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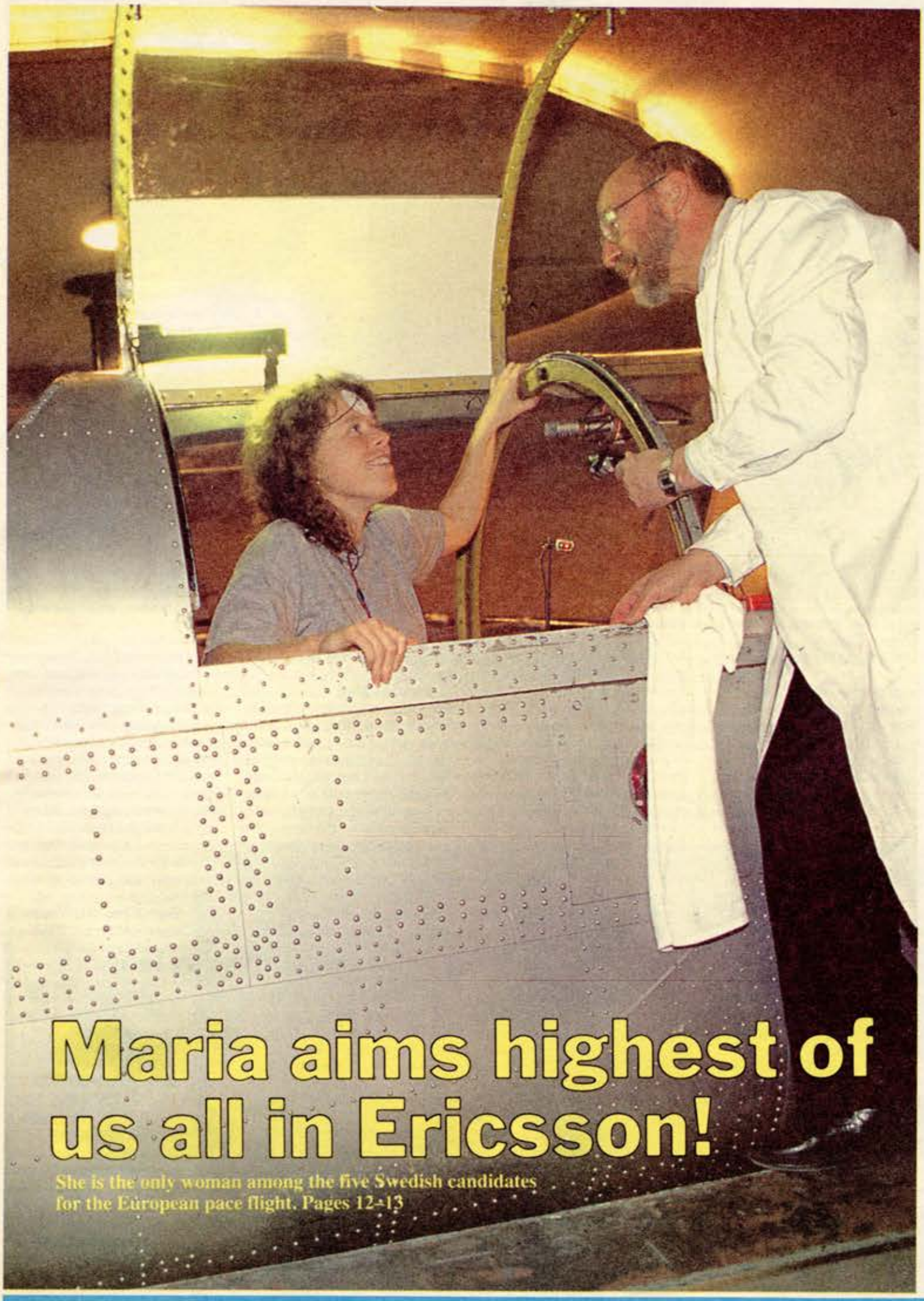


Maria aims highest of us all in Ericsson!

She is the only woman among the five Swedish candidates for the European pace flight. Pages 12-13

In Kuwait after the war

Amid the smoke of the 500 burning oilwells in Kuwait, a group of Ericsson employees have traveled around the country to assess the extent of damage to Ericsson equipment after the war.

Page 8-9

Ericsson divers clean up a lake

The diving club at Ericsson is the biggest in Sweden. It has contributed its know-how to the service of the environment.

Page 15

A daintier HotLine

A new HotLine in red was Ericsson's drawing card at the Stockholm auto show. The new model is a simpler and cheaper version.

Page 17

Halt to illegal bugging

For a company with many international contacts, there is a risk for phone bugging. At Saab-Scania they have chosen to use Codeline, Ericsson's cryptophone.

Page 10

Close to a billion in quarter • Page 6

Opportunity to work abroad attracts students

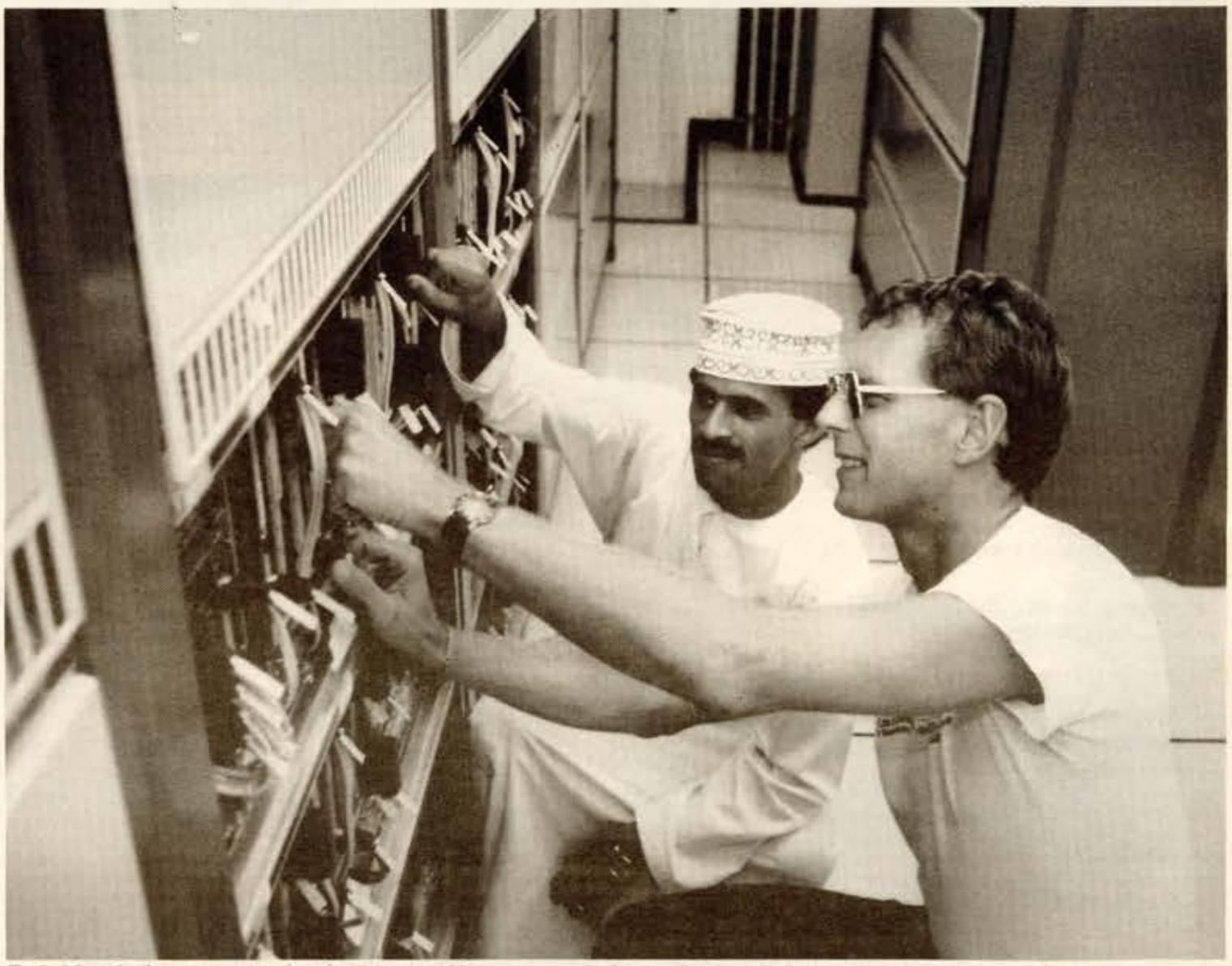
Ericsson came in second among the country's most sought-after employers. This was shown in a research survey among some 2,700 students that the Swedish publications Fri Ekonomi and Fri Teknik (Free Economy and Free Technology) conducted between April 2-17 this year.

"Ericsson most strongly competitive in future"

This is the fourth year in a row that the survey was conducted. Twenty percent more students responded to the questionnaire this year. Some 1,395 future economics graduates from seven academic institutions and 1,398 future civil engineering graduates from five institutes of technology got to give their views on 82 different companies. Ericsson came in second in the rankings of the country's most sought-after employer. ABB headed the list. But ABB had to yield to Ericsson when it came to the company that had the most competitive products and services for the future. Technicians also believed that Ericsson was more active in international competition than ABB, while the economists felt the contrary.

"It is surprising how little is known about the twenty largest companies in Sweden and their products. Volvo, Saab and the banks are not among the top ten companies that students consider having competitive products and services for the future," says Thomas Nyberg, last year's project leader.

On the other hand interest in the larger corporations and in state companies has increased; in 1990, the smaller companies elicited the most interest. Indevo fell most in the ratings among economists. Also KF-Industrier, Trygg Hansa/SPP, Gota, Nordbanken and Första Sparbanken fell off while Andersen Consulting, Ernst & Young, the state-owned Televerket, Procter & Gamble, Nobel, TRg division and Peter's & Co.- Arthur Andersen grew most. Among the technicians, FFV-Telub really went down. The entrepreneurial firm SIAB also slipped, as well as BPA, Scandiaconsult, Skanska and VBB Viak. Andersen Consulting gained most in the rankings even among technicians but had to share the honors with the state-owned Teli. Ångpanneföreningen, Esab, Programator and Euroc also gained. There are also newcomers to the list. Economists had a lot of faith in IKEA, which overall came in tenth, Options Mäklarna, 18th, and Microsoft, 28th. Technicians went for ABB Atom, which came in 12th, Televerket Radio, 16th, and Bofors Electronics, 18th.



Technicians in the survey set a lot of store on working overseas. And naturally, the job gives them a chance to appreciate other cultures and to look at things in other ways. Photo: Lars Åström.

Experienced students

The consulting field was the most interesting for both technicians and economists, but interest has fallen off compared with previous years. Instead, computer/electronics, accounting (for economists), manufacturing industry, steel/metals and a new area, energy/power, (for technicians) have become interesting areas for students.

A good one-third of the students have been abroad and have done practicals or studied there. Technicians seem to go abroad more frequently and more ready to move. For economists, the EC market is more interesting than big cities. About half of the students want to work for a Swedish company in Sweden six months after their finals and after three years 37 percent of the economists want to continue working at home while 37 percent of the technicians would prefer to work for a Swedish company abroad. Both economists and technicians can see themselves moving to a big city. Technicians did not mind a smaller city while the countryside held little appeal for both economists and technicians. Only one-third of the economists could see themselves moving to Norrland, in northern Sweden, compared with half the number of technicians. On the other hand it was only those from Stockholm and Gothenburg who could not see themselves moving at all.

Salary not all

Students attached a lot of weight to having job assignments that contributed to their development and to be able to take their own initiative. This was put ahead of good salary advancement. Technicians opted for being more social. Having pleasant working companions ranked third, while economists felt that salaries were more important. Economists still think of a career, while technicians were more interested in long-term technology developments. A new question had to with the importance of a company's environment consciousness. Three percent of the economists saw it as important, while 12 percent of the technicians felt a good physical working surroundings were more important.

The survey also took up the question of salary expectations and it reflected the ongoing recession. Economists were more pessimistic this year compared with last year when they were asked about starting salaries, while technicians felt their starting salaries could increase somewhat. On the other hand, economists were more optimistic in the long term. Surprisingly enough, students at the Stockholm Economics Institute expected a lower starting salary, compared with those at other schools.

Text: Charlotte Westling

Ericsson wins by lengths

For students out in the working world a few years, Ericsson is the most pouplar employer. This is shown in a survey done by the weekly Veckans Affärer in collaboration with Monterna Reserach. The survey, entitled "Five Years After Finals," was carried out among 400 civil engineers and economists most of whom are employed by Ericsson, ABB, Televerket and Volvo.

The participants questioned in the survey had to assess their employer's performance on a scale of 1–5. Here, Ericsson was shown to be the leader, closely followed by Televerket.

EDITORIAL

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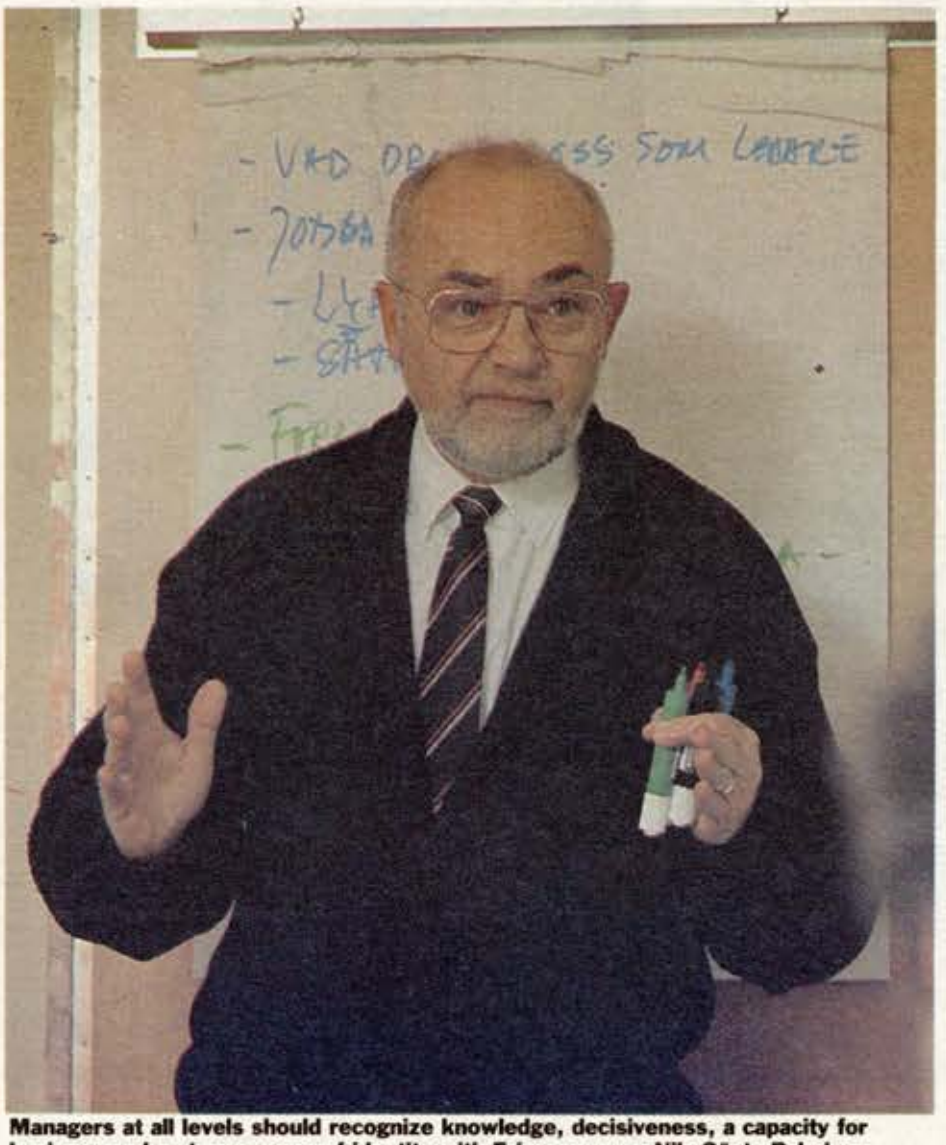
Management Planning secures managerial support

Management Planning is a long-term managerial support system that guarantees that we have and will always have the right managers in the company.

The MP concept is relatively new within the Ericsson Group. It was presented for the first time at an international conference for personnel and training staff within the group in Saltsjöbaden, outside Stockholm, in the fall of 1989.

One of the participants was Nils-Gösta Palmborg, who already last spring was working in Business Area Cable and Network responsible for management development and as an internal consultant for organizational development. He is also part of an international group that is working with these issues at the corporate level.



Managers at all levels should recognize knowledge, decisiveness, a capacity for business and a strong sense of identity with Ericsson, says Nils-Gösta Palmborg.

"Of course, there was management training in the Ericsson Group well before the fall of 1989. But not quite along the same good base that Management Planning provided us," says Nils-Gösta Palmborg, who before he came to Ericsson in 1986 was training manager at the Swedish pharmaceutical concern Kabi Vitrum.

At the end of 1988, a total of five international work groups got together. Their assignment was to determine what requirements were expected of an Ericsson manager, as well as coming up with proposals for a training and development program that would guarantee that these requirements would be met and not be just empty words on paper. The results of the group's work was presented less than a year later at the said conference in Saltsjöbaden under the umbrella concept Management Planning, a long-term process that began with identifying candidates and that covered all aspects of managerial support within Ericsson worldwide.

Business Areas Cable and Network, Business Communications and Components, as well as LME corporate executive functions have joined together in a common training program.

"This increased regularity and frequency in our courses," says Nils-Gösta. The collaboration also had another positive side, namely that our managers, in conjunction with the different training programs, could meet and transcend the business area boundaries.

Good response

Last year Nils-Gösta visited several units in Business Area Cable and Network and conducted two-day MP seminars, with mainly management groups as participants. The purpose of the seminar was to show how one identifies management material and project leader candidates and what development tools the training system had to offer. It also dealt with which management development activities we should work with, as well as – by no means the least important – the setting up of a timetable for when managers in the various units would be ready with identifying their first candidates.

And what response did you get during this first and ever important phase of the implementation work?

"A thoroughly positive one. We were all agreed that this was not a question of some theoretical product but, on the contrary, it was worth our while to work with it in practice afterwards also."

How do you see your role now when operations, so to speak, have gathered their own momentum outside of the units?

"To be a central support resource that one can turn to for help when one feels that it is needed. Moreover, I have a follow-through function, namely to see that activities do not cease but rather are carried out according to the prescribed guidelines. This deals with such important issues for Ericsson and its future that we cannot afford not to let things follow the prescribed course."

Provides unity

If I were to ask you to describe in a nutshell what is best about MP, what would you say?

"There are a lot of good things about MP. But if I had to choose one particular aspect it would be enough to say that the model could be used with the same good results in different countries and in different cultures. It gives a more unified picture of Ericsson managers – and I am referring now to both professional knowledge and social adaptability – which naturally facilitates not only recruiting work but also a desirable management rotation between both companies and countries."

This appears to be undeniably an essential plus factor. But at the same time isn't there a non-essential disadvantage in it? If one casts all the managers in one and the same mold, isn't there an inherent risk that one would lose individual leadership qualities that one should really retain?

