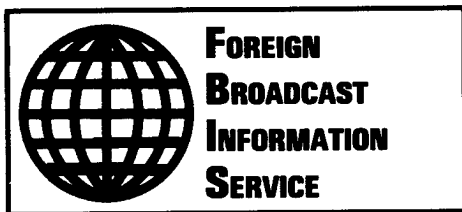


JPRS-TTP-92-002  
20 FEBRUARY 1992



# ***JPRS Report***

# **Telecommunications**

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# Telecommunications

JPRS-TTP-92-002

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### Swedish Firm To Manufacture Telecom Equipment

92WT0092A *Madras INDIAN EXPRESS in English*  
12 Dec 91 p 12

[Article by Naresh Minocha: "Swedish Firm To Set Up SKr153 Telecom Complex"]

[Text] New Delhi—Ericsson of Sweden has decided to set up a multi-product telecommunication complex at an investment of 59.2 million dollars (about 153 kronor [SKr]) in the country.

This is the largest and most diversified investment so far planned by any multinational in the telecom sector under the new industrial policy.

Ericsson will float a new company with 51 percent equity stake to produce digital telephone exchanges, including main automatic exchanges and electronic private automatic branch exchanges, multiplexers—the gadgets which reduce the transmission media requirement in the network—line equipment for fibre optics communication and radio base stations for cellular radio-based car telephone system. The venture will also include a large software development centre.

Though Ericsson has not yet disclosed the name of local partner for the venture, it is closely working with its existing partner, S.R. Jiwrajka group. Ericsson has 40 percent equity stake in Ericsson India Limited with the remaining 60 percent shares held by Jiwrajka group. This company manufactures telecom and allied equipment for the defence forces.

The entire project is to be implemented through the route of automatic approval for technology transfer and capital goods imports as provided for under the new industry policy. Ericsson will soon submit an application to the Reserve Bank of India for securing this approval.

In a 20-page proposal submitted to the Department of Telecommunications (DoT), the Swedish giant says: "Ericsson is prepared and has the capability to transfer know-how in all activities concerned with the switching system, transmission products and cellular communication systems. Know-how in management and administration is no exception. All relevant technology fields for a specific project are carefully analysed and adapted to the specific requirements."

Pointing out that its offer covers the most vital elements of a complete telecom system, it says that network management technology, in the form of network management and support centres, may be added to this offer.

Without naming its partner (WEBEL of West Bengal) for power system venture, Ericsson says the activities for this project have already been initiated separately.

The 8-billion dollar company says the proposed complex will start production 12-18 months after "contract signing." Its offer does not state what it means by contract

and with whom it has to be signed. According to a telecom expert, it may mean a long-term purchase contract with DoT, the virtual monopoly buyer of such telecom equipment.

The proposed complex will have a phased manufacturing programme for all specified products designed to achieve 69 percent indigenisation for transmission equipment and 61 percent for telephone exchanges.

Ericsson says "pre-studies" conducted by it show that it will be able to buy locally passive components, printed circuit boards, all mechanical piece parts, plastic piece parts, cables, diodes, transistors, and a few integrated circuits.

### Panasonic To Enter European Mobile Phone Market

92WS0241X *Duesseldorf HANDELSBLATT in German*  
24 Dec 91 p 9

[Article: "Entry Into the Mobile Telephone Market: Panasonic: Marketing via D-Network Service Firms"]

[Text] Panasonic, a subsidiary of the Japanese Matsushita Group, which will record a 1991 turnover of nearly \$47 billion, is familiar to most Germans as a manufacturer of home entertainment electronics such as video recorders. Now that the digital D-Network has been established under the European GSM-Standard (Groupe Speciale Mobile), Panasonic also wants to make inroads into the German mobile telephone market.

The Japanese objective for this market is ambitious: "We would like 20 percent of the market," states Detlev Driemeier, Panasonic marketing director. Other manufacturers such as Siemens and Alcatel have more modest aspirations—"at least 10 percent"—for a Pan-European market, which is expected to number between 20 and 25 million units by the year 2000.

