees, up from 900 in early 1986, and this figure is expected to reach 1,800 by the end of the company's present fiscal year.

Thorn Ericsson has become a major contributor to Britain's telecommunications infrastructure. It is one of only three manufacturers supplying digital local exchanges to British Telecom for the local exchange modernization program, and is the only British supplier of international digital exchanges for BT International.

International traffic

More than 90 percent of all international calls to and from the U.K. pass through Thorn Ericsson exchanges. And more than half of all cellular calls pass through exchanges and base stations supplied by the company, which is the sole supplier of exchanges from the Racal Vodafone cellular mobile network in the U.K.

British Telecom's first local exchange employing Ericsson's AXE technology was placed in service in Sevenoaks, Kent, during the last quarter of 1986.

'A Major Presence' In American Market

(Excerpts from a recent message to employees from M. Peter Thomas, president of Ericsson, Inc.)

"We are building a major presence in North America.

"And you are a member of the group that is working to increase that presence and make Ericsson a profitable full-line telecommunications supplier on this continent. We're building a customer-oriented organization with an emphasis on technical skill, architectural flexibility, quality and overall excellence.

"We believe that Ericsson offers the industry a technology, a spirit and a vision of today and tomorrow different from that of the past. Ericsson is not only solving communication problems today, but we're creating opportunities for the future by continually working to develop long-term business relationships with our customers. Our attitude towards them is: "We're here when you



Peter Thomas

need us?" That's not a passive viewpoint. It's an active pledge that Ericsson has the products, the service, the people and the strength to make a difference for our customers — today and tomorrow.

"We strive for excellence and invest in and develop our employees.

"We are a dynamic company, and we have to be to face the challenge of continued success. We expect a lot from our employees; we're working hard and moving fast."

Joint Program With IBM On Intelligent Networks

Continued from page 1

Announcement of the joint study agreement is in line with an earlier statement of direction by IBM relating to intelligent networks. The company said then that it was developing software solutions to meet growing requirements for data processing solutions to support advanced services for providers of telecommunications.

The agreement is a logical move for both companies at a time when providers and users of telecommunications services are looking for innovative solutions that can best be created by complementary expertise, Jan Stenberg, executive vice president and

head of the Public Telecommunications Business Area, declared.

Helmut Schmidt, vice president-telecommunications, IBM Europe, said: "This agreement is in line with IBM's efforts to provide solutions to emerging requirements in the field of telecommunications services. We believe that the contribution of our technology to this cooperative effort will bring significant value to the users of such services."

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NETWORK ENGINEERING SAILS SEVEN SEAS

As names go, Network Engineering and Construction does not immediately conjure up the image of a leading supplier of virtually any type of marine communications system used aboard oceangoing cruise ships, ferries and offshore facilities.

Despite its relative anonymity, however, the Marine Department of Ericsson Network Engineering (formerly Ericsson Telemateriel) has been active in the field of marine communications since the 1950s. The small (25-man) Department, based in a suburb of Gothenburg, now holds more than 20 percent of the world market for such systems.

North Sea Ferries and the Stena Line (see photos) are among the major ship operators that have selected Ericsson Network Engineering to supply integrated communications systems for their new vessels.

Marine Department Manager Arne Olofsson points out that Ericsson Network Engineering has an advantage over other suppliers in the marine tele-signaling field because it has the know-how, experience and range of systems to deliver complex installations.

Few suppliers manufacture their own range of integrated marine communications equipment. Many operate as contractors, installing a package of systems produced by a number of firms.

Has drawbacks

This approach has distinct drawbacks, Arne Olofsson points out.

"Marine communications systems installed by these contractors may consist of eight different makes of equipment, based on as many standards. Such systems will be difficult to integrate and when a subsystem fails, it may be difficult to locate the fault."

In addition, he notes, with a mixture of systems from different manufacturers, a separate service and maintenance organization may be required for each system. And the ship operator may have

to stock a wide variety of spare parts.