"There could possibly be such a risk. But now it is so designed that the MP system provides only the base itself – a number of minimum standards, if you wish – and leaves the rest open, which naturally must always be the case for individual and, not least, cultural differences in management approach and styles.

Ever greater demand

Traditionally, management recruiting has been very technical oriented. A lot of weight has been attached to professional competence among those who are seen as prospective managers. Already back in the seventies we began to notice a change, at least in Sweden. Management qualities, the ability to lead a team and deal with conflicts, were factors that began to acquire far greater significance. With that too came an increase in the demands made on prospective managers.

These are also important ingredients in the MP model, which is built on the premise that the basic approach to identifying candidates are personal qualities. Also of major significance is experience gathered in different areas of competence. The overall goal is that managers at all levels will be identified by knowledge, decisiveness, a capacity for business and a strong sense of identity with Ericsson. Professionalism, respect and perseverance are our common values.

The path to achieving this lofty goal is a systematic identification and development of candidates, as well as management development that is more closely linked with the group's activities at all levels.

When Nils-Gösta Palmborg lectures, the walls are covered with pages written all over. Here, at a seminar with job managers in Philippsson's Gräv & Schakt AB.

Text: Kåbe Liden
Photos: Karl-Evert Eklund

Career – an opportunity for all

Tryntsje Kroondijk is move ahead personified. Brisk, wide-awake eyes, a broad smile. She is comfortable with people and people are comfortable with her.

Just about two months ago she moved from Holland and began in the personnel department with Ericsson Business Communications in Stockholm. Her go-ahead style is perfect here. She will be working with career planning. Career planning is found in different forms in the various business areas.

Employees should know that I am around and that they can speak with me to get support and help in planning their individual development.

When you move to a new country, you have a lot to learn. One of the first things Tryntsje learned was that "career" is not always a good word to use in Swedish.

To many Swedish ears the word has an unpleasant ring. It has connotations of neckties, buttoned-up blouses, toughness in the battle for success and leadership, away from friendship and the "we" feeling among colleagues in the department, away from family and friends during leisure hours.

The Swedish Academy explains the equivalent word "careerist" as a climber. No-one wants to be called a climber. On the other hand one wants to be seen as ambitious, clever and successful.

Tryntsje began to look for a more neutral term than career planning, and settled for individual development. That is precisely what it is all about. All employees should have the possibility to develop – make a career – beyond his own prerequirements and desire.

"My job is not a part of the management development program," says Tryntsje. "Those who are part of that program represent only a small part of all our employees. I will work with all the others in the company, those who, unfortunately, are often forgotten."

Big differences

She spent her first days at EBC getting to know the company, its operations and the people working there.

Before she came here she worked in the personnel department of AT&T's Dutch offices, an American company on the European continent. She noticed huge differences.

"In Holland, the employees themselves made contact as soon as they knew that someone in the company was appointed to deal with career planning," says Tryntsje, laughing. "Can't we meet and talk about my career."

It's not like this in Sweden. At least not yet. But it is precisely there that she wants to get to, that it should be totally natural for everyone to talk about and to plan for his future.

Tryntsje believes she will spend most of her time in the technical departments.

"In the marketing and sales departments it is usually more natural for people to talk about their future with individual colleagues and for employees to move on to new assignments," she says.

In many of the technical departments, this type of communication usually functions in a worse manner.

"One's future is something that one talks about one morning a year when they have development sessions," says Tryntsje. Moreover, many managers do not like to take up development issues and as such do not take up individual development properly.

And for their part engineers are not very clear in their communications either.

"When a person is not entirely happy with a situation, he or she shows it, but the signals are not particularly clear. Managers have to be very attentive," says Tryntsje.

"So when a clever and much-liked colleague quits, we say, surprised, What a pity!. But undoubtedly this colleague has been indicating for a long time in different ways that he or she was not happy."

Had the manager and the employee communicated instead and began a discussion, he could have found a solution where the employee would have job assignments that he or she finds stimulating and the company would have kept a clever employee.

In such situations it is important for managers to think of the company as a total entity and not see it as a loss if an employee switches jobs internally to another department. Resentment does not benefit the work ambiance or the company and especially not the troubled employee, who can find himself in an unpleasant conflict situation.

From the company's point of view, the problem is that paradoxically the employee who is quitting is precisely the employee it wants to keep.

Tryntsje wants to be a support for both the individual employee and the managers.

"Managers must be aware of interests, possibilities, qualities and potential of those working in his department."

Tryntsje points out here that what she read about Swedish management style before coming to Sweden holds true. Swedes find it difficult to identify individuals, and they tend to see their department as a team.

She would like to support managers in development discussions so that they become more purposeful.

"Managers must be aware that it is only normal for employees to want new job assignments," Tryntsje adds, animatedly. "Especially in a company like Ericsson, which employs so many young people."

Humane perspective

"Employees should know that I am around and that they can speak with me to get support and help in planning their individual development."

Tryntsje will have information about all the openings in the company in Sweden and in many of the local companies. With this overview, she can make sure that the right person gets the right job.

The traditional way of developing and making a career was to climb straight up through the company ranks. Today, it is mostly diagonal routes that matter.

"It is important for the company to have employees with broad knowledge. And that goes not only for engineers and others with university training," Tryntsje stresses.

Near people

"But all this does not mean that I am going to come around and see to it that people change jobs," she says, hastening in her quick and humorous manner to paint a picture of her sitting behind a large PC screen matching openings with employee profiles. Tryntsje wants to work closer to people.

"It will not work setting up rules and systems for how people should evolve in their jobs. It is up to each and every one, and we are all different.

"Changing jobs every year is not something that suits everyone," she adds. Some like it the way it is and one should let this be so. But for those who want, opportunities for advancement should exist in the company.

Possibilities exist. But it is up to each individual to seek them out. Each and every one of us is responsible for our own advancement and must take the initiatives ourselves. Then, Tryntsje and the others in the personnel department are there for support and advice.

Text: Maria Rudell
Photo: Maria Petersson

Eripax safer yet

Speed, safety and access distinguish the data network Eripax. This has been further developed in the new release that has been just launched.

Eripax has been very successful in, among other places, stock exchanges, thanks to a unique Packet Broadcast function. This has also been improved on.

The new software release from Eripax is known as 6.2. It contains a number of important new functions. One of them is Virtual Circuit Restoration, VCR. This function guarantees that ongoing data communications will not be interrupted and no data will go astray if there should be a link error in the network or an error in the intermediary node.

Eripax is used in six of Europe's largest stock exchanges. A major competitive advantage is the unique Eripax Packet Broadcast function, since it is very important for exchanges to be able to spread information simultaneously to many different persons.

Packet Broadcast rapidly copies data that is sent out, for example, from a stock exchange and that is to be distributed to all those needing the information. The time lapse between the first and the last receiving this information is only a fraction of a second. Distribution is now even faster and more accurate than before since copying is done in several nodes simultaneously instead of one.

Another aspect of this is that the network can be used effectively all the time for other communication. Previously, throughput in the network was halted up to a point until the advent of Packet Broadcast since copying occupied a great deal of a node's capacity.

With the new release, individual data input can be controlled from a network monitoring centre NM400. If a user has a problem, the network operator can, from his work station, go in and check out the cause. In most cases the problem can also be corrected from the monitoring centre.

This all amounts to huge savings in time and labor, compared with previously when someone had to go to the spot and plug in a special analyzer to trace the problem and then correct it.

"With this release, we further strengthen our position as one of the leading X.25 suppliers in Europe," says Göran Ingemarsson at product management for Eripax.

Maria Rudell

'We take OPUS seriously here'

The 1990 results for OPUS within Ericsson Data Services were excellent. In the combined area the company got a higher rating than the year before. This is a result of having taken the previous year's OPUS findings seriously. The company's managers and executives have worked hard with the issues that employees were unhappy with earlier.

When the leadership for Ericsson Data Services, EDS, went through the 1989 OPUS findings, it was clear that there was room for many improvements in several aspects within the company. A high personnel turnover gave the same indications. With the help of OPUS the problem areas could be identified and analyzed. Plans for dealing with the issues were drawn up and were followed through. The most urgent problems were taken up directly by the company leadership.

Clear improvement

When OPUS was implemented again in 1990, the result was entirely different. Everyone worked at solving the problems and the efforts had yielded results. Jan Krook, the guiding light and strong driving force behind OPUS did not mince his words:

"This is one of the best OPUS results I have ever seen within Ericsson in Sweden. Most impressive is that the improvements came in such a short time. It usually takes considerably longer to achieve such overwhelming improvements.

"The EDS leadership has understood the significance of really taking OPUS feedback seriously. When new operative goals were set up for EDS, they used the information coming from OPUS. It is an occurrence in which EDS so far is the only player in the group. Perhaps this method of working can become a pacesetter for the group.

Prioritizing OPUS

Bengt Bolin is president of EDS. He emphasizes that managers in the company worked hard and goal-consciously with the improvements that OPUS results called for.

"We prioritized OPUS at the executive level, and we shall continue doing so. Where there is discontent, special plans will be drawn up for dealing with the matter so that results can also be positive there."

Tommy Frederiksen at the personnel department is happy with improvements in the OPUS results.

"We felt that the results would be good, but never that they would produce such an immense change."

Britt Reigo, personnel director for the Ericsson group, sees the excellent OPUS results at EDS as a fine example of what success can be achieved with the help of OPUS. The EDS method of using every conceivable channel to locate and improve whatever was not being done right is a very successful one, Britt points out.

"Of course, there are higher expectations now at EDS, that the company will show similarly high figures next time. The bar gets higher every time. Naturally, this means working actively and goal-oriented and not have unrealistic and too high expectations. The goal must be reachable."

A responsibility

"OPUS is an ideal yardstick if one uses the results correctly. Company leadership and managers must take full responsibility. They must see to it that they take the necessary measures and draw up plans, also for larger instances that demand both time and commitment," Britt adds.

To carry out OPUS and then just throw the results in a drawer is clearly showing disrespect for colleagues. If you undertake OPUS, then you have a commitment to employees. This means having perseverance and not giving up in midstream. We all want everyone to be aware that our views are meaningful and should be respected by management.

My Spangenberg

One desire that came from OPUS in EDS was for activities to develop exchanges and camaraderie. As a measure toward achieving this, EDS-TRÅFF was set up once every quarter where managers and workers could meet in a relaxed setting. One of the more pleasure-oriented get-togethers was a paddleboat trip around Kungsholmen in which several employees participated.

This is OPUS

OPUS is an attitude survey that has been conducted among Ericsson employees over the past ten years. The OPUS questionnaire contains some 70 questions. It gives an indication of what the employee thinks about the company, his work relationship, his colleagues and managers, among others.

OPUS is a yardstick that gives company leadership and management information on what is good and what is bad within the company. Therein lies the clue to areas that need improvement.

Ellemtel probes electric allergy

Ellemtel, owned by Ericsson and the Swedish telecom authority, is one of Sweden's most image-oriented companies with an average of two screens per employee.

In 1989, some employees at Ellemtel began to show signs of hypersensitivity to electricity, which was believed to come from working with computer screens. This led, in the spring of 1990, to company executives setting up a project to come to grips with the problem.

At its height, some 50 of Ellemtel's 750 employees felt ill effects. But ever since both Ellemtel's offices and the worst affected homes have been sanitized the number has fallen to 20. Five of these periodically take sick leave.

Over the course of a year Ellemtel has invested 4.5 million kronor in work milieu projects. The electric environment has been sanitized so that those who are hypersensitive can continue to work at Ellemtel.

Work environment

A lot of money has been put into a basic research project where, among other things, profession dermatologists at Lund Lasarett, a hospital in southern Sweden, the Chalmers Institute of Technology in Gothenburg and the Stress Research Laboratory at the Karolinska Institute in Stockholm are involved.

Phenomenon studied

But no-one knows for sure at this point where the allergy comes from. No-one has been able to establish a scientific link between the screen and hypersensitivity. The project has grown from its initial study of the screens and electric environment to include the work environment in its entirety. All factors seen linked to electric allergy are being studied: the electric environment, work organization, stress and the individual propensity for allergy.

Some of Ellemtel's measures for improving the work environment and, hence, the electric environment, are:

- to change to low-ray screens.
- to build a workroom away from electric and magnetic fields for the hypersensitive.
- to switch from fluorescent tubes and low-energy lamps to light bulbs.
- to reorganize time-pressed projects to reduce stress.
- to have the company medical department diagnose symptoms early for electric allergy.
- To put at the disposal of personnel such specialists like dentists, bite dermatologists, psychologists and ophthalmologists.

Investing in development

After reporting record earnings for 1990, it is a pleasure to confirm that sales are still running at a very high level, even though the pace of increase is a bit weak. The world recession is affecting our field of business – with regard to both business customers' orders and the expansion of public tele networks.

Tele projects have been postponed in many countries, which leads to a reduction in orders. Nevertheless, it is our judgement that the AXE system is holding its market shares in public telecommunications. Expansion continues in mobile telephones, both in order intakes and invoicing. Nevertheless, a certain leveling off in the pace of growth has been noted.

The group's earnings for the first quarter continue at a high and satisfactory level, though lower than last year. But it is important to bear in mind that the lower earnings is a direct result of our having chosen to increase our technology development costs by 500 MSEK compared with last year.

All in all, this year's first quarter results lead me to temper forecasts for 1991 – we have an economic recession to deal with. Lower results than last year must be seen, however, against a background of our increased investments in technology development.

If we look further down the '90s we at Ericsson are well prepared to overcome the major challenges that we are going to have to confront. We have already earned a reputation as being trustworthy developers of tomorrow's tele systems, and we intend to persevere in our marketing pursuits.

We must continue our extensive investments in technology development if Ericsson is to fully utilize the market opportunities that are there and if we are to continue to win market shares in public telecommunications. This is also a condition of our being able to continue to be world leaders in mobile telephony.

I know that the conditions are very good. We have established our base competence in the areas of switching technology, radio and network know-how. In my first year as president I have pursued aggressive marketing and development investment policies. I believe I have the entire organization behind me in these pursuits.

I take it as my personal responsibility to see that Ericsson remains the leading international supplier of telecommunication systems during the '90s.

Lars Ramqvist

"Take your cap and go!"

Board members' exhortation to outgoing member Jan Wallander was: Take your cap and go!"

Ericsson's ordinary shareholders meeting on Thursday, May 7, held no surprises. Lars Ramqvist presented the long-known record results for 1990 for a large turnout of shareholders, this time at the Stockholm Concert Hall. Shareholders' concern about 1991 was understandably based on the fact that Ericsson's earnings increase curve was now flattening out. Nevertheless, the group is still one of the larger companies in Sweden that is doing really well, despite the recession and last year's unrest around the world.

The board

The annual meeting proposed a dividend for 1990 of 3.5 kronor per share. Board members Cal-Erik Feinsilber, Georg Karnsund, Sven Olving, Lars Ramqvist, Björn Svedberg, Peter Wallenberg and Sven Ågrup were re-elected. Former alternate Per Lundberg joined the board, and Tom Hedelius was newly elected. They replaced outgoing Jan Wallander and Sten Wikander. Carl Wilhelm Ros and Jan Stenberg were re-elected as alternates on the board, while Sverker Martin-Löf and Jakob Wallenberg were elected as new alternates.

Outgoing members

Bjorn Svedberg, who was later re-elected as chairman of the board, thanked outgoing members Jan Wallander and Sten Wikander for their contributions. He particularly directed his thanks to Jan Wallander who, after 21 years on the board – the latest as vice chairman – was now leaving the position. Jan Wallander's contributions to Ericsson have been many and meaningful over the years, Björn Svedberg recalled. He thanked him for his valuable support during his own time as vice chairman and for the camaraderie that developed over the time. In recognition, Jan Wallander was presented with Ericsson's most worthy memento – a gold palque. On behalf of Telefon Aktiebolaget LM Ericsson, President Lars Ramqvist presented a memento and flowers. Jan Wallander also received – in return for the cordial relations he had with all the board members – a more unusual farewell gift, in the form of a cap!

Outgoing board member Sten Wikander is thanked by Björn Svedberg and Lars Ramqvist.

First quarter: a billion in earnings

Ericsson's interim report for the first quarter of 1991 shows that things are continuing to go well for the company. Earnings fell 14 percent, compared with the similar period last year, but it was still slightly above a billion kronor. This despite the fact that investments in research and development rose by 500 million kronor, compared with last year.

Ericsson's billings during the first two months of the year was 2 percent greater than the corresponding 1990 period. This amounted to 10,649 MSEK (10,409 MSEK in 1990). Orders fell by 12 percent, from 12,191 MSEK last year to 10,729 MSEK this year. Pretax profits fell 14 percent, amounting to 1,009 MSEK (1,180). Of this, 133 MSEK went to capital gains. On a per share basis, it amounted to a gain of 2.95 kronor (3.45) after tax appropriations and so-called full conversions. Taking into account latent taxes and auditing adjustments, earnings per share was 3.33 SEK (3.22) for the quarter. The increase was attributed to changes in Swedish tax regulations. That the earnings results showed a drop stems, in the first place, from the fact that the group's investments for technology development in public communications and mobile telephony have increased considerably. Broadband's ISDN, Digital Cross Connects and other investments for the future on the public side and the shift from analogue to digital technology in mobile telephony now call for increased investments.

Late orders

The downturn in the industrial sector has also affected telecommunications, above all in the form of reduced installations. Many huge orders and negotiations have been delayed, some because of financing problems, others as a result of the uneasy situation around the world in recent months. This has affected order intakes. Compared with last year's order intakes it should also be noted that the 1990 first quarter included many unusually large orders, among them a 6-billion SEK deal with Mexico on AXE, etc.

Caution

Investments in development must continue. Recession will determine the couse of events over the rest of the year. This means that the full-year results for 1991 are expected to be lower than for the record 1990 year. This is the cautious judgement that the group leadership has gone out with. From the business area point of view, it is in Public Telecommunications that developments have slowed most in recent months. It is also in this area that many big transactions have been delayed, transactions which in most cases, however, are expected to be completed before the end of the year. In many parts of the world, the recession has meant a slower pace of installations, which affects the business area's billings negatively. For Radio Communications, both order and billing developments continue positively as far as mobile telephone systems are concerned. That applies not least to the U.S., where continued successes are being noted. For land mobile radio, there were important orders from countries in the Middle East over the first three months of the year. Business Area Business Communications, despite the slight recession, had unchanged billings but there was a slight drop in orders. Cable and Network increased its order intakes. Continued strong growth on the Italian market and significant new contracts in Turkey have to a great degree contributed to the business area's positive showing. Components increased its billings, even though several subsidiaries were sold off during the past year. Orders also increased. Defense Systems had fewer orders in the first quarter than it did in the corresponding period last year. This came with selling off the Italian defense company Fiar in the fall.

Financial strength

The group's net finances improved during the quarter. Liquidity continues high, 39.1 percent (39.3 percent last year). During the period, 794 MSEK was invested in plants, machines and inventory. A total of 374 MSEK of these investments went to Sweden.

Quality – key word for the Kumla factory

At ERA's printed board plant in Kumla, they are gearing up to meet the increased demands of a new generation of printed board assemblies.

"Flexible production and a commitment to quality from all employees are two key factors we must meet in order to satisfy these demands," says production manager Göran Nordin.