The Japanese are no strangers to the mobile telephone industry: They control between 10 and 20 percent of the mobile telephone market in the United States as well as in Great Britain, Scandinavia, and Switzerland, where mobile telephones must comply with TACS (Total Access Communications System) and NMT (Nordic Mobile Telephone) standards. In contrast to this, the small market volume represented by the strictly German C-Network has kept Panasonic out of the German mobile telephone market.

The component-giant Matsushita established a strategic alliance with the British telecommunications firm Orbitel in the field of digital car phones, which are developed and produced in Great Britain. As part of the alliance, the two firms collaborated to produce a chip connector circuit for GSM telephones. The large combined market volume of the two manufacturers is expected to ensure a more rapid recovery of their investment costs. Nonetheless, from this point on, the Japanese want to develop the chip connector circuits for

second-generation mobile telephones independently. The production of GSM appliances will be tailored to market conditions. However, according to Panasonic, the initial production output will total 15,000 units per month.

Astonishingly, in contrast to home entertainment appliances, Panasonic does not intend to sell its D-Network car phones on the open market, but rather to sell them to well-established dealers. Consequently, the Japanese have for now ruled out product marketing aimed at the private final consumer. However, according to Driemeier, this is subject to change.

The car phones are to be marketed exclusively via a few service firms. As private mobile telephone corporations acting for D1 (the postal enterprise Telekom) and D2 (Mannesmann Mobilfunk), these firms take full responsibility for soliciting subscribers for their networks. In the meantime, the question of how Panasonic expects to win 20 percent of the market using this approach

remains unanswered. After all, the telephones are currently priced at 4,500 German marks.

#### **Israel Ready To Help With Communications Production**

*LD2201170792 Moscow TASS in English 1059 GMT  
22 Jan 92*

[By KAZTAG correspondent Gennadiy Kulagin]

[Text] Alma-Ata January 21 TASS—At their meeting here today Kazakhstan's Prime Minister Sergey Tereshchenko and Israeli Communications Minister Refa'el Pinhasi reached an agreement to set up a direct satellite telephone channel between Kazakhstan and Israel. This meeting has been the first direct contact between the two states at the intergovernmental level.

The Israeli side expressed readiness to help Kazakhstan organise the production of communications equipment, including through setting up joint enterprises.

## KENYA

### **Government Grants License for Third Radio, TV Station**

*EA3001143392 Nairobi KTN Television in English  
1800 GMT 29 Jan 92*

[Text] The government has licensed the establishment of a third radio and television station, making a total of three stations. The other two are the Kenya Broadcasting Corporation [KBC] and this network, Kenya Television Network [KTN]. In an exclusive interview with KTN, the minister for information and broadcasting, Burudi Nabwera, said the government is satisfied that KTN and KBC are doing a satisfactory job and that no more stations would be established in future. The minister was flanked by his permanent secretary, David Andere, and the director of information, Shadrak Musandu.

[Begin video recording] [Nabwera] What we call the private media in Kenya are not sufficiently independent and objective to help the person who has not decided for or against to make that decision. I would like them more independent. I would like them to be more accurate in reporting and report truthfully because I get the impression that some of the subeditors have already made up their mind as to what they want to say, so when news is received from Murang'a or Kakamega, for that matter, they know how to handle that news item.

You know, we have a third station coming which we have already approved and from the information available to me, the market is already saturated and until the new station.... Maybe if there is an entrepreneur who would like to start a new station far out in the rural areas, where we do not have stations yet, for example, in Turkana or Mandera or Garissa, I will be prepared to consider that. But at the moment I think the business that we have is already being taken care of so I am a bit wary. Although in principle diversity would be useful, but since KTN and KBC are more than adequate, and as I said, the government has already licensed a third station, I think we will have to go very slowly. So in short, I am not considering licensing new stations as yet. [end recording]

### **Posts, Telecommunications Charges Increased**

*EA2301141092 Nairobi KTN Television in English  
0500 GMT 22 Jan 92*

[From the press review]

[Text] Kenya Post and Telecommunications Corporation's subscribers and other consumers will have to reach deeper into their pockets to meet the increased cost of telephone and postal services. This follows the decision by the post office to increase telephone charges by between 30 and 50 percent with effect from next month. This is a lead story in the KENYA TIMES this morning. The paper says the annual rent for postal addresses are being raised from 132 shillings to 200 shillings, while the cost of installing a telephone shoots up from 918 shillings to 1,200 shillings.