Own range

Ericsson Network Engineering is unique in having engineered its own range of systems for ships and mobile offshore units. The principal difference, Arne Olofsson says, is that Ericsson has developed a state-of-the-art modular system that is compact, easier to install and less expensive to service. It is a multifunctional, integrated system that offers the latest in services and options.

The range of products and systems manufactured and installed by the Marine Department is wide. It includes automatic telephony, talk-back for docking, "lift" alarm telephones, a service phone system for technical-maintenance operations, engine room communications, bunkering telephones, public address and entertainment sound systems, crew-call systems, alarm and time-distribution equipment, and radio paging.

All subsystems are integrated into a single system served by Ericsson's ASA 100 universal switch. This automatic digital exchange can handle virtually any number of extensions and lines for a wide variety of communications functions.

Because the exchange is modular in design and requires only a small number of standardized



North Sea Ferries' Norsun, built in Yokohama, Japan, is equipped with an integrated communications system designed, manufactured and installed by Ericsson Network Engineering. Functions and equipment provided include automatic telephony, talk-back for docking, lift alarm and service phones, engine room communications, bunkering phones, public address and entertainment sound systems, crew-call, alarm and time distribution, the aerial and video information system. All functions are handled by Ericsson's ASA 100 universal digital switch.

The Norsesea, a sister ship built in Glasgow, Scotland, also features an Ericsson marine communications system.

printed circuit boards for each service, all the systems connected to the exchange can function separately.

Less cable needed

The Ericsson system requires less cable and wiring than comparable installations, which reduces overall weight aboard a ship. For greater operational reliability, the central equipment is divided into two installations that are linked by fiber optic cable. This cable, which is less sensitive to disturbances, also transmits voice, data and images more efficiently than the cable used in analog systems.

Arne Olofsson notes that Ericsson uses the same cables for signaling and to supply the power to blink lights, operate loudspeakers and perform other functions. "This reduces the amount of cable needed for the installation, as well as the overall system weight," he says. "It standardizes the cable network, cuts installation time and allows fast start-up."

Digital technology

The radio paging systems employ digital technology and are designed in accordance with modular principles. The pagers can operate independently or as a communi-

cation system linking phone sets and receivers. The receivers are equipped to receive and display digitally coded messages, alarms, and requests for technical service.

The integrated design of the Ericsson marine communications system permits calls from one subsystem to another, or between totally different systems. Access for external calls is programmed. All information between the exchange and the telephone instruments is transmitted via telephone cable. This information may consist of public address messages, music, wake-up calls, time distribution and emergency calls, as well as routine phone calls.

"Ericom Marine" is a flexible, technically advanced digital system that can serve between 10 and 5,000 stations. This modular unit requires only one type of shelf, six types of printed circuit boards, and a single type of amplifier. The stations are wall- or flush-mounted. Ericsson can also supply voice-operated digital loudspeaking intercom sets.

Back-up systems

Depending on requirements, each system has a back-up to assure operational reliability under the harshest conditions. And each system is securely protected against fire, water and collision. A substantial amount of system capacity is always available in emergencies, a prime requirement in a shipboard installation.

"The design of a marine communication system represents fine balancing of such factors as total function and the ship's environment," Arne Olofsson points out. "This requires special know-how and experience. With our modular system and 'super' exchange, we can custom-build any type of communications system for a ship."



The Stena Line's Stena Germanica (foreground), built in Gdynia, Poland and now in service between Sweden and West Germany, is one of the world's largest car and passenger ferries. The ship is 175 meters long, 20 meters wide and 11 stories high. It can accommodate 2,500 passengers, 700 cars and 150 crew members.

Equipment supplied by Ericsson Network Engineering includes a large (7,500W/2,500-speaker) public address system, a 2,000-detector fire alarm system, a 400-line PABX through which international calls can be handled directly, intercom and bridge communications systems, personal paging facilities and a hotel computer system.