Perhaps the most advanced printed board factory in Europe

At the printed board factory in Kumla, some 30,000 square meters of printed boards are manufactured every year. That corresponds to close to 4.5 football fields, or about 1.3 million boards. Production takes place around the clock, Monday to Friday, with the total 185 employees in the factory.

In line with the fact that production is becoming more complex, demands are also increasing for manufacturing technology and quality in the production of printed boards. An ever greater amount of information has to fit into the boards, which nevertheless has to be even smaller. And developments move fast.

What earlier was a double-sided board is now being replaced with a multilayer version, since today they are compressing between four and eight electrical layers on a single board. This means that the board's surface is getting smaller while the number of functions are getting bigger.

Among other things, the board for GSM, the pan-European mobile telephone system, will contain both six and eight multilayers. The average hole that is made in today's board is not more than 0.3 mm in diameter.

"A new laser plotter will be installed during the third quarter, which means that we will have the possibility of manufacturing conductors of 0.1 mm thickness," says Göran, who feels that already at this point Kumla has one of the highest degrees of achievement in Europe as far as printed board manufacture is concerned.

Christer Engdahl directs and monitors brown oxidizing of a printed board. This is done to achieve better adhesion of copper wiring.

Ingela Gideonsson works with final testing, where she goes over the board manually. At this point electric tests are also done to make sure that all electrical parts are functioning.

Shortened lead time

In Kumla, they are continuously working with improving quality. A number of different projects are running parallel with the objective of improving manufacturing technology, work methods and milieu. Measures that in the end would lead to better products. A very important part of the factory is the prototype department that was expanded in order to be able to produce larger prototype series in a move to guarantee quality. Another aim was to shorten lead time.

"Today, it takes eight weeks from order to delivery. It takes 35-40 minutes for a board to go through the manufacturing chain, which involves 57 operation steps. At the turn of the year, we will have reduced the total lead time to six weeks," says Göran.

It is also naturally important that personnel share in the quest for better quality. For every process, there is a process group whose mission is to resolve eventual problems that arise during production. The group includes a technician, a job leader, an instructor and a maintenance and service person. Consequently, delegated responsibility that gives operators wide variation.

Collaboration

A test project related to the changed work pattern is also taking palce between the printed board and the nearby radio factories. Among other things, it has been decided to have terminals at all work stations so that operators can easily see which product is waiting in line to be manufactured. They also loan personnel from each other in order to maintain an even level of production. Resources in training are also set up to increase competence.

"In addition, we have a huge exchange with the ETX factory in Norrköping, which also makes printed boards. At present we have three common areas of work. We collaborate in matters of planning and purchase where, since we use the same suppliers, we can make joint technical investments and supplier agreements. This also gives us an advantage with service and spare parts purchase. We have mixed manufacture between the factories so as to keep the highest possible capacity in use. On the personnel side, we have a printed board school for new employees as well as rotation training. In addition, every month a production cross unit (a group within production that works with the same products) goes from here on study trips to the Norrköping factory, and they in turn visit us."

Avoiding the air

They are also working with improving the milieu. At the moment the factory is being partly refurnished and they have gotten in new machines which handle several successive stages of manufacture at a time. Something that allows operators to avoid much of the bad air that came earlier with changing machines between jobs. Another element of pride is that as far as short-time surface treatment process goes they have succeeded in bringing down the use of chloridated solutions from 35 tons a year to 0. New ventillation systems that will improve the air are also being installed.

As we said, there is a lot going on at the Kumla factory. Investments in machines, man and milieu.

"Naturally, investment in personnel is the most important. Without everyone's wholehearted support we will never be able to overcome situations where interruptions arise or where manufacturing stops. And it is more fun to work in a place where people are happy, which I hope but at the same time also feel is the case with many here," says Göran.

Göran Nordin is production manager in Kumla.

Helena Andersson

Ericsson pictures of Kuwait

In March 1991, 13 Ericsson colleagues traveled to Kuwait. Their assignment was to reconnoiter and assess Ericsson plants and equipment in war-ravaged Kuwait.

How much survived the war, how much was destroyed?

After some weeks of traveling around the country they come home with the answer: the war had caused extensive damage to the tele network and exchanges, but it could have been much, much worse.

The pictures were taken by Thommy Thörnstedt, Rolf Hedenström, Bo Nilsson, Uolevi Partanen, Anders Friberg and Claes Gyllencreutz.

Anders Friberg, ERA, probes this totally destroyed site in Wafra, southern Kuwait. It contained three radio base stations for mobile telephones. The racks held up but the electronics were destroyed. Ericsson's car phone network in Kuwait was half way installed when the war broke out last August. The network was of the so-called TACS type and was designed for 20,000 subscribers. It was a turnkey project, that is everything was to be ready so that the customer had only to turn a key when he was ready to set it in operation. That was the case then; but now the situation is different. An offer is on the way for reconstruction. Naturally, the Kuwaitis are eager to have the system back in operation as soon as possible. ▼

▲ Smoke clouds hang heavy over Kuwait City. In the skyline can be seen Kuwait's tower, which is a national symbol. When the wind shifts and blows in smoke from the 500 burning oilwells, day turns to night and everything becomes black in Kuwait City. Face masks filter out the larger particles, but still one cannot stay in the city for any length of time.

◀ The Iraqis dug trenches like these across the highway about every hundred meters to impede allied troop transports.

Just behind the man in the ditch one can see a bit of the 500-kilometer long coaxial cable to Saudi Arabia which Ericsson laid down in 1976-78. The cable was said to be broken in three places, but it was seen to be deliberately ripped apart in the entire 120-kilometer Kuwait stretch. Far back in the trench can be seen an Iraqi tank that fell into its own trap.

A relatively new AXE exchange with 20,000 local lines combined with a tandem exchange was completely destroyed in South Sabahia in southern Kuwait. This was during the American precision bombing of Iraqi strongholds in Kuwait, among which the Ericsson plant was situated. AT&T has already received a contract to the exchange which will have 6,000 local lines combined with a tandem exchange. ▼

▲ A Tomahawk missile landed between two houses. One of them was the 11-story Telecommunications Center and the other was a Kuwaiti shopping center – The Souk – that was completely burned out. All the windows were blown out with the explosion and the mangled remains of the house is indescribable.

To the right are the first Ericsson men on site in Kuwait following the liberation: Bo Nilsson and Uolevi Partanen, together with representatives of the Kuwaiti Communications Ministry and American soldiers.

▲ This is the base for a 100-meter high radio link tower at the Salmy 1 site, which was bombed during the war. The majority of the base stations in Kuwait City stayed intact, but in the rest of the country some 90 percent has been destroyed. The old sites where the base stations were could perhaps be used again, but transmission networks have to be built up from scratch. In that case it will replace Kuwait's earlier mobile telephone network, which was a Japanese NEC network. But the NEC equipment was carried off by the Iraqis, who just have NEC switches. Ericsson's installed equipment on the other hand seemed uninteresting to them and was left intact – rather fortunately.

Today's business climate calls for bugging-free equipment

Fifty years ago rules were set up in the Swedish defense industry that prohibited talking about classified information over the phone. For top company executives in civilian industry, there should also be similar rules. Here, in many instances one is not as careful with information as one should be. So says Rolf Dolk, head of security at Saab Scania and a member of Business Security Delegation in Sweden.

"Codeline is as easy to use as an ordinary phone," says Rolf Dolk, head of security at Saab-Scania, where all the top executives have a Codeline.

New markets with new players, tougher competition, battles and joint partners. That's how the business climate looks for the nineties. And in some new markets ethical and moral boundaries will be such that we in Sweden are not accustomed to. Especially dealings in Eastern Europe, and the market that is opening up there has both new opportunities and risks.

In this new business climate, time is a significant factor. It will be extremely important for competitors and other companies wanting to get in on the market to know for example when new technology should be introduced or new products launched. One way of getting this information is through telephone tapping, or bugging, something that has been going on for some time now. This is a "shortcut" for rapidly getting information and knowledge.

"Top executives will have their phones tapped, and it is only when they realize that information has leaked out that they then do something about it. Swedish industry should be more alert," says Dolk. At the same time he warns about video and tele conferences, where strategic issues are dealt with. Discussing important matters over the phone in order to save traveling and conference costs could be very costly if information gets out.

Codeline a help

At Saab-Scania, all top executives have a Codeline, a cryptophone from Ericsson. Companies abroad are also now buying Codeline, so a network for more secure telephone contact is being built up.

"We went along and tested this cryptophone long before it was fully developed and decided quite early on to get it for our top executives. Codeline is a good product with high quality. It is built with Swedish technology, and we feel that's important," says Dolk.

"You cannot hear when a call is coded. That's good since it is important for one to recognize again the voice with whom one is speaking but when encryption is used," he adds. That a company has security-conscious employees and that it acquires equipment to eliminate security risks is a part of good corporate thinking, says Dolk.

Corporate security is part of business operations. Through high risk awareness one increases confidence. And that's important for our business contacts nationally and internationally, he notes.

"The more international a company is the greater the risks for telephone bugging. Calls overseas can go via radio link or satellite and systematic eavesdropping can occur. So says Ilio Virgili at the tele security offices, in Kristianstad, a unit within Televerket, where experts analyze complaints by companies and organizations.

Basic protection

There is a high level of basic protection in the Swedish tele network, and for most users this is enough. When it comes to strategic issues and information between people at top management level, however, there is a need for greater security. Decisions on upcoming agreements that leak out can affect the stock exchange, for example. "At the larger companies they are always aware of the risks for phone tapping. Protecting your information is important not only for big companies," Ilio says, adding:

"For a small specialized company it can very often be vital to protect their special "know-how." In the U.S., where the business climate is tougher than here at home, one is more risk conscious and knows the danger of telephone bugging. Even if Europe is still a few steps behind the U.S., it is beginning to wake up now and, perhaps more so in England, they have their eyes open for the risks of illegal bugging.

"By using cryptophones when, for example, strategic decisions are being discussed by phone, one can avoid the danger of bugging. Codeline is a cryptophone approved by Televerket. And we are very happy with it. It is now part of Televerket's lineup," Ilio Virgili notes.

Codeline accord in Norway and Sweden

Two important distribution agreements for Codeline were signed in April. One was between Ericsson and Scandinavian Telecommunication Trading AB (STT), one of the major companies within the Televerket group. The other is between Ericsson and the Norwegian NFT Crypto AS.

STT is reponsible for marketing and will be selling Codeline through Sweden's 20 tele areas. In Stockholm, Gothenburg and Malmö the bulk of the work will be done through the big-customer outlets there. Investments in tele security are being made in Televerket, and Codeline is a very important product in this area.

"We are reckoning with sales of up to 20 million next year," says Sture Pettersson at Ericsson Radio Systems, responsible for marketing of Codeline in Scandinavia.

High quality

"We have compared different types of cryptophones and we chose Codeline. It meets Televerket's requirements, is of top quality, is sober and has excellent sound quality. It is so perfect that it goes well in a boardroom," says Johan Warpe, product manager at STT.

He sees the market for Codeline as bigger than what one thought. Today, at most there are only a few Swedish companies that have a cryptophone.

All the big phone manufacturers sell cryptophones but these are for military use and are often huge and bulky. Codeline is the first civilian cryptophone.

Big-customer sales team will begin to sell Codeline now, and Johan believes that this year they will sell between 200 and 300 phones. Each set costs about 50,000 kronor and to be able to use it you have to have two phones, one at "each end."

As a symbol for the agreement that was recently signed, Johan Warpe, STT, hands a receiver of Codeline to Sture Pettersson, ERA. Photo: Björn Seger

Outside Sweden

In Norway, Codeline will be sold through NFT Crypto AS. This is a company owned by Norsk Försvarsteknologi (Norwegian Defense Technology), which has a high level of crypto competence and wants to expand its product family. In Denmark and Finland, Codeline will be sold through Ericsson companies. Sture says that in Norway, Denmark and Finland combined the market is as large as in Sweden.

"But, he stresses, it is a new product where one needs to sell the idea at the beginning. It is difficult to say when sales of the actual phone will commence."

Outside of Scandinavia, negotiations are mainly going on with With Ericsson companies as distributors. Discussions have begun with Holland, Switzerland, Brazil and Ireland. In the U.S. and Britain, market soundings are being taken. Codeline has already been sold to customers in Belgium and Turkey through Ericsson companies there

Gunilla Tamm

Corporate Staff gets Codeline network

Corporate Staff Marketing at Ericsson has purchased Codeline. Several of these are located outside Europe and they are now in the process of building up a network with these countries. Judging by the experiences they have had so far, everything seems to be functioning well between the different areas of the globe. During the Kuwait crisis in the fall, Codeline was used internally among various Ericsson companies.

Codeline

Codeline needs no special application in the normal tele network. All that is needed for a call to be encoded is that both the caller and the person receiving the call should have a Codeline.

The set is easy to use. You call up in the usual way and when you want to hook up the encryption (an encryption key is built in) you press the encryption button. It then takes a matter of seconds for the coding equipment in both phones to synchronize. When the encryption light goes on that means the call cannot be tapped. The encryption key does not have to be inserted every time you make a new call.

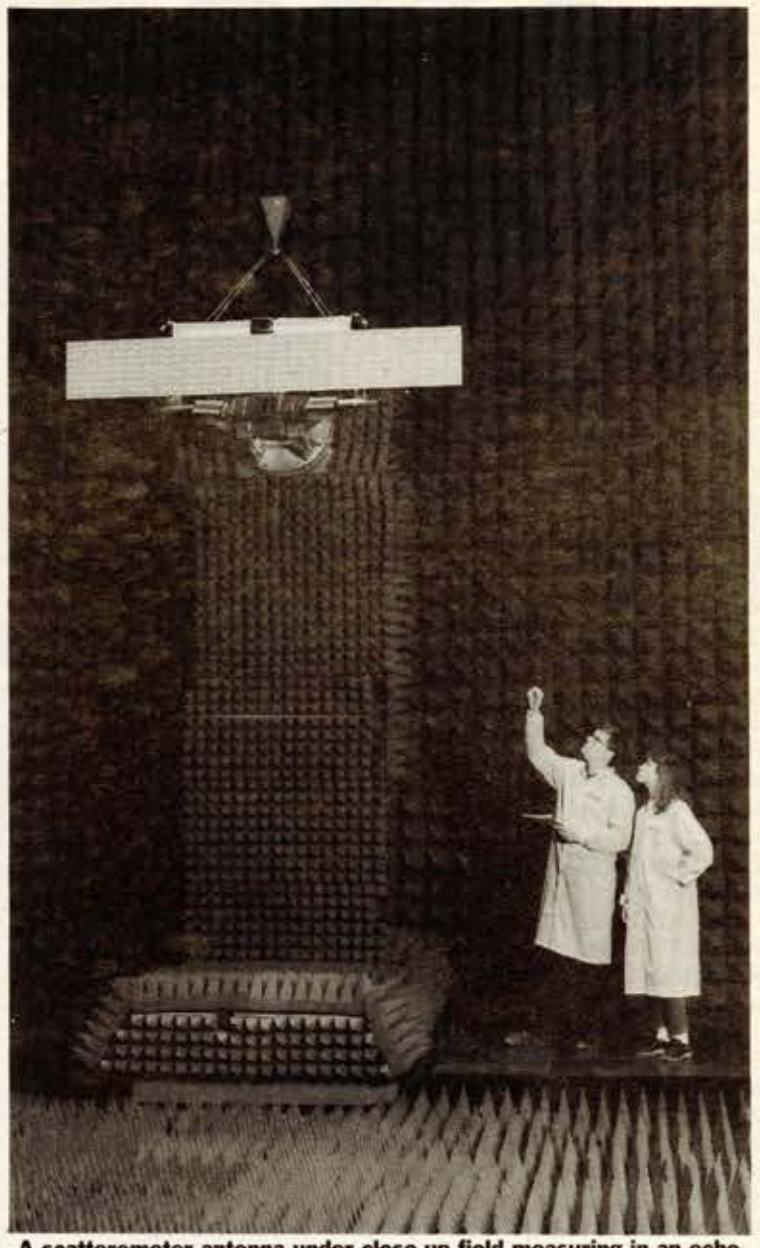
The encryption technology is digital. The call goes through a coder and is encoded thereafter. It then goes through a modem into the tele network and at the receiving end the signals are decoded through a decoding process. Anyone trying to listening in on a coded call would just pick up a static noise.

Codeline is manufactured at ERA's factory in Linköping.

Europe's largest satellite takes its place in space

Within the next few months Europe's first radar satellite, ERS-1, will be launched into space with an Ariane rocket from Kourou, in French Guiana, in South America. Over the next couple of years, from its orbital path, 800 kilometers up in space, the satellite will be able to feed researchers data about the earth's oceans, coastlines and icecaps so that we can better comprehend the environmental system in which we live, as well as being able to get better weather forecasts.

To acquire this type of knowledge, a lot depends not least on the two radar instruments on board, of which ERE in Mölndal was responsible for certain parts.



A scatterometer antenna under close-up field measuring in an echo-free room.

ERS-1 (European Remote Sensing Satellite) has six different measuring instruments aboard. The active radar instrument (AMI, Active Microwave Instrument) contains two different radar functions: the synthetic aperture radar, which scans oceans, polar ice and land masses, and a wind scatterometer, which, in the main, scans ocean surfaces and measures wind speeds and directions. Among the other four instruments there is a radiometer, which measures the earth's rays without itself emitting any signals.

Remote analysis

ERS-1 is part of ESA's (European Space Agency) remote analysis program for earth observations. The program covers a broad spectrum: meteorology, climatology, oceanography, glaciology and environmental effects. It is a very important addition to the joint international attempts to study the earth in order to better understand, protect and control our planet. For some time now, the program has included five stationary meteorological satellites (meteosat) over the Equator, the first of which was launched in November 1977. We are used to seeing pictures from this on the television weather report maps.

Largest yet

Ten years ago, in 1981, the ESA council accepted the ERS program. Three years later, in 1984, work began on developing and building the satellite. The U.S.A., the Soviet Union and Japan all had radar satellites before, but for Europe's part it was the first time that it was using advanced microwave or radar technology in a civilian satellite. Radar expands considerably the fields of study where researchers are dependent on clouds, fog and daylight. Via optical satellites like SPOT one can observe only in clear weather.

ERS-1 is the largest and most sophisticated satellite built in Europe to date. It weighs 2,400 kilos and measures 12 by 12 by 12.5 meters and costs around five billion kronor, of which Sweden contributed about three percent.

Earth's climate

ERS-1 is the first of a number of satellites that would monitor changes in the earth's climate. This mission is twofold. Scientifically, it will aid oceanographic research by measuring wind speeds, wave heights and directions, the spread of icecaps and ocean currents. Commercially, it will be used for weather forecasting and ice monitoring, support offshore branches and fisheries industry as well as studying ocean pollution, like oil spills for example. Much of the information gathered by the satellite is already accessible to users within three hours from time of observation, among other ways via the data receiving station in Kiruna, northern Sweden.

ERS-1 feeds researchers valuable data

Chalmers in Gothenburg is one of the research institutes that will be using part of the data from ERS-1 for remote analysis of ice and snow. At the start of next year, ice patterns in the Gulf of Bothnia will be mapped out so as to be better able to supply icebreakers with data.