### **Shanxi Plant Manufactures CDMA Satellite Datacom Network**

92P60104A Beijing ZHONGGUO DIANZI BAO  
in Chinese 13 Dec 91 p 1

[Article by Gu Bingxin [7357 3521 9515]: "Shanxi Markets Code-Division Satellite Data Communications Network"]

[Summary] On 21 November, the first units of a formatted-network satellite communications system developed in an 11-year effort and manufactured by the Shanxi Galaxy Electronic Equipment Plant were shipped. This is the first operational CDMA-SDCN [code-division multiple access] satellite data communications network to be manufactured domestically. This network, meeting late eighties international standards, consists of several small CDMA satcom earth stations forming a networked system that can be used by the military forces and by civilian authorities in area such as petroleum exploration, geological prospecting, electric power, and transportation.

### **Digital Microwave Projects Described**

#### **Contract Signed for Nanchang-Fuzhou DS4 Line**

92P60083A Beijing DIANXIN JISHU in Chinese No 11, Nov 91 p 47

[Untitled news brief by Liu Jiuru [0491 0046 1172]]

[Summary] The overall contract for the construction of the MPT level-1-trunkline 140 Mbit/s [DS4] digital microwave (DMW) project connecting Nanchang with Fuzhou was signed in Beijing in June [1991]. MPT was represented by the posts and telecommunications (P&T) offices of Jiangxi and Fujian Provinces; signing on the construction side was the China P&T Industrial Corporation. This 476.7-km-long DMW line will have a total of 11 microwave stations, five (covering 204 km) in Jiangxi Province and six (covering 272.7 km) in Fujian Province. The DS4 DMW equipment, PCM digital multiplexing equipment, power supplies, high-performance antennas and other units are all domestically manufactured and comply with CCIR and CCITT international standards. Terminal testing should be conducted by October 1992.

#### **'Shenda' Superhighway DS2 Line Operational**

92P60083B Beijing DIANXIN JISHU in Chinese  
No 11, Nov 91 p 47

[Untitled news brief by Huang Wenquan [7806 2429 6898]]

[Summary] The "Shenda" superhighway 8 Mbit/s [DS2] DMW project, constructed by the China Communications Construction Company's Xian Engineering Company, passed acceptance check on 10 July [1991] and became formally operational. This 8,820-km-long [as published] DMW line, with eight microwave stations,

uses domestically made equipment throughout. The opening of this line will improve management of the "Shenda" superhighway.

### **Gansu Uses Foreign Loans To Develop Telephone Project**

HK3001062792 Lanzhou Gansu People's Radio  
Network in Mandarin 2300 GMT 21 Jan 92

[Text] Our province uses the loans provided by the Spanish Government to import program-controlled telephone devices; the relevant signing ceremony was held in Lanzhou on 20 January. This is a fairly large imported project in our province during the Eighth Five-Year Plan period, and the imported facilities and equipment will include 100,000 pieces of conversing equipment, 3,780 trunk lines, program-controlled switchboards, digital and microwave facilities, and so on. With the complete fulfillment of this project by the end of the Eighth Five-Year Plan period, various prefectures, autonomous prefectures, and cities, and more than 80 percent of counties in our province will have an automatic telephone communication system and be able to contact the whole country and various parts of the world through trunk calls.

Vice Governor Li Ping attended the signing ceremony, and briefed foreign businessmen on our province's economic situation.