SAR

Antennas for SAR and thewind scatterometer were designed and control measured by ERE in Mölndal. Manufacture was done by Dornier in Germany and Casa in Spain.

The synthetic aperture radar has an antenna ten meters long and one meter wide. The larger the antenna the smaller the object that can be observed on the earth's surface. By using artificial design to get the antenna to see further than what it actually is (synthetic aperture) one can discern even smaller objects than one would otherwise have been able to. This is achieved through data processing, which extends the antenna in much the same way that astronomers extend their viewing with a telescope when studying the stars.

Wind scatterometer

The windscatterometer uses three antennas which continuously receive signals from the ocean surface while the satellite is traveling its orbital path. One gets three different measurements with very small time lapses and, through wave height and direction, can calculate wind speeds and directions.

Besides the antennas, ERE has also designed and manufactured a frequency generator that consists of a clock in the radar and a frequency converter. In order to verify the antenna's performance, ERE has also been charged with building special measuring equipment for large flat antennas like SAR which was originally built for the Tele-X satellite. This measuring equipment is unique in Europe and is used at home in Sweden also, for example for PS-890.

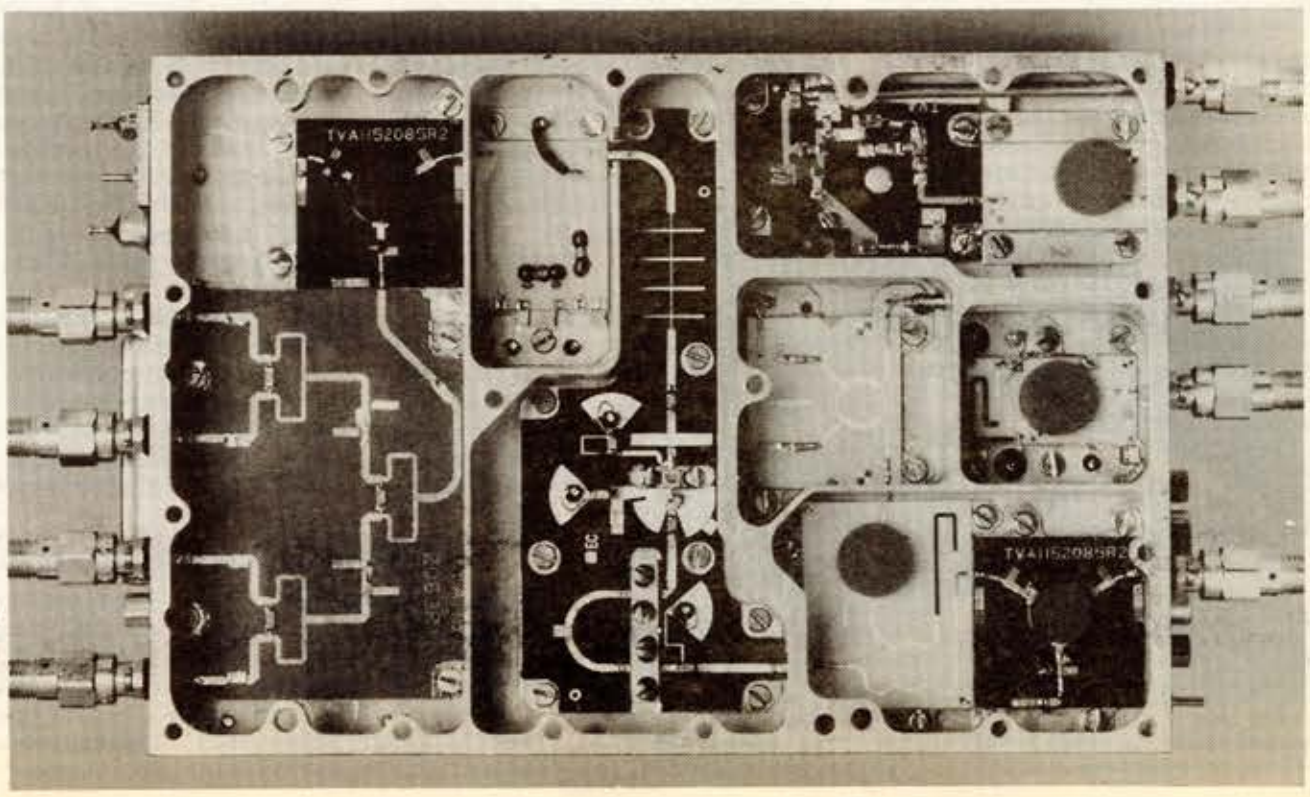
New generation

ERS-1 is an important step in itself, but the full effect of the satellite will first be felt when the first researchers are provided with continuous data over an extende period. That's why a similar satellite will be launced already in 1994. These two satellites together will provide data continuity from now until POEM (Polar Orbit Earth-Observation Mission) which comes about in 1997.

With POEM, we will be confronting an entirely new generation of antennas with entirely new output.

"That is an active antenna, like in the PS-890 radar, where instead of wave guide antennas one would use entirely new technology with microchip antennas, which brings to mind printed board assembly technology," says Lars Nordfeldt, from marketing, space department.

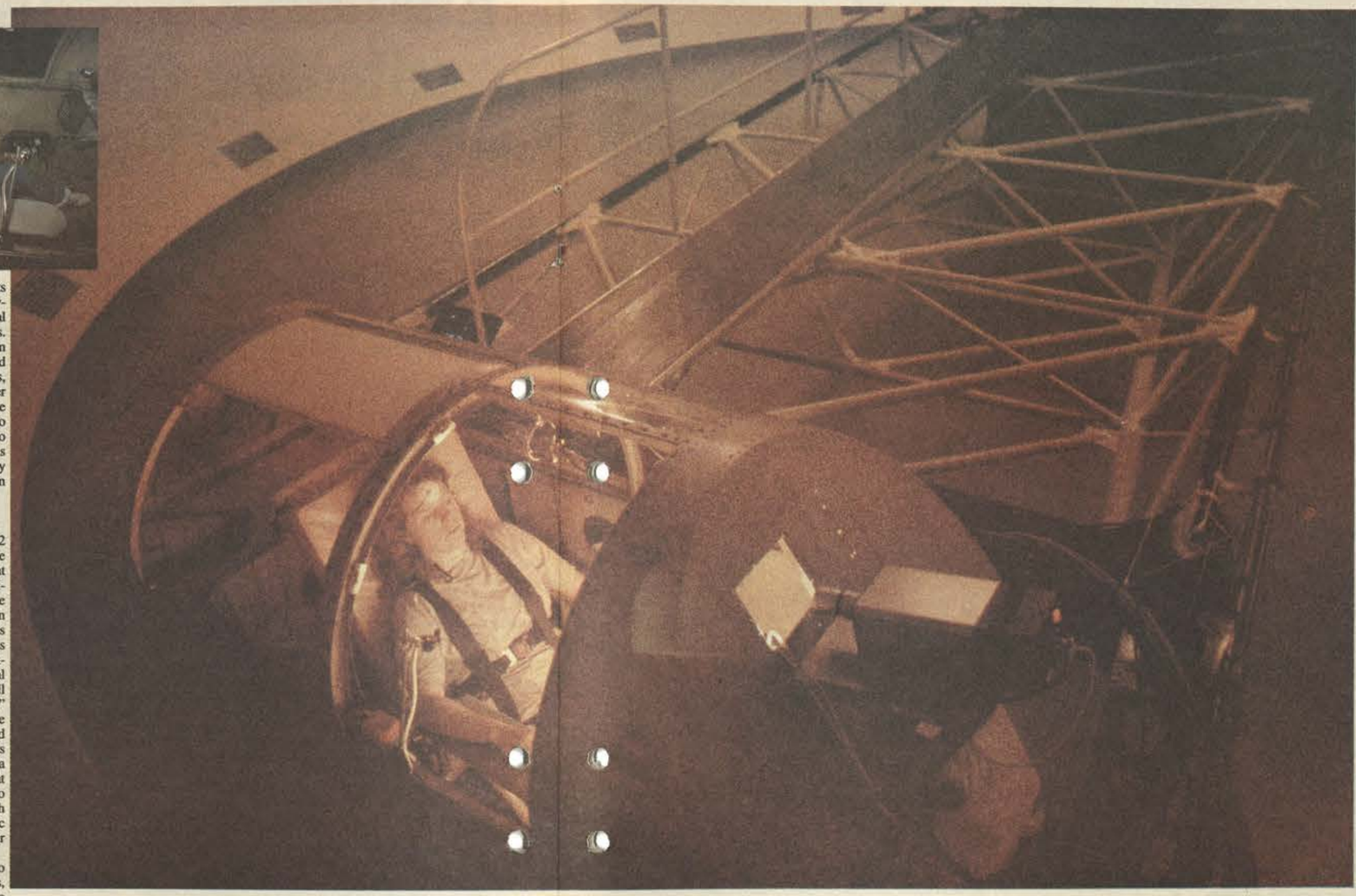
Gunilla Bergman



A test chart of the different printed board assembly technologies that are used in a part of the frequency generator in microwave instruments.

COUNTDOWN HAS STARTED FOR MARIA

Wednesday, April 24, was an important day in the life of Maria Edberg. That day she took a giant step to making her journey into space. Maria was one of five Swedes chosen as candidates for a seat in the European space shuttle Hermes. At the beginning there were 297 persons including 17 women applying for this sought-after "space ticket." Maria is one of these individuals who strives to go beyond the ordinary. She wants to be an astronaut.



Maria Edberg sits in a centrifuge at the Baromedicinal department of Karolinska Institute.

Here they test how the body reacts to forces stronger than earth's gravity. Photos: Mikael Lindström, Bildgruppen Peya.

Ten, nine, eight, seven, six, five, four, three, two, one, liftoff! July 16, 1969, 2.32 P.M. Swedish time, television viewers could see the Apollo 11 spacecraft lift off. Very much like that event of July 1969, Maria is presently seated in a conical-shaped vessel at Karolinska Institute, testing what it is like to land on the moon.

The cylinder is mounted on a rotating two-prong steel arm in a circular room. Outside the room, Professor Dag Linnarsson is counting down in the control room. A slight buzzing sound indicates that the cylinder in the room is in motion. Maria has plates on her forehead and chest in order to measure how well she maintains her blood pressure. On a small TV screen, we can see her face contracting more and more. Every ten seconds Maria is supposed to press a little button in her hand to indicate that she is conscious. Maria presses down as if giving birth in order to increase her blood pressure again. Fighter pilots use the same technique.

The cylinder she is sitting in revolves at 70 kilometers per hour when the G-force has reached 5. That is equivalent to 25 revolutions per minute. In a sitting position the force is mainly directed from head to feet. This is the force one encounters when landing. The duration of the test is 45 seconds.

Maria is also tested in a lying position. The force then presses her lungs and heart together and basically she tries to stay alive. The same feeling is experienced by space pilots at launching. The force will now be increased to 8 G, which is equivalent to 85 kilometers per hour, or 30 revolutions per minute. This corresponds to the rate of revolution of a record-player. It is unlikely that an astronaut will undergo forces stronger than 3 G. At a launching, after the first rocket stage has been burned out and until the next one is fired, the force decreases from weightlessness to 3 G, which is also quite an experience.

"The increase from 0 to 3 G is awesome" says Professor Linnarsson, with a gleamy in his eyes. He would have liked to be selected as an astronaut, but that was not possible since he wears glasses and is above the age limit. "You have to find the emergency exit, even if you have lost your glasses," he says.

The gravity test is one of the last tests Maria has to do before final selection. However, she has already gone through medical tests, interviews and psychological tests. Furthermore, she has been sitting in vacuum tanks and in revolving chairs, she has tested her sense of balance with water in her ears, and much more. The purpose is, however contradictory it may sound, not to select the most well-trained, but to choose those who have no ailments that could be hazardous to their lives on a journey into space. Today's exercise was successful for Maria, precisely as it was in reality for Neil Armstrong in 1969.

On earth instead

In 1969, at 9.17 P.M. Swedish time, 102 hours and 45 minutes after liftoff, The Eagle had landed on the moon. Some hours later, at 3.56 A.M., those who had access to television could see pictures of the first men on the moon: Neil Armstrong, followed by Edwin Eugene Aldrin, taking their first cautious steps on the rough surface. Radio link was established. It transmitted a buzzing, crackling sound and we could hear an emotional Neil Armstrong say that this was "a small step for man, but a giant leap for mankind."

Maria Edberg was 9 years old when she saw the two men walking on the moon, and that she will never forget. Ever since, she has wanted to be an astronaut. She is now a graduate engineer and currently employed at Ericsson, with sales of AXE switches to Holland. She is 30 years old and lives with three foster children. She goes to aerobic classes and plays tennis. Just like any other woman.

What is it that impels an individual to become an astronaut and confront stress, which other people would not even dare think about?

Studied supernovas

Maria's father, a sea captain, was very interested in the stars and astronomy. He aroused her interest in space. Already during high school she was a trainee for one week at the Råö space observatory outside of Gothenburg and she wrote a report under the scientific title of "The origin and structure of the universe." She received a scholarship from the Swedish-American Foundation and studied astronomy along with other subjects for a year at college in the States. There was a planetarium at the school where she could study supernovas and other astronomical phenomena. During her studies at the Chalmers Institute of Technology in Gothenburg, she wrote her thesis for the senior lecturer of astronomy at the Radio Astronomical Observatory. In addition, she was active in the Chalmers space group which consisted of students with more than one star in their eyes. They went up to Kiruna and were there when rockets and weather balloons were launched from the Esrange ramp and were in search of astronomical phenomena.

"The majority of those in the space group wanted to work with astronomy in some way, and that's the way it is today too. But my interest has always been to be an astronaut, and that didn't happen at the time. So, I traveled around the earth instead.

She did her final practicals with the Radio Astronomical laboratory in Paris. Maria designed printed board assemblies that were used in radio astronomy to measure frequencies from space. So she has demonstrated sufficiently that she is interested in the subject.

Listening for Martians

Measuring frequencies from space, having a keen ear, are some of the qualities required of a prospective astronaut, besides good basic condition. Since one travels in a team of 6-10 persons, it is important to be outgoing and to be able to collaborate. One must have a strong psyche, be able to control one's reactions, not be claustrophobic, not shy away from confrontation, but at the same time be very goal and result oriented.

"A certain amount of self-confidence is required, but not too much because in that case one would not be able to collaborate. One must be open and be able to digest signals one receives. One must be able to think logically in differing situations. In an emergency it is ideal to be able to read all the signals but also to know how to separate the ones that are not essential. Of course, these are what the tests are all about."

Today, a space flight is somewhat less physically demanding than it was in 1969. But what was missing then was the training to withstand the physical post-reactions, which are now becoming more and more important in order to be prepared and to follow up. How dangerous is it then?

"It is still very dangerous but certainly not to the extent that it was earlier.

At ESA and the state delegation for space activities one does not want adventurers but responsible people who like challenges. People who want to excel and be on the front line. As a serious engineer, Maria likes to solve problems, to work with the latest technology and to learn new things.

"I like changes and I love to travel. I am looking for the ultimate experience and to discover myself even more, to become more conscious of life around me."

Significance in life

But what does Maria feel toward the universe? Humility, respect, fear or dizziness, as I do?

It is an incredible feeling. That is exactly what I am looking for. Others might not be able to cope with this. On the other hand, I think that psychologically this is a fantastic experience. To see how small we are, how important it is to take care of what we have, our significance in life."

A touch of a true adventuress is probably hidden behind those steel-blue eyes after all. Maria enjoys reading science fiction and loves movies like "2001" and she can still recall the introduction melody of a television series from the sixties. What about green men, do they exist?

"It would be ridiculous to say that no other living things exist in the universe. I do not reject the possibility, since the universe is so huge. There are incredibly many things that have to fit together.

"When we confront some form of life, it is not for certain we would even realize it. For example, right now I could not determine whether it is a form of life, if I, as an astronaut, would see something living on hydrochloric acid instead of amino acids.".

Mankind initially developed space technology for the sake of military gain. As a pacifist Maria thinks this is a shame. Doesn't she ever question why we spend billions on space projects instead of solving our problems on earth first?

"I agree with you to a certain extent, but we have to allocate our resources. There will always be problems here and now, yet we must carry on with research, otherwise we will not advance."

"Even though it is basically adventurous and egoistic of me to consider space technology as something positive, just because I enjoy it, we still have to learn about our origin and our future. This knowledge is so much more rewarding in day-to-day life than just technical knowledge alone. It is far more so than people can imagine. On the other hand, I definitely question America's Star Wars program."

What is mankind's role in the universe? "I believe we have the possibility to influence our planet, yet we are presently destroying it and if we continue to think only of ourselves, we will ruin it all. But if we don't, we could certainly influence not only Earth but also our own galaxy. However, we have little chance of having an impact on the universe, where we are like small ants. Good heavens, you do ask philosophical questions"!

Crowning creation

Now I know, she believes in the possibility of research to improve the world. But she refers to previous "discoveries" in quotation marks. She sees Australia's 200th anniversary pathetic and Columbus's discovery of America as a joke. She says we have a lot to learn from the Indians, Aboriginees and the Orient. "Westerners have forgotten about their souls." She thinks that the prime driving forces are survival and curiosity.

"The meaning of life is to survive and to improve what we are doing now. If only people would just pull themselves together, she says with a deep sigh. We are such an incredibly beautiful creation. Our lives are justified by the beauty of it alone. A bit of nirvana, to enter the universe, and to be "one." On the other hand, I think it is ridiculous to imagine us populating the entire universe."

"I believe man is good at heart and evil stems from fear – fear of oneself as well as of others. Fear prevents you from acting logically."

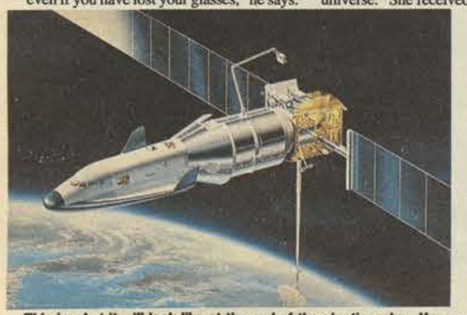
Let us say that if one is not afraid, if one is open to external influences and one's body performs well (according to Maria that would be quite dreary) and if she is selected to be an astronaut. If. What would Maria think on that day in 1998-99 when she goes aboard Hermes?

"I would be a bit startled. I would feel extremely good, as if the moment had finally come, and then my stomach would tingle."

That is the least one could expect, I mean a tingle in the stomach.

By the way, what happened to our friend Neil Armstrong? Well, it is said that he turned religious and Aldrin is searching for Noah's Ark somewhere in Turkey. The effects on the individual differ. It is not enough just to be open to external factors alone; one also has to maintain contact with other astronauts in order to share the fantastic experience. For it must be very difficult being around those who have not been up there. A strong psyche, I say, as I walk home. It is absolutely crucial to success.

Text: Charlotta Westling



This is what it will look like at the end of the nineties when Hermes docks with the Columbus Free-Flying Laboratory. Perhaps Maria Edberg will be aboard.

HERMES – SPACE SHUTTLE OF THE FUTURE

The selected astronauts will travel into space with Hermès, referred to even as the space shuttle of the future.

Hermès is one of Ericsson Radar Electronic's space projects. ERE develops scanners on the spacecraft, together with the French SAT and SEP. The total weight of the Hermès shuttle will amount to 22 metric tons. During its calculated 15-year life span, up to 30 manned flights are planned. The shuttle will be a two-story construction and will be manned by a crew of three on every flight.

ESA, the European Space Agency, is mainly responsible for the Hermès program. While France, through its space agency, CNES, is directly responsible for the space shuttle. The project involves 12 nations, with France being the largest contributor, followed by Germany and Italy. After them, Belgium, Spain, The Netherlands, Switzerland, Sweden, Austria, Denmark and Norway, with Canada as an associated member.

ESA will choose ten pilots and lab specialists out of approximately 50, who are recommended by 13 different countries.

ESA gives three reasons for developing Hermès – mainly to manage manned space flights; secondly, so that Europe can compete in space on its own and, lastly, in order to be accepted as a partner of equal importance in international collaboration.

Hermes is a part of the triumvirate Arianne 5, Columbus and Hermes. Arianne 5 will launch Hermes to the space station Columbus, which will hopefully be based by the international space base Freedom.

In the mid-nineties, Arianne 5 will be able to conduct commercial launches, before the time comes a couple of years later for the first launching of an unmanned Hermès. Followed by the launch of Columbus and, thereafter, the first manned Hermès will head into space.

Fresh winds blowing for EDM in Australia

Three and a half years ago, ERE's subsidiary, Ericsson Defense Systems, EDM, was established. The company has its offices in Melbourne, in the state of Victoria, in Australia.

In the blue-gray building that sets it apart from the other Ericsson companies in the area, there are five employees.

EDM's hand in Australian defense market strengthened

"We even have a man based in Canberra," says Ivan Trayling, head of EDM, adding that there is also someone at the Defense Science and Technology Organization (DSTO) in Adelaide in South Australia. The 22-year-old engineer is paid by EDM while an additional Swedish engineer, Åse Jacobsson, from ERE in Mölndal, is paid by the Australian state.

The reason for Ericsson having two persons in DSTO in Adelaide is that in part they would teach and in part they would learn more about customer demands for Ericsson's airborne surveillance radar, PS-890.

Further project on the way

The Australian government has decided to invest in a surveillance radar but no definite bids would be made for some time. But the more the Australians learn about ERE's radar the greater the chances it would have in an eventual contest.

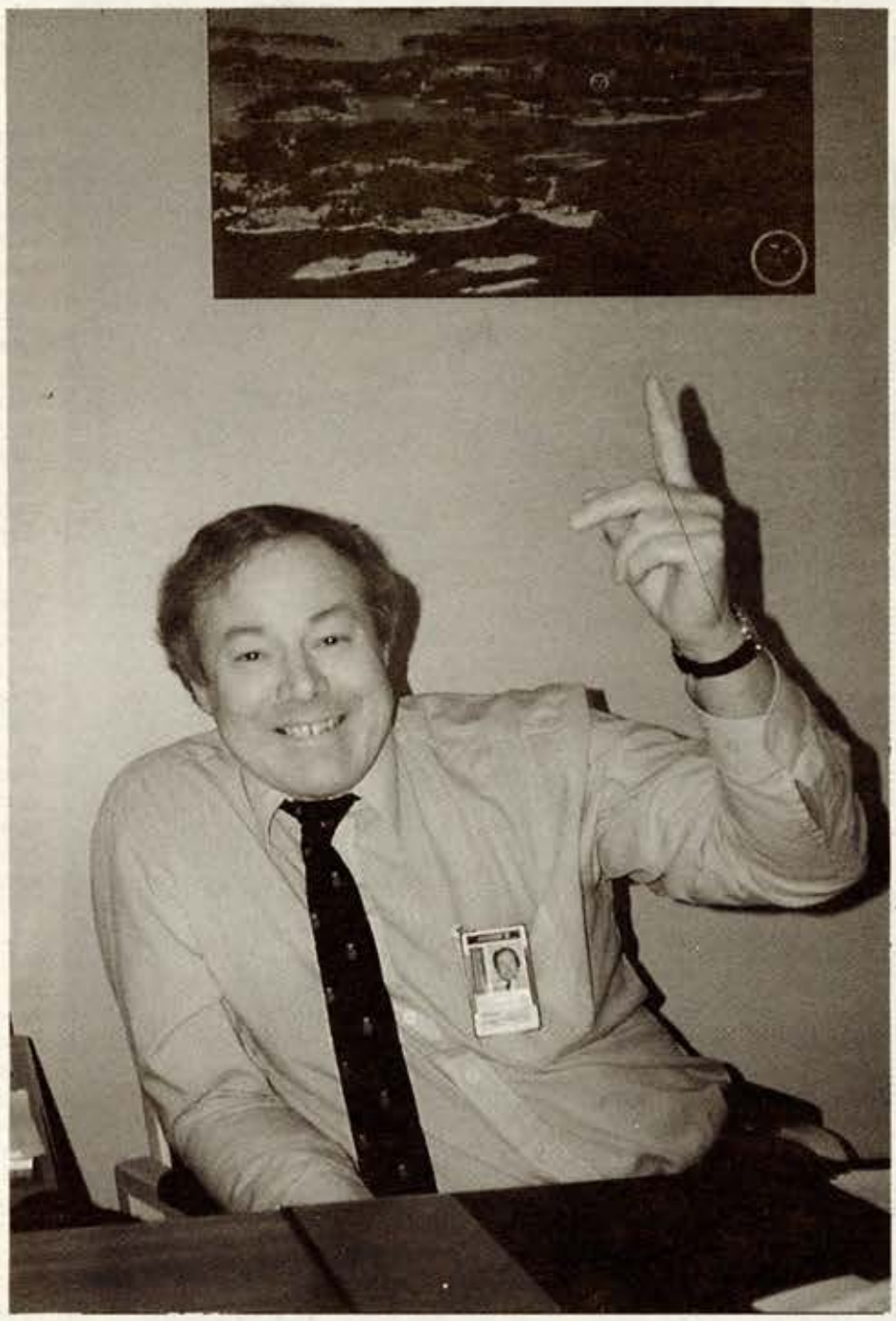
"I presented this project for the Defense Department and they took to it," says Ivan, adding, that he has a further project on the way – one that is equally interesting and that both Swedes and Australians can use, exactly like the project with PS-890.

Three and a half years is no length of time in a company's history. Nevertheless, among other things EDM succeeded in getting 10 Sea GIRAFFE in the frigate division of ANZAC, the Australian New Zealand Army Corps. The PS-890, marketed as aerial guidance systems for the Royal Australian Air Force, was developed as part of a mobile field telephone that was tested in Australia, Sweden and the Philippines with very satisfactory results. But the whole thing took a long time to push through.

Years of waiting

"One must be a masochist to do business with defense," says Ivan, laughingly. "The years of waiting. Then the loneliness. But we have had support and help from Mölndal, especially in the ANZAC project. There we got all the help we needed, both in expertise and with encouragement. It was extremely important to be always able to give our customers immediate answers.

"Still, the going was not always smooth. The order went to Bofors, with ERE as subcontractor for radar. In this situation, EDM got nothing."



Ivan Trayling, head of EDM, Australia, which, among other things, markets PS-890 in the country and participates in the development of aerial guidance systems for the Royal Australian Air Force.

"I was distraught and totally disappointed," he admits, and the glimmer in his eyes disappeared. "My feelings about Swedes then – no, I would prefer to forget that."

Worked day and night

"We had worked really hard, several weeks at a stretch. We worked day and night with the bid. We even went to Sweden to make sure that it was all clear. There was lot of sweat, toil and excitement behind such a bid. A lot of ups and downs. Everything was built around the decision to be taken. Whether we would get the deal or not. When AMECON got the big contract we were almost overcome with joy. Then, it took a while before the subcontractors were named and then the excitement started to build up again. We were almost a hundred percent sure that we would get the order. And then – at the eleventh hour – Bofors got it. That was the greatest disappointment in my life. This affected not only me and us at EDM. The order was even factored in to the factory's budget since a lot was going to be manufactured there.

"To lose an order – it doesn't matter under what circumstances – is the very worst that could happen to you. But we are forced to get that out of our minds and get into the game again and move on. Maybe even go through the agony again. But this time it was really difficult to come back."

Pleasant result

Still, eventually things got going again. EDM just recently signed the final contract with Bofors, Australia. ERE will serve as subcontractor to EDM and a considerable part of the stations will be produced locally at Ericsson in Australia. So after all is said and done, the result is not all that bad.

Like many Western economies, Australia's is in recession (even if the latest reports indicate a slight upturn). Times are just as hard here as they were during the thirties, economic experts say. Unemployment is way above 8 percent, but in Australia unemployment is not measured in the same way as in Sweden. If someone in a family of two working people is unemployed, he or she is not counted in the statistics.

No cutback

"Interestingly enough, in this economic downturn defense costs are hardly affected," notes Ivan.

"When the call came that Europe was made to scale back defense costs, the Australian government made it clear that here in our part of the world nothing had changed that warranted a cutback. Since there was still some instability in a number of countries in the Pacific we shouldn't weaken our defenses. Our defense program will continue as is. The government has announced that they want to boost exports, even within the defense industry."

EDM is a small player on the huge rugby field that makes up the Australian defense industry. But many interesting projects have strengthened EDM's hand. And Ivan Trayling believes that within just one year things will be different. Other big companies in the defense industry are Telecom, BHP (Broke Hill Property, previously in mining operations), Marconi, Lockheed, Rockwell Aerospace, Amecon and Bofors, among others.

More humor

To the almost obligatory question of what it is like working for and with Swedes, Ivan is silent at first. Then a broad smile breaks out.

"There is tremendous respect for Sweden and Swedes in Australia," he says. "Swedish products stand for quality, but if we must be really honest we would like to see a little more humor on your part.

"Humor is an invaluable tool when you are working with people. Even when you are deeply involved in something – if you spice it with humor the results are even better. Put it to the test, both in business and in marriage. We all have a need to laugh; and sometimes even at our own selves."

Maud Umaerus

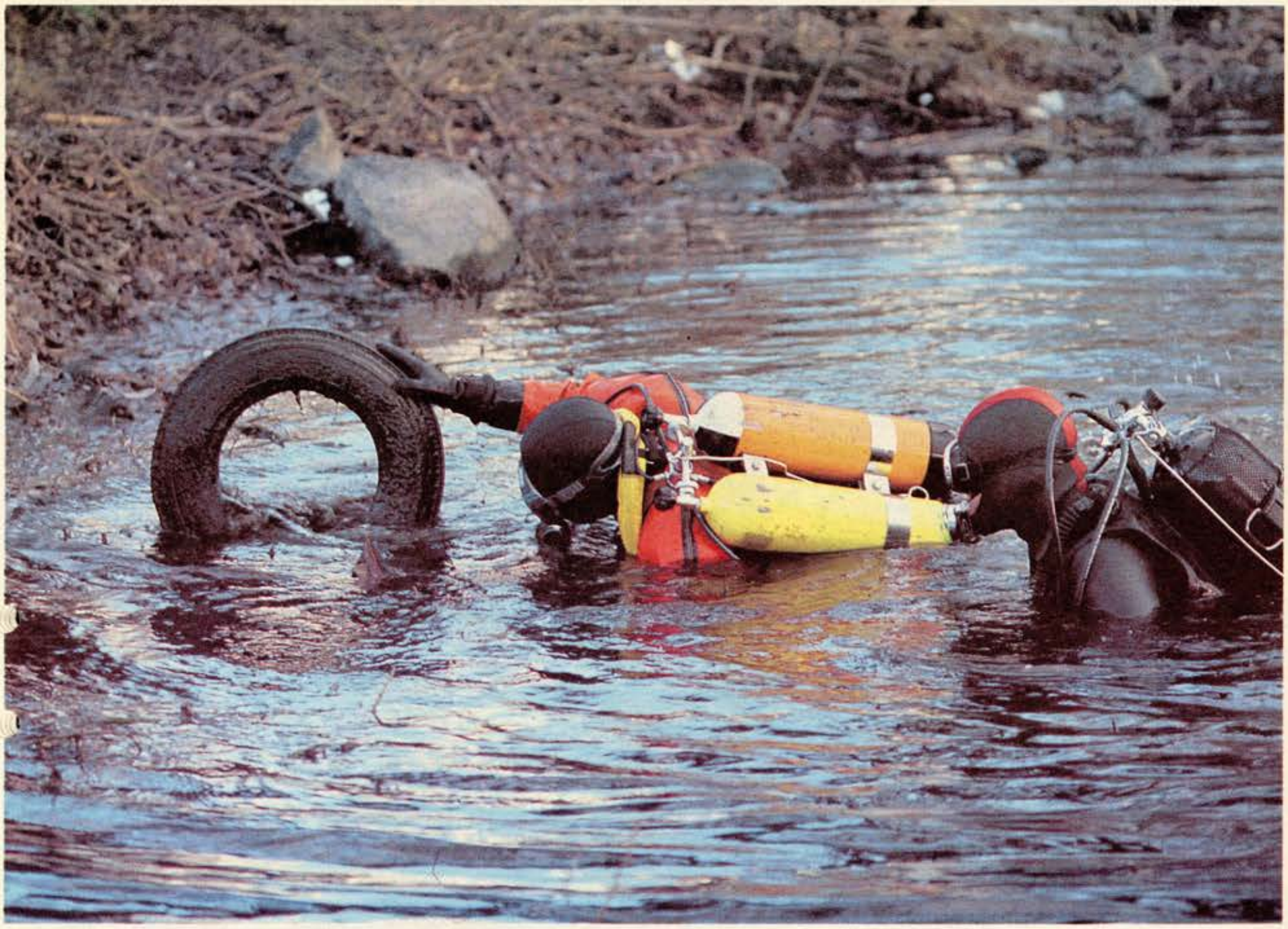
Fiber optics in stereon

No system is better than its worst part. And that also holds true for stereo equipment. Today, there are CD players, amplifiers, etc. of very high quality – and price. They often have the capacity to reproduce sound faithful to the original, with hardly any variation at all. But when the signals then have to be transmitted to the loudspeakers problems arise.

The entirely dominant loudspeaker cable today is of pair type. A cheap cable that offers high resistance and that is sensitive to different disturbances. Before the signals reach the loudspeakers, therefore, they are changed so that sound reproduction is not at all what the equipment is supposed to provide.

A company in England has come to grips with the problem and has now produced a loudspeaker cable of the fiber optic type. Light diodes and cable are entirely encased in plastic so that there is no risk of leakage of damaging infrared light. Perhaps, this type of cable will provide the melodies of the future.

(Affärer och Företag)



Mission: Save the Lake

This is the story about a lake that was going to be restored with a harrow, thresher and drinking water, and which in the end was almost drained dry before a couple of individuals got together and helped the local authorities. A consultant came up with a machine that could oxygenate the lake's water. A fishing organization put rainbow salmon into the waters and a diving club cleaned out scrap from the lake.

This story actually developed as we were about to interview the LM diving club while they were cleaning out the Trekanten (Triangle) lake. One of the larger evening papers was also there to take pictures of the heaps of scrap. But let's take it from the beginning.

Lake Triangle has a problem with water circulation. The only water that runs into the lake comes from polluted everyday water. Lake water that stands still becomes deficient in oxygen and forms sulphurized hydrogen and too much phosphorus in the cold bottom sediment. This way the nutritive substances leak out of the bottom sediment and come up to the warm surface and form plankton.

An ancient problem

During the fifties one tried to supply water from Lake Mälaren and during the eighties the local authorities tried to find new solutions to the problem. They cleaned the lake of scrap and wood chips, dredged it and harrowed down calcium nitrate to oxygenate the bottom sediment. This caused a lot of criticism, which had to be put up with. Another idea was to add drinking water from the water reservoir by Liljeholmen and to let the surface water, like a natural outflow, stream into Mälaren through a thresher. Since 1983, they have been pumping out the cold water from the bottom and adding the corresponding amount of drinking water from the Norsborg waterworks. But to drain 520,000 cubic meters of water is not the easiest task. It took 5–6 years to change the water. Today, the drainage time is about one year.

Consultant joins

These measures that were taken were not enough to improve the lake's water quality. Instead the local authority decided to reduce the discharge in the lake and oxygenate the water.

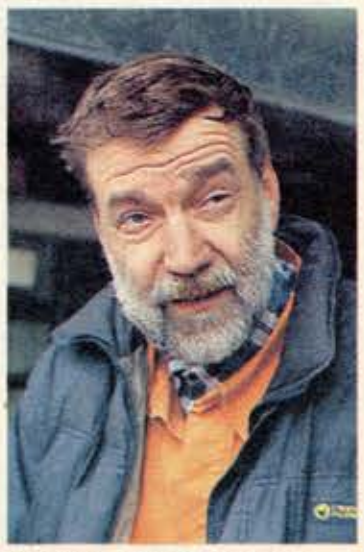
Bo Werner was the man who had the competence to carry this out. His suggestion was based on an old idea to oxygenate the bottom water with compressed air, so the nutritive substances remain in the bottom sediment. The water is oxygenated with the help of a compressor which sends out compressed air through a hose into the lake. At the same time drinking water is brought into the lake.

Water conservation and lake restoration are delicate issues since several government services are involved; the public works department takes care of surface problems of the lakes; the parks and recreation department is responsible for the parks all the way down to the waterside and the Stockholm's Vatten AB, the water authority, is in charge of the water conservation.

Borrowing the lake

Here, the Tellus fishing club enters the picture. The Triangle is home lake to the fishing club, and through the Angling association they borrows water from the local authorities, the recreation department and the lake administration. In return, they supervise activities and fishing care.

The club's members discovered a lot of garbage floating up on to the lakeside, and so they decided to contact LM-diving, Ericsson's sports diving club. During one



Bo Werner pitched in to help the commune reduce waste and to replace water int the Triangle lake.

single Saturday, the club's members did not only practice diving but they cleaned out the lake, the surrounding environment and the bathing area of one ton of assorted scrap originating from diverse areas. Among other things there is said to be a car in the middle of the lake, for he who wants it, but it has to be removed with a crane. This is a more extensive project for the local authorities.

"One argument against cleaning the lake is that one could better see all the garbage at the bottom" says Christer Lennergren from the water conservation office, with a smile. But he adds:

"A more serious reason is that if the lake becomes too clear, light can cause uninhibited growth at the bottom."

But the story does not end here. Everything would have been great, with voluntary contributions and a competent consultant for the lake's restoration, if it weren't for the man, who was going to fix the drinking-water faucet, who was on vacation. His replacement did not manage the job of turning on the faucet or he just forgot to do it. Anyway, the expert at the water conservation bureau, Gunilla Lindgren, had to rush off to Lake Triangle to make sure that the drinking water started to flow into the lake again. By then the water level in the lake had already dropped a couple of decimeters. LM divers came close to not having to dive for bicycles and other garbage.

Taking care of Triangle lake will probably never end. According to Gunilla Lindgren it is an eternal project, since nature's order has already been disturbed. But in the end the best solution might be to not take care of the lake at all, because then one would not have to see the garbage.

Text: Charlotta Westling
Photo: Maria Petersson

AT 24 km. per hour, the ball crashes into the car phone. The softer it lands the better. HotLine survived the test.

Roland Lindqvist (above) and Anders Jonsson at Ericsson have together with the Swedish motor vehicles department and the road and traffic institute developed a test dashboard that saves time and hundreds of thousands of kronor.