### **High-Capacity SPC Digital Switch Domestically Developed**

92P60104B Beijing RENMIN RIBAO in Chinese  
15 Dec 91 p 1

[Article by He Huangbiao [0149 7806 1753] and Zhang Dongwen [1728 2639 2429]: "High-Capacity Stored-Program-Controlled Digital Switchboard Unveiled"]

[Summary] Beijing, 13 Dec (RENMIN RIBAO)—At a joint press conference held the other day by the PLA General Staff Headquarters and by MPT, spokesmen for the two organizations announced development of the highest-capacity domestic stored-program-controlled (SPC) digital switchboard, which has now passed technical appraisal. The HJD-04 SPC digital telephone switch, jointly developed by the PLA's Institute of Information Engineering and by the China MPT Industrial Corporation, represents a major breakthrough in the campaign to modernize the nation's communications technology. With a capacity of 60,000 equivalent lines, the HJD-04 is suitable for a 16,000-line tandem office or a 30,000-40,000-line metropolitan telephone office, and meets late-eighties international standards. Busy-hour call processing potential exceeds 2 million BHCA. In place of the traditional design, this new digital switching network has a fully connected distributed T-type network structure, which raises the degree of terminal "intelligentization." The HJD-04 also represents the first incorporation of real-time multiplexed frequency spectrum analysis technology into a switchboard. It is

understood that foreign nations have usually taken seven to eight years to develop such a high-tech product; China has taken only three years and four months to develop this new high-capacity SPC digital switch.

#### **Direct Dialing Services Available Throughout Zhejiang**

*OW0502084192 Beijing XINHUA in English  
0658 GMT 5 Feb 92*

[Text] Hangzhou, February 5 (XINHUA)—Zhejiang, a coastal province in east China, has achieved prominent results in using foreign funds to improve its telecommunications facilities.

By the end of last year the capacity of the province's telephone switchboards had exceeded one million lines, and all of its counties had installed automatic switchboards.

In the past few years the province has introduced more than 88 million U.S. dollars from Spain, Australia, Japan and Britain to import advanced equipment, including microwave communications transmission systems and program-controlled switchboards.

Now, international and domestic direct-dialing services are available throughout the province.

#### **Shanghai Suburban Villagers Get Closed-Circuit Television**

*OW0202020192 Beijing XINHUA in English  
0144 GMT 2 Feb 92*

[Text] Shanghai, February 2 (XINHUA)—Huoxian Village in Jiading, a suburban county of Shanghai city, China's leading commercial center, recently became one of the first rural villages in China to have closed-circuit television.

The 600,000 yuan two-way video communication system now gives the village access to teleconferences, village TV news, and selected TV programming.

A joint project of the the village and the county posts and telecommunications department, the system supplements existing television communication services with additional cables and a switching station.

It is expected that this pioneering project will become part of a network of closed-circuit television systems for Shanghai which will be completed within the year.

#### **Development of Shanghai Phone System**

*OW0402063692 Beijing XINHUA in English  
0616 GMT 4 Feb 92*

[Text] Shanghai, February 4 (XINHUA)—More farmers in Shanghai's suburbs are using telephones to contact their relatives or friends in exchanging visits during the spring festival, the traditional Chinese New Year days, which starts today.

Statistics show that the number of telephone lines in the suburbs of this largest Chinese city has more than doubled to the current 180,000 from 82,000 in 1988.

In Jiading, Qingpu, Chuansha, Fengxian and Nanhui counties, all the villages have installed telephones. Exchanges with a transmitting capacity of 10,000 lines have been put into operation at Zhujiajiao and Zhangan towns. And optical fiber lines have been laid in these towns.

In 17 villages of Jiading County, with the installation of program controlled telephone exchanges, telephone sets increased rapidly to an average of one for every two families.

In addition, about 6,000 rural families are now using direct dialing long distance phone systems. Pagers and mobile phones have also been used by some farmers working in rural industries and self-managed farms. Telephones have provided much convenience for local farmers in their international business.

In some areas, telephones have been used in fighting natural disasters.