HotLine beats crash test

Can one hurt oneself in a car crash as a result of a mobile phone placed on the dashboard? The risk is not great, according to crash tests conducted by Ericsson together with the Swedish motor vehicles and traffic authorities. The tests are relatively easy and cheap, thanks to a specially devised dashboard that is used instead of a car.

Experts reckon that in a car crash at speeds over 50 kilometers an hour a passenger sitting with an ordinary seatbelt would hit his head on the dashboard. Hence, auto manufacturers should be able to guarantee that dashboards are properly designed to minimize impact.

But even if the dashboard is okay, objects attached to it could cause damage. And cars are being filled up more and more with gadgets. Mobile phones, radio gear, taxi meters etc. Of which some are mounted directly facing passengers, to the right of the steering wheel.

The new large receipt-writing meters in taxicabs was a sort of alarm clock that led auto inspectors to ask if it can really be placed just anywhere in a car. The result was that the placement of accessories which earlier never caused alarm are now being suddenly questioned – much to the irritation of car owners.

Test dashboard

The regulations, which have been in force since 1970 (when Sweden adapted American Safety Standards), stipulate that all accessories must be crash tested and be approved before mounting in a so-called impact zone. The rules also say that tests must be conducted for every make and model of the car.

In order to simplify the process, Ericsson, together with the Swedish motor vehicles department and the VTI, the road and traffic institute, has developed a test dashboard that meets the demands of the "worst approved dashboard."

"A worthwhile initiative from Ericsson," says Bengt Arnalid, from the auto inspection technical division in Sweden. "This is a simplified way to test and to formulate regulations, and we at the inspection division are operating by it."

Tests are carried out at the inspection department's premises in Linköping, (alongside the crash track that is used for testing children's car seats). The testing procedure is not complicated.

An aluminum ball weighing 6.8 kilos attached to a swing is hoisted to a certain height, let loose in an arc and impacts at 24 km. per hour against the test dashboard or object that is resting on it. (Corresponding to 50 km. per hour with a seatbelt). The ball hits against the objects worst hardest part.

At the end of April, Ericsson was in Linköping to test 16 different products. Mobile phones, Mobitex terminals, microphones, maneuver apparatus for comradio etc. The average result was good and Ericsson now has the bulk of its present mobile accessories approved. Among others, the mobile phones.

On the other hand, the fact that the equipment was approved in a crash test does not mean that it can be installed wherever in a car.

A mobile phone, which for other reasons is placed in an unsuitable place, for example in a badly designed attachment, can still be refused by the motor vehicles inspection. The ideal is still that nothing should be mounted in the impact zone. Ericsson has put a lot of work into developing a good test model.

■ There is a conflict that must be resolved. Either a car phone should be placed ergonomically correct, within easy reach and easy to handle without impairing driving safety. But perhaps that means a dangerous spot in the event of a crash. Or, it should be safely anchored. Down on the floor where no one can hit against it. But impossible to operate while still maintaining full control in traffic. Thanks to a crash test one can now determine whether a car phone is not dangerous and still mount it in an ergonomically good spot. Even if there should be a crash impact in the passenger space.

"The testing method also makes it easy for manufacturers to meet the new rigid legal demands. In the Swedish product safety laws that exist today and in the proposed product damage laws heavy demands are being made on both product safety and manufacturers' product responsibility," says Vicke Lindblad, at Ericsson Radio.

Mats Holte from Ericsson and Rolf Gustafsson, AB Svensk Bilprovning, motor vehicle inspection, study results of the crash.

Last spring a proposal was left for general test dashboards.

"This test is an exemplary way of trying to resolve problems. Ericsson has ventured to devise something which in the short run could be difficult," says Jan Wenäll, research engineer at VTI. "But in the long run it means that they are well ahead of the competion in this field."

"The method will eventually facilitate matters both for manufacturers and us as traffic authorities. I believe there will be great demand to test products and that in the future drivers will demand products that are approved only after safety tests."

Text: Lars Cederquist
Photos: Maria Petersson

"Now installers know what they can and cannot mount on dashboards," says Anders Jonsson, installation support at Ericsson Radio Systems Sverige AB.

Red, cheap pocket phone and a unique "hands-free" solution

Now you can carry your pocket phone in your pocket or attach it to your belt and have both hands free during conversation. Thanks to a small addition, a cord linked to a loudspeaker placed in the ear and a mini microphone at the level of the mouth.

This is Ericsson's latest mobile telephone product, a novelty that was presented at the auto show at the Älvsjö fair in Stockholm in mid-April. Ericsson also showed its latest pocket phone – a wine-red variant of HotLine Pocket. Four thousand kronor cheaper.

Gilberto Gallacio, sales manager for the Stockholm region, demonstrates how one can speak into the pocket phone, hands free.

Ericsson's two biggest novelties at auto show

Ericsson stood out at the auto show. The stand had a good spot, a red, shiny, sleek sports car, a light warm ambiance, demonstrators dressed in typical "Harry HotLine hats," and a two-meter model of the HotLine itself all drew attraction. All the more important when so many competitors gather in a small area to prove that precisely THEIR mobile phone is best.

Moreover, Ericsson had two novelties to show.

Hands free

One was a so-called HotLine Portable Handsfree. An addition that weighs no more than 24 grams and costs 880 kronor.

This has a disk attached to the bottom of the pocket phone and a thin cord with an earphone at one end and a microphone just far enough that it comes up to about midway at the mouth.

"This is a unique solution," says Per Körner, product manager for Ericsson's HotLine range in Sweden. The noise level is fully acceptable even if it is not as good as in the fixed handsfree in a car.

But there is also a slight price difference. The fixed one costs 2,500 kronor, and added to that is about as much for mounting. The portable one can be mounted by the individual – in half a second.

The other novelty is the wine-red, low-price variant of Ericsson's pocket phone.

It looks very much like the ordinary HotLine pocket, but, as we said, it is wine red. With white buttons and green display. And it costs 4,000 kronor less – 12,950 (including high-capacity battery and rapid charging), compared with 16,850 kronor.

Many visitors were puzzled. A HotLine for 13,000? HotLine usually stands for top quality, somewhat exclusive.

"We have not sacrificed on quality," explains Per Körner, but we have made a pocket phone in a little simpler design. With somewhat fewer finesses. For example, the choice of abbreviated numbers is half as large."

"But it is not at all sure that buyers will see this as a negative. Many finesses are not used to their fullest extent."

The new phone is as larger as the regular HotLine pocket. It weighs 530 grams, has two hours call time and exceptionally long standby time – 69 hours.

Complete family

With the new phone, Ericsson has now completed the product family as far as pocket phones are concerned. There is a suitable mobile phone for all types of users.

It was often crowded at the Ericssons stand. It was ideally located and, among other things, it drew crowds with a new red pocket phone.

The new phone is called NH 51 and is approved for the Nordic mobile phone system NMT 900 and can be used in the Nordic countries and Switzerland.

It was developed at the mobile telephone division in Lund and produced at the Ericsson plant in Kumla.

Huge interest

The portable handsfree accessory can be as easily attached to the HotLine pocket phone 1921 as to the new red NH 51.

"Interest in Ericsson's new products was surprisingly huge, considering the 'hodgepodge' mobile phones that is expec when every supplier show up tl products at a fair," concludes Körner.

Text: Lars Cederquist
Photos: Maria Petersson

Better relations with China

(ETX) The world's relations with China have improved significantly in recent years. At the end of April, the Swedish government decided that BITS, an organization involved with international technical economic cooperation, will resume preparatory work on financial assistance to China.

For Ericsson, this could mean that postponed projects can seriously be set in motion again.

So far, Ericsson has supplied approximately 1.3 million AXE lines to eight different provinces in China.

As a result of the political troubles in China in 1989, all aid projects were stopped.

Last November, the Swedish government relaxed its restrictions to some extent. Commitments that were already under contract were allowed to be carried out.

"The fact that BITS will now resume preparatory work for new projects can be very important for Ericsson," says Uldis Zervens, marketing manager for China.

Several countries have already eased restrictions concerning soft loans and if Sweden does not follow suit, there is a risk that Ericsson will fall behind competitors.

"One should bear in mind that this decision does not necessarily mean that everything is alright for financial assistance for Ericsson's project.

However, since this was specifically mentioned in the government's press release, I think the chances are quite good.

Diplomatic relations between Sweden and China will also be restored.

"What we are currently waiting for is a positive signal for the 540,000 lines in Guangdong province" says Uldis Zervens. ■

A few weeks ago, Björn Svedberg, on a visit to China, had a 40-minute long meeting with Prime Minister Li Peng. There are not very many Western industrial leaders who are received at such a high level and for such a long time.

Huge order from Oman

(ECA) Ericsson has received a new order that involves expansion of the tele network in Oman for a value of 100 million kronor.

"With this Ericsson will have built the tele network and supplied AXE exchanges and other tele equipment to Oman for a combined value of more than a billion kronor, including a mobile telephone network, since the ongoing expansion in Oman began in 1985," says Jan Eckerud, responsible for market coordination in ECA.

The expansion program for telecommunications will maintain the same pace over the coming five-year period since market prospects look good, says Jan Eckerud.

The present order was brought home by Ericsson Network Engineering AB in Stockholm, which is also responsible for seeing the project through.

The order includes the supply and installation of AXE switches, transmission equipment, including radio link equipment, local networks and fiber optic cable connections to and between some 10 cities in the country. The fiber optic cable will be supplied by Ericsson Cables AB.

Within 10 months, the 100 million kronor project in Oman will be ready.

The project also involves video link-ups between Ministry of Information units in the capital city of Muscat.

The new project will begin immediately and is expected to be completed in 18 months. ■

Mobil telephons in Puerto Rico

(ERA) On May 5 a mobile telephone system went into commercial operation in Puerto Rico. The network, which replaces the earlier system from NEC, currently has 25,000 subscribers. The contract was won in tough competition with Northern Telecom and AT&T. The customer is Puerto Rico Telephone Company, PRTC.

The system, which is AMPS, American standard, was installed and set in operation in a relatively short time. Less than five months from signing of the contract on December 10, 1990, the system was in commercial operation.

"The entire project organization, with Thomas Uhlander as project manager and Göte Åkerman as project manager in Puerto Rico have done a fantastic job," says Thomas Heuman, responsible for marketing for Puerto Rico.

"Thanks to extraordinary input from everyone, we got it all together and shipped the material and had it installed and put it all into operation in such a short time. It was a lot of work, late nights and holidays,

especially for the team in Puerto Rico, where they worked in three shifts at times.

Involved in the project were ERU, ETX, EKA, CEV, TIM and LMC. Puerto Rico is a new market for Ericsson, where it is now making inroads with mobile telephone systems.

Further expansion with 50 channels is already in progress and there will be even further growth in 1992-93.

Puert Rico is an autonomous territory, associated with the U.S. since 1952.

It has 3.2 million inhabitants and an area of 8,900 square kilometers. Its capital is San Juan. ■

Sea Giraffe to Australia

(ERE) Ericsson Radar Electronics, has sold its marine radar Sea Giraffe to Australia and New Zealand. The radar will be placed on board the new frigates that are being built by the fleets of both countries. The radar is part of the guidance system for vessels that Bofors Electronics Pacific will supply. The order value is more than 100 million kronor.

According to the contract, Ericsson will start radar production in Australia for manufacture of important radar parts. This will be done at the group's plants in Broadmeadows. Investments have already been made this year for a calculated production start in mid-1993.

"This means a major investment in Australia to sell our radar system," says Göran Hedborg, responsible for the business at ERE in Mölndal. Australia now has access to a domestic, advanced radar industry. A lot of interest has also been shown in Ericsson's airborne surveillance radar which is just being developed for the Swedish air force. ■

ERE's marine Sea Giraffe here on the Swedish Coast Guard cutter Gothenburg

VMX gives Ericsson voice

(EBC) An OEM agreement has been concluded with the American company VMX, definitely one of the biggest for voice processing in business switches in the U.S. The agreement gives Ericsson the right to market and sell VMX products throughout the entire world. In the U.S., voice processing has long been clearly part of a company's communications system. Now, Europe and other countries are catching up with the States in this area.

"We see an incredible market potential for these products and applications," says Hans Calminder, product manager at EBC.

"The European market for voice processing is estimated to be worth 147 MUSD this year and this figure is expected to reach 640 MUSD in 1994. In May, the smallest system in the product range was launched, Voice 100. In the fall, the other larger system will be launched. The entire line will be sold as applications for MD110, BusinessPhone BCS 150 and BusinessPhone 90.

Field tests with Voice 100 are in progress with EBC in Sundbyberg, as well as in Finland, Belgium and Spain. Regular deliveries to customers are expected to begin in mid-June. ■

(EKA) Ericsson Components' Standard Components division signed an agreement in October with TI which involves distribution of their semiconductor program and in the spring operations got under way.

On April 24, Ericsson Components' Standard Components division was host to a huge seminar at Solvalla in Sweden, which dealt with Texas Instruments' TIs semiconductor program A little over a hundred interested customers and prospective customers attended the seminar, the largest gathering ever for a customer seminar at Components. ■

Cutbacks in Kungsbacka

(ECA) The special cable division in Kungsbacka has cut back 35 persons. Among them are 10 service staff and the others are workshop employees.

"Above all, there are two reasons why we have to cut back," says division manager Janne Sjödén. "In part, the huge structural changes in the transportation sector and, also, the growing recession in Swedish industry. The main part of the factory is now on a three-day week, which is expected to continue from now into the vacation period," Janne adds.

"We have established collaboration with several Ericsson units in the Gothenburg area to try to develop substitute work. After these measures are accomplished, the Kungsbacka plant will have around 150 employees. ■

ERA's president, Kurt Hellström, and president for Buildings operations, Per Palmberg, in a joint ground-breaking moment. Photo: Björn Seger.

Groundbreaking Event

On May 15, ERA's president, Kurt Hellström, together with Per Palmberg, head of Buildings operations, broke ground for the new building in Kista.

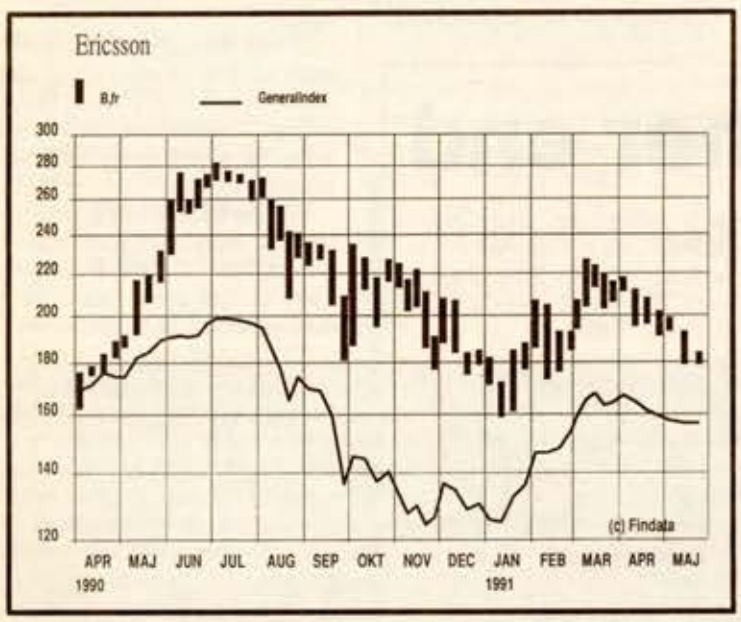
The new building in Kista in the first phase will provide 450 new work places in a total area of 14,000 square meters. Moving in is scheduled for 1993.

"With this investment, the Ericsson Group shows that it has a commitment to Stockholm. It also demonstrates that we believe in Sweden and that, moreover, we have tremendous faith in the future of radio comminications," says Kurt Hellström before he and Per Palmberg each took a spade to break ground for the new offices. Kurt also recalled another ground-breaking event that took place 16 years ago. That was when Svenska Radio Aktiebolaget, SRA (today ERA) was the very first company to set up in Kista.

A total of 350 million kronor has been invested in the new building which will make it possible for all BR personnel to work under one roof. Today, ERA leases 50,000 square meters of office space around Kista.

Helena Andersson

SHARE WATCH



ERICSSONS SHARES

Date	Mutual Fund		Share Savings Fund	
	Share price (SEK)	Assets (MSEK)	Share price (SEK)	Assets (MSEK)
1988-12-31	135	52,2	343	56,0
1989-12-31	304	94,1	825	77,1
1990-12-31	317	86,4	86	65,6
1991-04-05	378	99,8	101	74,7
1991-05-13	324	84,5	88	64,9

The share price is based on a stock trade of 183 kronor and a convertible figure of 335 percent.

After the sharp gains during the first quarter, the Stockholm Stock Exchange has weakened under the pressure of too many negative company earnings reports. As a result, April was a disastrous month, with a minus of about 4 percent.

Ericsson's B Free shares to a large degree have followed the general bourse trend in recent times, and as usual they belong to some of the most sought-after shares.

1990 hard to repeat

So far this year, Ericsson shares have risen 8 percent, significantly less than the rise in the general index of over 20 percent. The market does not expect any spectacular earnings increase in the upcoming quarterly report but rather has accepted the group forecast that 1990 earnings will be hard to repeat.

p/e ratio 13

Price in relation to earnings, the p/e ratio, is still at 13, which is precisely the industrial average. It is a value that seems reasonable enough, even when compared with the performance of other telecom companies on foreign stock exchanges.

OUTLOOK

BY MATS HALLVARSSON

With 1990's earnings increase, the French/Dutch Alcatel has established itself as Ericsson's foremost competitor. Alcatel reported impressive earnings, strong finance and a number of solid international market breakthroughs. And many misgivings of doom have now been put to rest.

After five years of tough restructuring Alcatel Alsthom is showing that it can give Ericsson a close race to be the world's leading international telecommunications manufacturer.

There were not many who believed in such a successful turnaround when CGE, as the French telecom and electro concern was called at the time, in 1986 bought all the international operations of the American ITT, which were mostly European.

There were many doomsayers and they doubted that CGE would manage to develop both its French E10 system and ITT's System 12 at the same time. They envisioned culture clashes, difficult marketing problems and weak profits. But after five years, president Pierre Suard can say that he has succeeded. Yield (net profit in realtion to sales) is close to five percent. This was the target for the group, which was set to be reached in 1992.

A lot has happened in the past few years. The group is no longer known as CGE but rather Alcatel Alsthom, and the telecom divisions are centered in a Dutch holding company that is called Alcatel NV.

Rationalization, company buyouts and selloffs have streamlined the group so that telecommunications is now undisputedly the largest division with 92 billion francs in sales, out of a total 144 billion. The next largest division is energy and transport, which quickly became a world leader in the explosive market for high speed trains.

The calling card, however, is still telecom operations. Alactel has not only succeeded in maintaining its market positions for its two systems but it has also expanded them. There is never any talk of abandoning one system to the advantage of the other.

Instead, development work has been geared toward eventually integrating the two systems. Customers have to a large extent – contrary to what many believed – developed a sense of faith in the long-term and quality investments.

With this, Alactel has also been able to make some impressive breakthroughs and expansion in world markets that are traditionally strong points for Ericsson.