The telephone has also shortened the distances between young people in love. In the past, they had to travel miles on bike or even on foot to meet their boy or girl friends. Now "the telephone has helped us deepen our mutual understanding," said Zhang Guirong, a young man in Yuyao village, Qingpu County.

Nowadays telephones have become the first item in the expenditure budget of Shanghai farmers when they get rich.

#### **Shandong Establishes Rizhao Radio, TV Stations**

*SK0602044092 Jinan DAZHONG RIBAO in Chinese  
4 Jan 92 p 1*

[Summary] The Rizhao Television Station and the Rizhao People's Broadcasting Station began broadcasting as soon as the New Year started, thus putting an end to Rizhao's history of relay in all the radio and television programs.

## LAOS

**PRC-Aided TV Station Handed Over**

92WT0066B *Vientiane PASASON in Lao 18 Nov 91*  
p 1

[Text] In the evening of 15 November a ceremony was held in the capital, Vientiane, to present the Lao-Chinese Friendship TV Station, which used satellite transmission. Mr. Phao Bounnaphon, the minister of foreign economic relations, and Mr. Houang Kok Sai, the Chinese ambassador to Laos, conducted the ceremony in the presence of Mr. Nounkeo Olaboun, the minister of information and culture, the deputy ministers, invited guests, and a number of involved cadres.

This TV station required seven months and four days to construct. Construction began on 11 April of this year. The station is located near kilometer marker six near the Lao-Soviet Friendship Hospital. It consists of one building and a 37 meter high antenna which receives and transmits over a distance of from 25 to 30 km. It has 1 kilowatt of power and is able to receive TV programs from the PRC and transmit Lao programs to the PRC. It has been able to achieve the technical objectives set for it. Close assistance and guidance was received from Chinese experts during the entire period of construction. This was assistance at no cost from the government of the PRC. It is considered a gift from Mr. Li Peng, the prime minister of the PRC, who visited Laos in December of 1991.

**PRC-Supplied Communications System Described**

92WT0066A *Vientiane PASASON in Lao 4 Nov 91* p 2

[Text] As has already been reported, the Asia Pacific Electronics Company of China recently made an investment to set up a paging radio system (khonling) for communications in the LPDR [Lao People's Democratic Republic]. The investment totaled \$3.5 million (not \$350 million) and the goal was to expand cooperation and investment. This was an investment which received the approval of both the Lao government and the Chinese Government.

What are the advantages of pagers and why do we need them here where we do not have telephones everywhere as they do in other countries? In response Mr. Si Cheu Chin, the engineering administrator for this company, said that pagers had a wide range of uses and had many advantages for individuals and the public. The pager did not require telephones to be useful since we could use number codes to call and indicate problems to others, for example we could use the code 001 (urgent that you return home, your wife is sick), 002 (urgent that you return home, your child is sick). In advanced countries, the police, doctors, businessmen, and important cadres have pagers for convenience in making calls, arranging meetings, or requesting to meet someone whose location was not known. These contacts could be made in a few minutes, or one could page 50 people or more at a time. He said that the paging system was set up in Laos not just to expand cooperation and investment but also to make

the Lao people familiar with using paging systems which would be useful in the daily life of individuals and would make communications convenient for society. In addition it would improve the economy.

In response to the opinion that paging was not permanent because permission had not been granted for it from the Ministry of Interior, he said that the business had been granted permission from the governments of both countries and therefore this rumor was without any basis in fact.

The company had been able to distribute about 100 pagers. There were three models: one with normal sound, one with sound and vibration, and one with music and vibration. The prices ranged from 130,200 kip to 142,800 kip for a unit. In addition there was a service charge of 7,000 kip per month. If anyone was interested in purchasing a pager or getting information about paging, they could call (16)9863, or they could go to the long distance service center next to the city administration. He would provide every convenience.