The past 15-16 months Alcatel has made considerable inroads into East Europe, with contracts in Poland, Rumania and the Soviet Union. It has received large orders from Kina, Iran, Mexico, Italy and, much to Ericsson's regret, in Australia. For just about the last 30 years, Ericsson has been the sole supplier on the Australian market, but it now has a competitor in for life.

Added to this, Alcatel can reckon with a "East bonus," through its traditional strong standing in the west German market. The former east German area of Germany is at present the single fastest growing tele market in Europe. And there Alcatel, together with Siemens, rule the roost.

Surely, some former doomsayers can say that all this is not so remarkable – orders for tele equipment have been on the rise for several years around the world and orders have brought more competitors into the field to cope with growing demand.

Moreover, Alcatel has been riding high on the East wave, thanks to its German stronghold.

Behind the Eastern investments there is also a matter of state loans. We will see the results first when the orders are really paid for.

But that can hardly dim the figures from the 1990 operations. Alcatel delivered close to nine million lines in 1990, 50 percent more than Ericsson, and received orders for more than 13 million lines.

Tele sales increased by only 4 percent, since Business Communications had a very bad year, with a drop of 20 percent, at the same time that demand for transmission equipment was weak. On the other hand, gross profits rose by 20 percent to just over 8 billion. Ericsson, however, can rejoice about this since it had a significantly better gross margin (gross earnings in relation to total sales) – 12.5% compared with the Alcatel group's 8.7% – and certainly even better if we compare only Public telecommunications.

But the most important thing for the Alcatel group is that it has now attained the total yield target that Pierre Suard set up five years ago, namely a net gain that is 5% of total sales. That came a year earlier than was calculated.

The profit achievement goes hand in hand with a strong financial buildup. Alcatel companies have been able to expand while at the same time cutting back on costs.

In quick retrospect, there is only one major weakness on the tele side and that is the limited success in mobile telephony. Here, Alcatel is several years behind Ericsson in building up the market, and certainly in technological development also. The stagnant economy in the U.S. is also a handicap.

But Alcatel is working hard at catching up. And there is no doubt that the group has resources to invest a lot and long-term. Despite the aggressiveness of the Japanese and the North Americans, Alcatel will continue to be Ericsson's foremost international competitor for many years to come.

Perspectives from working abroad

"Tell us the story about the car!" the other guys urge. This is their first day together after a five-month stay abroad with different subsidiaries around the world. And the nine rotation engineers at T-division have a lot to talk about.

Nine rotation engineers at ETX T-division leave the heat in far off countries for a cool spring in Sweden. From left, Peter Andersson, Johan Wallin, Per Öberg, Christer Fryxell, Magnus Hallenstål, Sven Åkesson, Robert Skog, Johan Åhlander and Magnus Lindhe.

Rotation engineers are, as the name implies, engineers who rotate between training and practical work within different areas in T-division. Besides these nine, there is another batch of eleven who began training in the fall of 1990.

To alternate theory with practical work and to include a stay abroad is frequently used by companies to attract graduate engineers from universities. They are called student engineers, rotation engineers or trainees.

Yet there are few similar training programs that are as extensive as the rotation training at Ericsson Telecom's T-division.

It stretches over two years and is divided into four parts, says Charlotte Uggla, who works with personnel at T-division. Each part starts with approximately five weeks of theory, followed by practical work that puts the theory into practice.

Several applicants

The training program is very popular, with lots of applicants every year. This year there are about a hundred applying for approximately ten places.

"When selecting candidates, we consider the ability to absorb a lot of information during a short period of time. Therefore they must be open-minded and extrovert. We also consider them as a group. So it is important to include various types of characters in order for the group to work well", explains Charlotte.

Unfortunately, there are not a lot of female applicants and that is a shame.

During the third part, after about one year of training, the rotation engineers work at one of Ericsson's subsidiaries abroad.

We met the rotation engineers on their first day together after their stay abroad.

A day dedicated to filling in on what had happened at home, sharing experiences and opening mail. But also to simply having the opportunity to chat.

All the guys agree that their stay abroad was better than expected.

"Especially the work has been better" says Magnus Lindhe, who was in Mexico. "I have been busy and I worked very independently."

"The difference is enormous when we compare it with practical work in Sweden," he continues. Earlier, during practical work in Sweden, others in the department knew so much more about AXE then we did. Sometimes it felt like one was a burden for the department".

"On the contrary, at the subsidiary, we knew as much and sometimes even more than they did about AXE. They saw us as a definite asset. It really felt like we were useful".

The rotation engineers have been in Mexico, Australia, the USA and Canada. Their descriptions of working conditions show there are differences.

"In Australia and Mexico the pace was not very fast, but in the States it was more important, at least to give the impression, that one was working hard."

"They call it face showing – showing oneself at the office".

"It was like that in Canada too", says Magnus Hallenstål.

"Both in Canada and in the States, there was not only 'domestic' personnel, but also people from countries all over the world."

A Swedish company

"This is probably due to the training in technology. Many come to the United States and Canada to study. Afterwards they stay on there."

"Despite large differences, Ericsson is still a Swedish company with mostly Swedish managers. Therefore it was not very difficult to adapt."

So what were the advantages of the stay abroad?

Most important, the rotation engineers feel, was the opportunity they had to gather and use all the different things they had previously learned. Things were concretized and it felt "for real." It has been extremely educational to live with existing cultural differences. New perspectives have been formed. Not the least important, was the opportunity to establish contacts with people.

Home sweet home

Most of them enjoy being home again.

"I was mentally prepared to be away for five months, so naturally it is nice to be back home. But, of course, I would not mind going away in a month or so," says Magnus Lindhe.

But that will not be the case. The last six months of their training will be here at home in Sweden. They do not know where in T-division they will be placed as yet.

"We sort of serve as a bank of knowledge in the group," says Christer Fryxell. "Since we have previously had our practical work in different places, we can ask each other how it was, and then decide where we want to be located."

"Will you stay with Ericsson after the program?" I wonder.

"You should not be asking that when Charlotte is present," they say, laughing.

Charlotte looks a bit worried, but they are only pulling her leg. They all seem to have plans for staying on.

And then there was the story about the car. Well, unfortunately we never got to hear it, despite all the urging. Perhaps it can be told another time.

Text: Helena Lidén
Photo: Maria Petersson

Consoling voice at the other end

Jourhavande Affärsman, a businessman on call, is not there only for the ones who earn more than SEK 300,000 per year, have an important position and a lot of responsibility. Anyone with problems in their department, in their own company or in their private lives can call.

"I have been part of business life myself, so I know how hard and tough it can get. Executives don't have any protection nets" says the businessman on call, who prefers to remain anonymous.

He has been doing this since the stock market crashed on October 19, 1987, a day known as Black Monday.

He is about 60 years old, a true Stockholmer, calls himself "general worker" nowadays and has been an executive and was involved in complex deals.

"It affects everything in your life. We were not far away from bankruptcy, but now I am back in business," he says.

In the very beginning, it was only meant for middle and upper managers, but now anyone can call. It does not matter what position you have.

The caller has the right to remain anonymous, and the same goes for the one on call duty, who only wants to be a voice at the other end.

He does not have any degree in psychology, which he feels is an advantage, but he has plenty of experience with people.

"Often people just need to chat, have someone who listens to them and to get new perspectives."

He is fascinated by people and tries to share his experiences.

People with all different kinds of problems call. It can be matters concerning alcohol, relocations. And it has happened that women call and talk about their husbands. Lately, several calls have been about reorganizations and layoffs. At the most three to four persons call during one evening.

Businessmen in trouble

"The most difficult call I have ever had was a pensioner who had nothing but debts, had been a criminal and who wondered if I had a Colombi egg (a simple solution to a difficult problem; ed. note) to give him.

The businessman on call is located at the business paper Dagens Industri. He contacted the newspaper after reading some articles on how difficult it was for businessmen in trouble to get help. One can wonder why a daily newspaper, like Dagens Industri, has established a businessman on call. Just imagine, Lars Ramqvist, president of Ericsson, calling to say he had made a bad deal. Is there a journalistic interest?

"No, just the suspicion of leaked information would seriously injure the newspaper's credibility." Of course the businessman on call attracts attention to Dagens Industri in the media. However, he also creates an image of the newspaper, not only as a tough and hard business paper but also as a serious discussion partner.

It is not the ideal job, but he says the discussions give him a lot more. There must be a little extra excitement, not ever knowing who the caller is. As long as no one recognizes him or his special slightly burred voice, he can be that consoling voice at the other end.

Charlotta Westling

Despite severe difficulties, EPA personnel succeeded in demonstrating TMOS at the workshop in Australia.

Customers join in EPA workshop

Workshops involving different products are frequently arranged in Ericsson. There is nothing unusual in this. On the other hand, though, it is not often that customers are invited to participate. But in Australia, customers were welcome to EPA's workshop on TMOS. This proved to be a brilliant idea.

EPA, Ericsson's subsidiary in Australia, put a lot of effort into introducing the TMOS product family, a group of systems for operation and maintenance of tele networks.

At EPA's presentation on TMOS a year ago, customers requested a workshop. During three days around the end of March, they had the opportunity to see what TMOS actually can accomplish in practice.

In Australia, like in other parts of the world, competition is increasing. Another supplier of mobile telephones has entered the market and during the spring a three-year purchase will be carried out, where, among others, Ericsson and Alcatel will compete. Competitors also offer different solutions, specifically in operation and maintenance.

"It really is necessary for us to have the opportunity to meet customers and show them our products" says Kent Linde, C region.

'Magic'

Products were discussed the first two days and on the third day TMOS was demonstrated.

Product information consisted mainly of presentations, along with an open dialogue with customers. But above all, the practical demonstration of TMOS was appreciated. TMOS is a product family that is continuously developing. Therefore, it was important to show customers that what was promised in theory a year ago is now available.

"Customers were astonished at the developments we achieved" says Per-Erik Gustafsson, X division. Several customers described TMOS capabilities as "magic."

But preparation for the TMOS demonstration was by no means without problems.

The last minute

A connection between the TMOS system in Glenroy, approximately 20 kilometers from Melbourne where the conference was held, and the demonstration equipment, was supposed to be hooked up for this very occasion.

The demonstration was planned for Wednesday afternoon, and on Tuesday afternoon problems with radio communications arose.

In the event of an emergency, Ted Brown, marketing manager at EPA, was prepared to use an MD110 that serves the office in Melbourne, with the understanding that all telecommunications would be interrupted during the demonstration.

On Tuesday evening things were still not functioning, so it was decided to drive the TMOS-system from Glenroy to Melbourne. But on arrival in Glenroy, the car turned out to be too small.

On top of it all, the computer broke down on the morning of the demonstration.

Sun Micro System was contacted and they managed to get the system functioning just one hour before the demonstration. The system worked perfectly.

"This just goes to show that if you try hard enough you can make it," Kent emphasizes, praising EPA's personnel.

Subsidiaries describing and demonstrating products for customers, like they did in Australia, is very positive.

"Subsidiaries are the ones that are closest to customers, and since TMOS is a base system that can later be adapted to the market, it is important for subsidiaries to be involved" says Ted Brown.

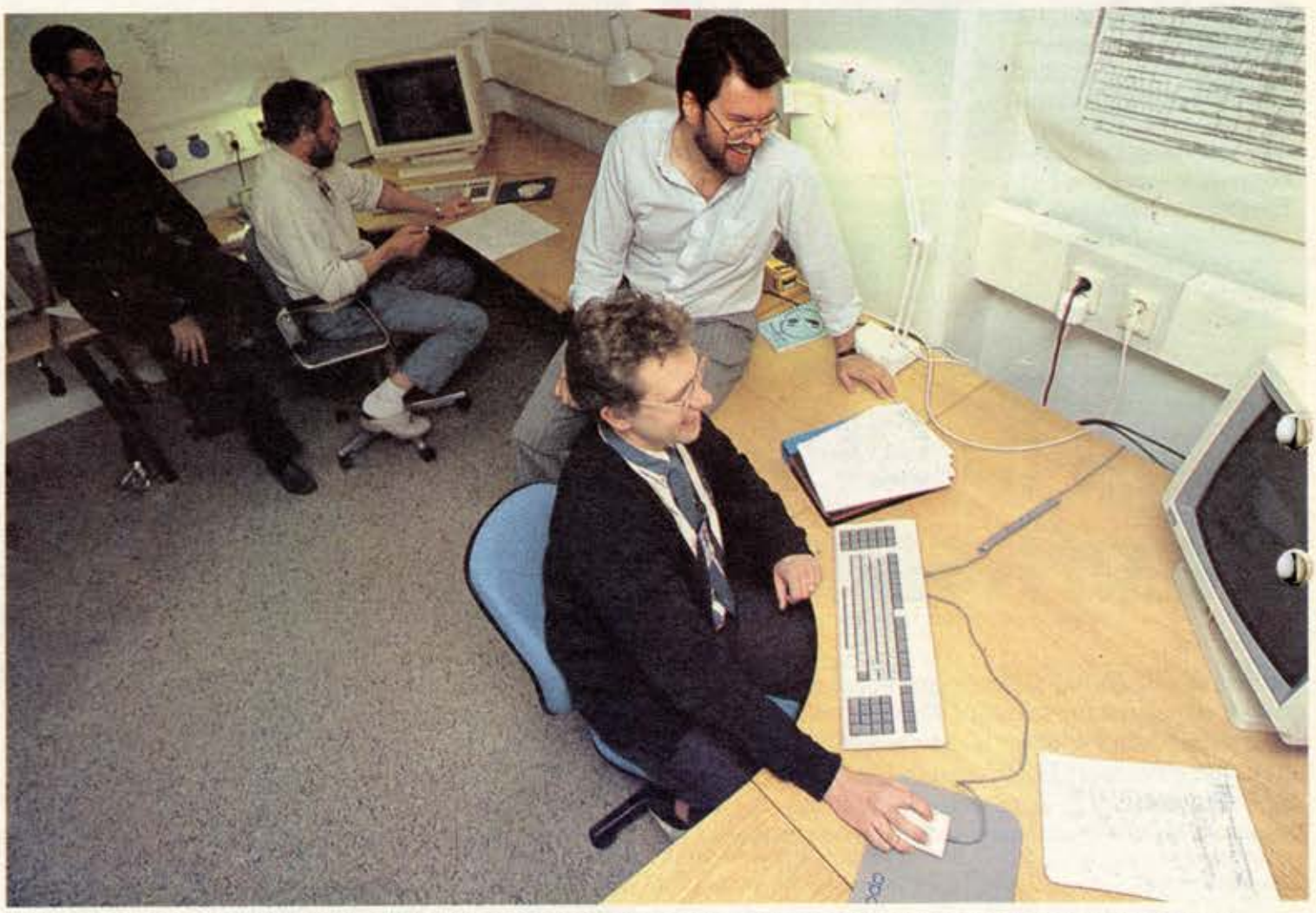
Helena Lidén

A workshop where customers are invited is very unusual. However, EPA, Ericsson's subsidiary in Australia, organized a workshop on TMOS in Melbourne where customers actually participated.

"Magic" was customers' impressive response to a demonstration of the TMOS-system's possibilities.

A line printed board for all markets

The ACA3 project for the third-generation analogue line printed board assemble is a clear example of a collaborative project within the Ericsson Group. It began with a major "brainstorm" session in 1986, with all those who had some knowledge about the system, line printed boards, components, construction methods and marketing. Many ideas came forth, which have materialized today.



At workstations for cicuits construction at the Development Division at Ericsson Components in Kista, from left Saad Guedira, Hans Johansson, Hans-Olov Hallin and Berndt Wallin.

Today we are building digital telephone exchanges and are laying optical cable for tomorrow's broadband networks. But the adaptation for subscribers is still analogue, and it will continue to be so until broadband networks take over telecommunications. In 1990, Ericsson sold about 6 million analogue lines. World needs are estimated at 47 million.

And now Ericsson has developed the third-generation analogue line printed board in project ACA3, Analogue Customer Access, third generation. The project was launched in 1988. One of the goals was to halve the price of line printed boards, which earlier accounted for half the costs of telephone exchanges.

Another goal was to adapt line printed board assemblies for all markets. In previous printed boards parts were modified to accommodate customers' shifting subscriber networks. This resulted in a range of different boards.

In the new one, programming possibilities are built in with the integrated circuits and the result is a line printed board that is suitable for all markets.

Project leader for encasing, Magnus Bergström, plastic casing experts Ivan Jonas and Dora Egenaes, with a machine that casts plastic casing.

Collaboration

"In the project, Ericsson Telecom stood for systems know-how, Texas Instruments (TI) for VLSI circuit technology (Very Large Integration) and design assistance, and Ericsson Components for component know-how for high-tension circuits," recalls Jan Johansson, manager for Ericsson Components Development division.

Main responsibility for the project fell to Ericsson Telecom, with Björn Johansen as project leader.

"This is one of the top priority projects within Ericsson at present. Many Ericsson people and a number of various inputs, from base technology developent to production have been involved," says Björn.

It is principally the function in the integrated circuits that make the line printed board assembly manageable and adaptable for different markets. Four new circuits have been developed, and the demand for low price and adaptability for all markets has imposed new and tough dimensions in the design phase.

Assistance from TI

One of the circuits has been developed by Ericsson Telecom with the use of accessories from TI, a digital signal processor in CMOS technology. Another, an analogue-digital converter in CMOS, was developed by TI in Nice with support and systems know-how from Ericsson Telecom and component know-how from Components, which had two men based in Nice.

Ericsson Components was responsible for two of the circuits, an analogue line printed board and a circuit that feeds current to subscribers.

Both circuits are in high-tension bipolar technology.

With demands – increased flexibility, lower costs – a larger programming capacity has been designed into the circuits and plastic casing has held prices down.

Powerful help

"An obvious advantage was the powerful design assistance and construction system from Texas Instruments," says Eskil Kjelkerud, head of computer assistan

"That gave us more secure design. All four circuits, at us, TI and Telecom, functioned with the first test run and could be tested on a board."

The plastic casing has also meant new demands in design, as well as the process of disk manufacturing. As many functions as possible have been incorporated into as small a silicon chip as possible. This was also one way of holding prices down.

The line printed board assembly has already been tested in the system, but there is still a lot of adapting and adjusting work to be done before it is put on the open market next year.

Text: Inger Bengtsson
Photo: Maria Petersson

What happens with a line printed board?

Line printed board assemblies are the final link between the telephone subscriber's analogue phone line and the digital switch. With the phone line the call is an electric signal which is in proportion to the loudness with which one is speaking, an analogue signal. That is an SLIC circuit, which handles communication with the subscriber, sends and receives calls and connects if the receiver is on. SLIC is an analogue circuit manufactured in bipolar technology. With the line board the sound level is converted to a cipher value and as such becomes digital. This conversion is done in SLAC, a circuit that takes care of the digital signals. For the most part, SLAC is digital and is manufactured along MOS technology.

The line printed board also sends out ring signals and controls that the phone line is clear.