## VIETNAM

**Da Nang Commissions New Color TV Transmitter**

BK2701142592 *Hanoi Voice of Vietnam Network in Vietnamese 0500 GMT 25 Jan 92*

[Text] With the assistance of the Hanoi Radio and Television Association, after more than two months of intensive work, the Da Nang television station has test run and commissioned a five KW-capacity Czechoslovakian-made color television transmitter named (Velahay).

This is the third color television transmitter assembled in our country so far.

With the commission of this color television transmitter, the Da Nang television station can overcome the shortcomings displayed by the previous color television transmitter and exploit the television programs of the Vietnam Television Network and the Ho Chi Minh city television station, thus diversifying its own television programs, promptly meeting the local people's need on the occasion of the Lunar New Year, and consolidating the strong points of a television station in Central Vietnam.

**Postal, Overseas Telephone Charges Reduced**

BK2301143792 *Hanoi VNA in English 1330 GMT 23 Jan 92*

[Text] Hanoi 23 Jan (VNA)—The Vietnam Post and Telecommunications Corporation has, for the third time, reduced charges for its different international services.

Postal parcel charge for Asia-Pacific has been cut 15 percent, printed matter charge, 16 percent.

Air mail charge for a 25-gram letter has gone down from \$2.60 to \$1.55. International calls now cost 5.1 percent less. Telex charge is down 8 percent on an average (for Africa and America, with the exception of Canada, the cut is 26.5 percent).

**CZECHOSLOVAKIA**

**CSTK Begins Transmitting on New Electronic System**

*LD0102184192 Prague CSTK in English 1433 GMT  
1 Feb 92*

[Text] Prague Feb 1 (CSTK)—The Czechoslovak News Agency [CSTK] today started transmitting its Czech-language news service via a new electronic editorial

system combining the technical advantages of the Swiss system "Typlan" with Finnish terminals "Nokia."

The Typlan/Nokia system replaced the "InTel" electronic system which was introduced in 1979. Until then news services were transmitted via telex.

Foreign-language news services will start to use the new system in spring.

**BRAZIL****French Satellite To Aid in Demarcation of Border**

*PY0102133492 Rio de Janeiro O GLOBO in Portuguese  
30 Jan 92 p 5*

[Text] Sao Jose dos Campos—The northern Brazilian border, which is completely covered by the Amazon rain forest, will be demarcated in the next few months with

the French satellite Spot. The project will start in February and will be carried out by experts from Inpe [National Institute of Space Research] and the Army Ministry Geography and Geodesics Service with the assistance of French experts.

Inpe Director Marcio Barbosa reported yesterday that the first map showing the northern border demarcations will be ready by April. It will be the basis for demarcating the Brazilian border with Guyana, French Guiana, Suriname, Venezuela, Colombia, Peru, and Bolivia.

## REGIONAL AFFAIRS

### Technical Cooperation With Sudan, Iran To Expand

EA0302145592 Khartoum SUNA in Arabic 1445 GMT  
1 Feb 92

[Text] Khartoum, 1 Feb (SUNA)—Dr. Jamal al-Din 'Uthman, director of television, has discussed areas of bilateral cooperation between Sudan and Iran with the information attache of the Embassy of the Islamic Republic of Iran under which the two sides have agreed to expand the range of their technical cooperation with the exchange of weekly television dispatches as of January. This transpired during a joint meeting held here recently at which the Iranian attache presented 17 Iranian films to Sudanese television.

### 11 African Countries To Receive ESC Broadcasts

NC0202111492 Cairo MENA in Arabic 2139 GMT  
1 Feb 92

[Text] Cairo, 1 Feb (MENA)—Eleven African countries will shortly begin receiving Egyptian Space Channel [ESC] broadcasts. The Radio and Television Union [RTU] has finished erecting dish antennas designed to receive ESC in these countries.

An RTU official said today that Information Minister Safwat al-Sharif signed agreements with the Moroccan, Sudanese, Niger, and Burkinabe information ministers and heads of delegations who attended the second conference of Islamic information ministers in Cairo in January. These agreements allow these countries to receive ESC broadcasts and retransmit them over their television stations.

The official added that similar agreements were previously signed with Chad, Djibouti, Kenya, Zambia, Guinea, Zaire, and Nigeria. He explained that the agreements are for two years and will be renewed automatically.

The agreements also state that the RTU will supply and erect the dish antennas in each country at its own expense. Broadcasts will be supplied free of charge. Stations in the receiving countries will broadcast ESC programs in part or whole, either via live relay or after recording the Arabic language programs and choosing what they deem suitable.

## EGYPT

### Al-Sharif To Attend New Arab Satellite Launch on 25 Feb

NC2901135892 Cairo MENA in Arabic 1202 GMT  
29 Jan 92

[Text] Cairo, 29 Jan (MENA)—Information Minister Safwat al-Sharif has stated that the first generation, third Arab satellite, 1NC, will be launched from a French base on 25 February.

Al-Sharif said that he will attend the launch, since Egypt is the only country to use the third satellite's broad beam transponder.

He added that an agreement will soon be reached to transmit the Egyptian Space Channel to four Muslim republics in the new Commonwealth of Independent States. Another agreement was signed to receive the Egyptian Space Channel in Burkina Faso, a country bordering many African states.

The information minister clarified that Egypt transmits to a bigger area than does any other country in the region.

## INDIA

### Satellite To Serve Rural Areas Under Study

92WT0094A Madras INDIAN EXPRESS in English  
12 Dec 91 p 4

[Article: "Gramsat Plan 'Aims at Transforming Rural Society'"]

[Text] Madras—A dedicated satellite system—the Gramsat—to meet specific education and development information requirements of the country's rural regions through TV and radio is being formulated by the Indian Space Research Organisation (ISRO).

The Gramsat plan will cover all the states and be multi-lingual, catering for particular areas, ISRO chairman U.R. Rao said on Wednesday.

Delivering the Vikram Sarabhai memorial lecture instituted by the Indian Society of Remote Sensing (ISRS), at Anna University, he said the Gramsat system would meet the requirements in the areas of culture, and region specific knowledge on health, hygiene, environment, family planning, and better agricultural practices all of which are aimed at transforming rural society.

Besides providing mass literacy, the plan also seeks to make available continuing education to groups like industrial workers. The response from industry has been enthusiastic.

Dr. Rao said special inexpensive hardware had already been prepared for such activity, and tested in Gujarat.

The Gramsat plan would have to get off the ground in around one and half years, and implemented in four to five years. The satellite may cost Rs. 100 crore but the ground costs would be heavy.

During the experiment at Rupal, in Gujarat's Gandhinagar district, the participants interacted using a talk back facility.

The objectives of the system would be achieved by providing six to eight high powered C-band transponders which together with video compression techniques,

could disseminate region and culture specific audio-visual programmes of relevance in each of the regional languages. The viewer would be simply tuning in to his TV set on the local channel, through a rebroadcast system. Easier reception could be facilitated by adding two or three very high power spot beam Ku band transponders.

Though hardware could be had easily for such a project, the focus should be on producing software, as educational broadcasts should be presented in an entertaining way.

**Sustainable development:** Dr. Rao said the integrated sustainable development of vast rural areas and optimal utilisation of land and water resources could be achieved only by the inculcation of scientific ideas at the level of the user—the agriculturist.

The problem was complicated in the developing countries, where holdings were fragmented. For instance, in India, 168 million hectares of agricultural land was distributed among 100 million farmers, whereas in the US 200 million hectares were managed by two million farmers.

Space-based remote sensing data provided the best means of arriving at locale specific prescriptions to solve the problems of conservation of resources and planning sustained development.

In addition, Dr. Rao pointed out that satellite-based sea surface temperature anomalies data provided regular information to coastal fishermen in the country, and helped them increase their fish catch.

In the area of wasteland identification, satellite remote sensing had helped identify 13 categories of wastelands, (their total extent was 54 million hectares, almost half of it reclaimable).