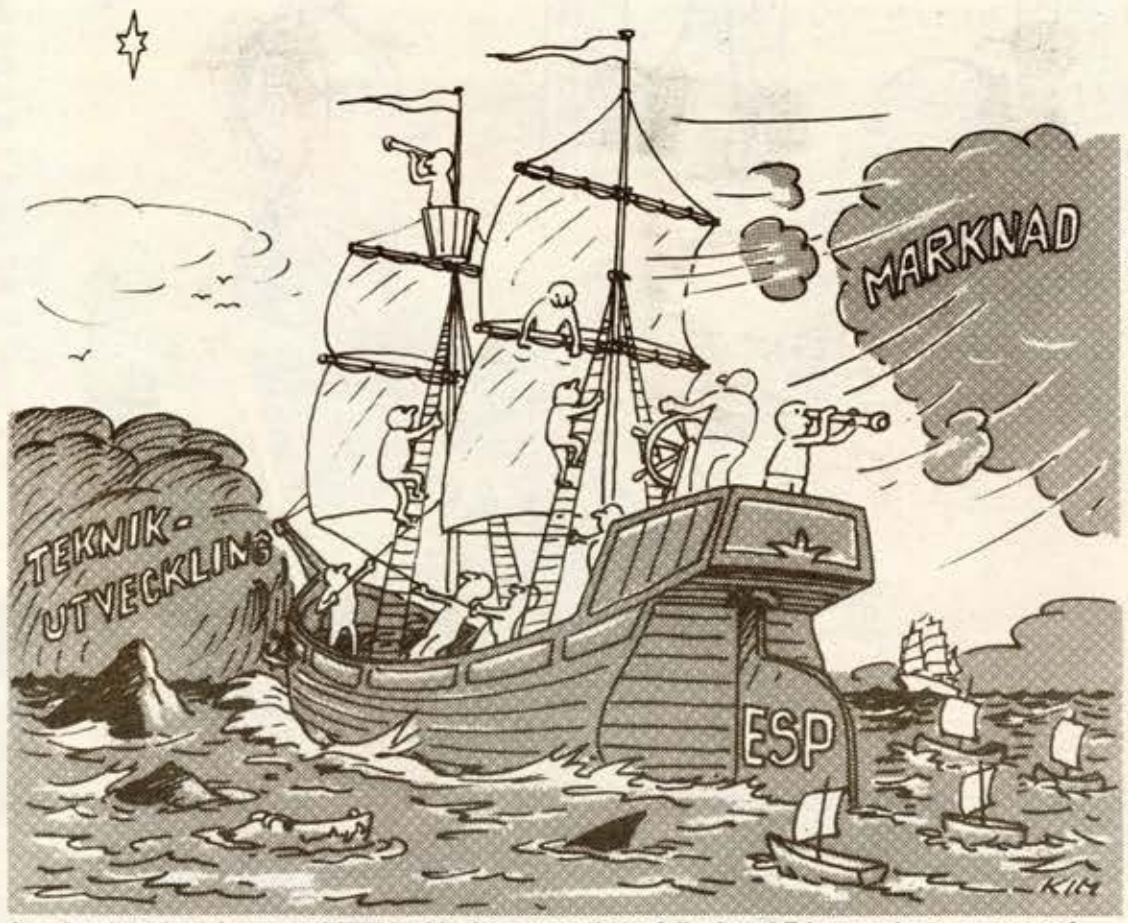
ACA project born in 1975

The thinking that led to the first Analogue Customer Access, ACA1 line printed board project was already around in 1975 at Ellemtel. The collaboration was with National Semiconductor, later Intel, and the board was ready for production in 1981. In this there was a forerunner to the SLAC circuit. Demand specifications for ACA2 were ready in 1979, and collaboration was with AMD for SLAC and RIFA handled SLIC. The board was in production in 1985 and is now used on the market with tough demands. SLIC and SLAC became "trendsetters" on the market. The first thoughts of ACA3 came about in 1985, feasible studies were completed in 1986 and the project began in 1988.

ESP stears Ericsson to the future

A day in a company is full of everyday occurences and problems. These call for more or less immediate measures. But for a company to succeed in the long run it must have long-term goals and strategies, which serves as a guide to daily decision-making.

That's why every year the Ericsson Group draws up a strategic plan, a thick volume better known as ESP, Ericsson Strategic Plan.



An adventuresome journey without end is the course that a fully rigged Ericsson charts on a sea of opportunities. Everyone in the large and composite crew has helped to map this course and to take his turn at the helm that is known as ESP.

Every year ESP describes in words and figures the goals and strategies of the Ericsson Group for the next five years. Markets are analyzed and the paths to attaining goals are described.

Developing a plan is an extensive job in which many Ericsson employees contribute. This year's procedure already began last November when the corporate leadership issued a directive on how the 1991 ESP should be drawn up and what it should focus on.

ESP has its origins in the first half of the '80s, a time when Ericsson was undergoing major changes and when major events were occuring around the world. Now, ten years later, the situation, at least as far as world events are concerned, is the same.

"In situations like these it is important to look ahead in a systematic way," says Bo Landin. He is head of corporate function Marketing and administers the ESP work within the group.

Evolved planning

During the course of the year the ESP process has evolved, and this still continues to be done.

"An important change in '91 is that the local companies have been assigned to develop market-oriented plans for respective markets," says Bo. Previously, the entire responsibility for ESP was left to the business areas. Now, the business areas formulate startegic plans with the emphasis on products.

The change is a result of the new organization within Ericsson.

"The local companies are very receptive to the change," says Bo. "They are on a par with the business areas as far as strategic planning is concerned and the group leadership attaches even greater weight to international operations.

The business areas and local companies, however, have had closer cooperation in the process of drawing up their plans.

"If marketing and product plans do not hang together, the entire ESP is worthless," says Bo.

This year's ESP is just entering its final phases. From the end of April to the middle of June, the business areas and the major local companies will present one by one their chapter for the total ESP for the group's corporate leadership, known as VL.

"Every company within Ericsson is responsible for developing a strategic plan, even if it does not make a separate presentation to VL," Bo points out.

Each presentation is followed by a discussion, where VL very often gives direct feedback.

"Plans are mostly approved on a broad scale," says Bo. "But it often happens that VL has definite views and it rejects parts of the plan or request that certain parts be reworked or clarified."

VL bases its views on the Ericsson Group's general strategy and business idea, whether the plan meets the desired goal for unity and whether it fits into the group's total financial planning.

Circle closes

When the process is finished the final ESP serves as a base for budgeting.

"And afterwards it is time to begin with the next ESP," says Bo. "A joke, but the exaggeration is not all that far off."

"The prerequisite to continue with ESP is that the units that work with it need it. Coming up with a presentation for VL is no self-serving mission," Bo says.

"Today, enthusiasm for ESP work is tremendous. This is an incentive for units to regularly and systematically go through their operations," Bo continues.

"We have a tendency to bury ourselves in short-term problems and opportunities. It is difficult in pressing situations to lift your sights above the horizon. ESP work forces us to do so."

Bo also sees ESP as increasing collaboration within the group. The business areas cannot make their plans without participation by the local companies, and vice-versa.

"It is also a way for the executive leadership to get an overall view that all units within the group are working in tandem with the group's guidelines. This serves as a complement to the ongoing contact that VL has with operations through steering commitees.

Plans for future

ESP is here to stay, Bo believes. Stable market relations within the field, with a tele monopoly in every country, these aspects of earlier times are gone. Preparing for the future has become even more necessary, and at the same time even more difficult.

"The world influences us a great deal. Deregulation are changing our marketing patterns. Market developments are the biggest uncertainty factors in our plans. Technical developments are more evolutionary and easier to visualize."

That's why Bo feels that the coming year's ESP will be developed to focus all the more on market demands and changes.

"It is possible that we can choose another tempo for ESP than today's," says Bo, elaborating on his thoughts about ESP in the future. Or maybe we can choose not to go through all the operations and processes, but rather concentrate on a number of critical issues."

Regardless of when and how future ESPs are done, Bo feels that we will continue to implement a five-year plan.

"It should not involve too short a time span, for then we tend to concentrate far too much on the problems of the day. At the same time, perspective should not be too long. Already the fifth year in our planning is indicative, it offers only a guideline.

"But," Bo concludes, "on the other hand it would certainly surprise everyone if realities in five years should turn out to be exactly what we envision them as being today."

Maria Rudell

ESP at Businessareas

This year was the first time that the Ericsson group issued a directive to the local companies to draw up and present an ESP. Business Area Business Communications, however, has involved its local companies in ESP work over the last three years and have asked them to draw up their own plans.

"Previously, we always got comments from the companies that we in Stockholm never really listened to them closely," says Jan-Olof Hedman, who coordinated the ESP work within EBC. "Involving them in ESP was a way of letting them influence what we would be working with."

It has been very educational, Jan-Olof notes.

"One should not forget ESP work's important function in the development of operations and organizations. ESP does not deal only with markets and products.

Dialogue between business areas and companies and among companies themselves increases understanding tremendously.

The most meaningful aspect of the ESP process is not the pages that are produced but the work itself, says Jan-Olof.

"Work with ESP involves many people, and they become conscious of the direction the company is taking. Discussions about the future spread out into wider circles.

"It also allows one to have his eyes open for opportunities in a way other than through discussions. One is prepared and can seize opportunities when they arise," Jan Olof adds, giving as an example of this the purchase of the English computer communications company Camtec.

He thinks it is good that the ESP process exists. What he would like to see as soon as possible is a more concrete directive from the group leadership, with more distinct notations of eventual changes in Ericsson's direction.

ESP in the local companies

"ESP is a good tool with which to steer operations. It is not only a reporting system," says Dietmar Hesselbein, head of marketing in Ericsson Business Communications GmbH, EBD, one of the local companies in Germany. He is responsible for EBD's ESP work.

"It is absolutely important to develop a long-term plan. It should not be merely theoretical; it should also cover marketing, costs, personnel, etc." he says.

Thanks to ESP it is properly done once a year, which Dietmar sees as a good thing.

"That the local companies are more and more involved in the improvements," says the head of marketing. "A few years ago when most ESP work was being done in Sweden the result was not as good. Certain parts of ESP were much too theoretical."

"Of course, it means more work for us in the local companies this way, but, for example, the marketing we achieve is better than what we had before."

The local companies are on site and they know the respective markets best.

"That we carry out our ESP ourselves also gives the local companies greater responsibility," Dietmar points out. "If the figures in our ESP are incorrect, then it is we ourselves who have made the mistake. You cannot blame anyone or anything else.

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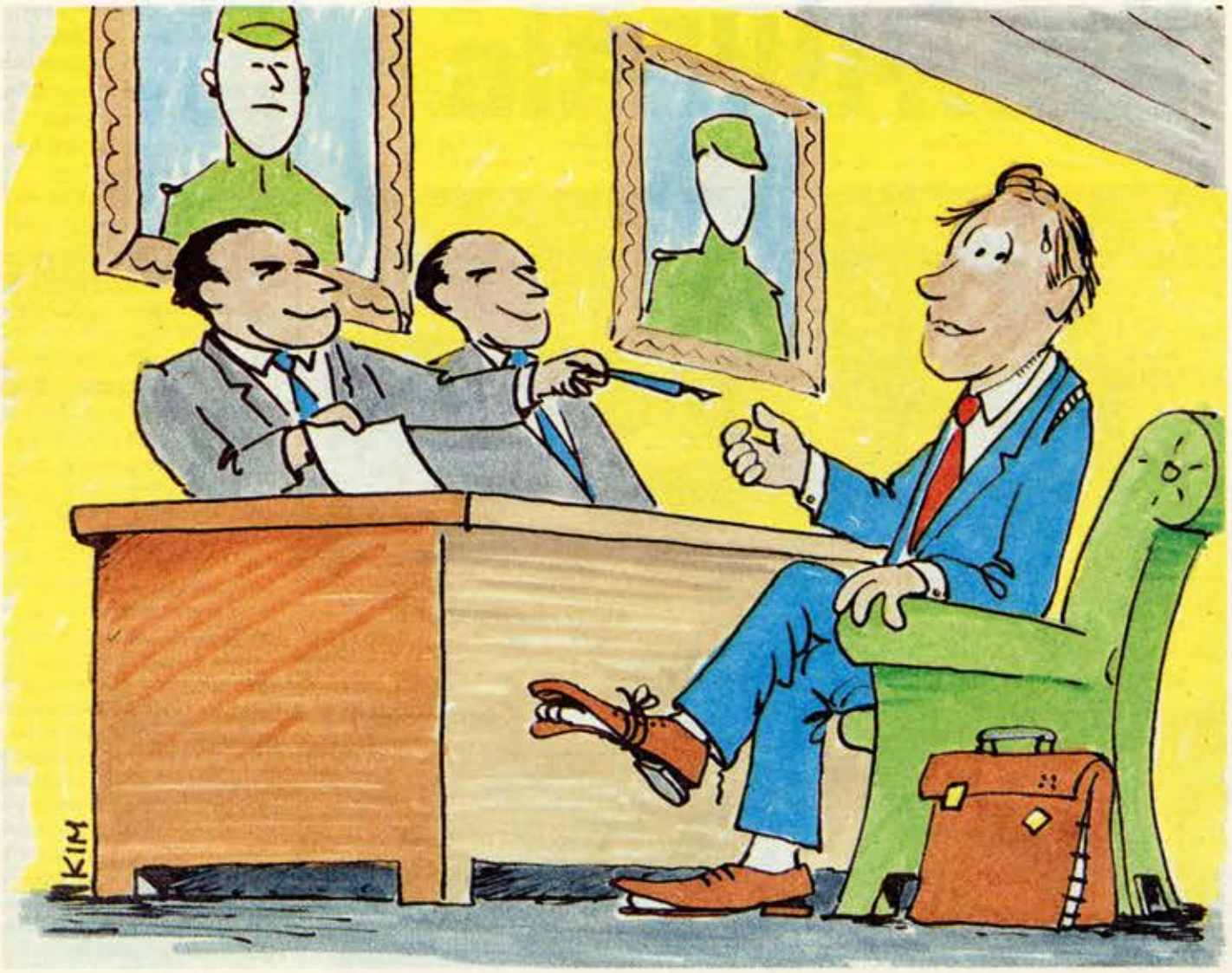

With ragged shoes...

Per Bengtsson took off for South Korea to put the finishing touches on a contract for AXE switches. It was to have taken a week at most, according to plans, so he figured he would pack just one pair of shoes.

In actual fact it took three months to get the contract completed. During the signing ceremony Pelle dragged himself into the midst of the VIPs with the soles of his shoes falling apart from the uppers.

"In 1982, contract negotiations were under way with South Korea for AXE switches. It was an important contract since – if all went well – it would mean a breakthrough for Ericsson in the country. Björn Jonsson at ETX was heading the negotiations. In Sweden, Per Bengtsson, then responsible for components at EKA, was waiting all ready to fly out to Soth Korea to wrap up negotiations as far as components were concerned.

After waiting some time, one Saturday Björn called to say that the time was here for Pelle to be on site. Final negotiations would begin on the Monday and should all be completed by Friday the same week.

No sooner said than done. Pelle got himself on the first available flight to Seoul. Since he intended to return to Sweden before the end of the week he packed only the bare essentials. A suit and a couple of extra shirts would be enough. A change of shoes – unfortunately enough – did not cross his mind.

Weeks go by

Monday came and negotiations began according to plan. The rest of the week went by and Friday, the day for signing, was finally there.

"Then we got word that our negotiating partners wanted to make some small adjustments in the agreement and that we would return to the negotiations after the weekend," Pelle recounts.

He and the other Swedes had then to be prepared to spend an additional week in Korea, but since his shirts could be sent to the laundry Pelle did not see this as any major disaster.

The negotiations continued the following week and Friday came around again. The Swedes were convinced that negotiations would be wrapped up then and so they prepared to head back home to Sweden. But that was not the case. On this Friday, too, there were still more adjustments to make and it was announced that negotiations would run into another week. And negotiated they did, week after week, until soon it extended into months.

With ragged shoes

Two months later they were still sitting at the negotiating table. In this situation, Pelle's clothing began to wear out and he started spending his free time in shops with clothes for oversized Koreans. This was not at all an easy way to spend one's leisure time, as was readily seen.

Pelle had yet another problem. With his change of shoes back in Sweden, his only pair he took with him began to fall apart. And finding a shoe shop in Korea that carries size 45 turned out to be harder than finding clothes to fit. In the end, he was lucky enough to find the Korean equivalent of a surplus store which, much to his delight, sold Hennes&Mauritz clothing in normal European sizes. However, he could not find shoes. So he had to go around in the old pair which really began to go to bits now. The uppers were threatening to fall apart from the soles. Now he really and truly hoped that the negotiations will not drag out too much more .

The big day

And so, finally, after three months the negotiations were completed. The big day came, with a festive ceremony where, among others, the South Korean minister of communications and then Ericsson president Björn Svedberg, were to be present at the contract signing.

Pelle took part also as a member of the Swedish delegation at the signing ceremony. A big day, too, even if it was not entirely problem-free for Pelle. The day before he had finally given up in the battle against the crumbling shoe which had now definitely fallen apart. To hide the fact as far as he possibly could he tried with the help of a pair of black socks that matched the color of the shoes to camouflage the splits.

Later, when the time finally arrived to gather with the VIPs, it was a "very slow-moving" Pelle that entered the room. This way he could avoid lifting his shoes too high at the risk of having the soles fall off onto the floor.

"Nobody noticed my shoes or my unusual dragging stride. But still it felt uneasy."

The moral of the story could well be better a pair of shoes too many than too few the next time you are on a business trip. It could take longer than you expect.

As it turned out, things got on the way, and today, ten years later, Ericsson has earned enough confidence to deliver no less than 1.5 million tele lines to South korea."

Helena Andersson

A better paper with ads?

STOP PRESS
BY LARS-GÖRAN HEDIN

In journalistic circles it is a known but seldom discussed fact that ads can contribute to raising a paper's readability. There are several reasons for this: One is that ads very often are formulated to attract the reader's interest, which also extends to the paper's overall contents. Ads for products and services that arouse interest give the reader an extra motive for really reading the paper. Another effect of the ads is that the paper's makeup is in keeping with the reader's idea of how a paper should look.

We who put out Kontakten, Contact and the business area papers are working indefatigably in our effort to give our readers as professional and as excellent a paper as possible. As a start in this direction, we now have in a couple of the Swedish issues the possibility of testing how ads would take their place in Ericsson's in-house publications.

Interest from the advertising market side is so much that we do not envision any marketing hindrance for a regular – but limited – appearance of ads in the papers. As for limitations, we feel that a maximum of 25 percent ads is a permissible mix. This is less than what our sister publication Televärlden – put out by Televerket, the Swedish telecom authority – allows. The ratio of ads there has not had any negative effect in what is generally a very good paper.

There are two interesting categories of outside ads that I myself believe in for the future: Ads that are directed to employees as private individuals and those that are directed to them in their professional role. In both cases it can often be the case that employees are offered special benefits.

A very interesting advertising market is internal job openings. At present, a lot of money is being spent in the daily and trade press on ads for job openings. Since many of these jobs are sought by people already within the company, I feel that a "classified" ad has a given place in the Swedish "Kontaktens Platsforum," or in its equivalent in Contact – a special section with job openings and personnel announcements.

In addition, the placement of ads in Ericsson's internal publications naturally has economic advantages. There are excellent economic payoffs to be had here. That's money that could otherwise be used for producing even better papers in future.

Your views?

Readers, we would like to know your views on this matter. Call or write to the editorial offices. You will find details of the telephone number and address on Page 2.