There should be no complacency on the food front, because India's green revolution had helped increase food production from 55 million tonnes in 1947 to only 177 million tonnes last year, but the target was 220 million tonnes to meet the needs of a projected one billion population. This had to be viewed against the yield patterns in the country, which were far lower than those in the US, and the global average. Rice yield was 1.7 tonnes per hectare against five tonnes in California. For wheat, it was 2.2 tonnes/ha, compared to 3.7 world average, and 5.4 in USA.

Largescale irrigation, the use of chemical fertiliser, inadequate drainage and bad practices were leading to alarming increase in soil salinity.

Unless agriculture production increased, there would be rampant famine and starvation in the coming decades, particularly in Africa where population growth was faster, Dr. Rao said.

**Big projects:** Coming down on major irrigation projects, Dr. Rao said the big dams had contributed to improved

agriculture production in developing countries, but brought along with them associated problems like water logging, salinisation, and loss of valuable biospheres.

An estimated 100 million hectares of irrigated land in the world had become totally unproductive due to water logging. On the contrary, small ponds, tanks and check dams constructed at each watershed level had a better ability to meet the water requirements efficiently without causing ecological damage.

Even in the construction of big dams, satellite imageries provided accurate data that helped plan their optimal height. In a typical dam, the reduction by just 20 metres from 260 m to 240 m reduced the forest inundation from 40,000 hectares to under 15,000 hectares.

At the memorial lecture delivered on the occasion of ISRS annual convention, and symposium on remote sensing of environment, International Society of Photogrammetry and Remote Sensing vice president G. Konecny recalled the development of the technology at the global level. ISRS president B.L. Deekshatulu also spoke.

Anna University vice-chancellor M. Anandakrishnan pointed out that the country's space programme had developed admirably, thanks to visionaries like Vikram A. Sarabhai. National organising committee co-chairman T. Natarajan (director of the University's Institute of Remote Sensing) welcomed the gathering. ISRS secretary B.M. Singh proposed a vote of thanks.

### Troubles in Operation of Telecom System

*92WT0093A Bombay THE TIMES OF INDIA  
in English 3 Jan 92 p 7*

[Article by N. Suresh: "Telecom Set-Up on Tenterhooks"]

[Text] New Delhi, Jan 2—The telephone set-up in the country has been on tenterhooks for nearly a year over one issue: whether it will be corporatised or privatised. Nobody in the government yet has a satisfactory answer. For it is a Rs 8,900-crore question. Maybe, the New Year has an answer.

The uncertainty began in the late 1990s when the 4.5-lakh strong employees union in the Department of Telecommunications (DoT) resorted to a two-week strike, demanding parity in wages with their counterparts in the public-sector Mahanagar Telephone Nigam Limited (MTNL).

The issue was not new as it was agitating them ever since the MTNL was set up as an experimental measure in April 1986 to run the most-profitable network in the country covering Bombay and Delhi. They too were not absorbed into the corporation and till a decision was taken, MTNL staff managed to get an interim allowance of Rs 100 a month till they get other benefits available to public sector employees.

The Chandra Shekhar government, faced with the task of finding the crores of rupees needed to pay DoT staff and invite similar demands from other Central government employees took the easy way out: appoint a high-level committee to study the total restructuring of the telecom set-up.

The committee, headed by a management expert, Mr. M.B. Athreya, produced a voluminous report and handed it over to the government last April. The committee toyed with the idea of recommending privatisation of telecom services, keeping in tune with the trend in this vital infrastructural sector all over the world.

With liberalisation mantra not yet sweeping the country at that time, the Athreya committee played safe by recommending a restructuring plan which involved setting up MTNL-type corporation for the five major regions—north, south, west, east and central—in the country, and separate corporations for long-distance communications and a telecom finance corporations.

However, the financial implications (Rs 8,900 crores) of such a step was mind-boggling for the sector, already starved of funds for expansion to cater to the increasing demand for telephone connections (Rs 20 lakhs at the latest) and other services such as data transmission, video text, voice mail, electronic mail and paging facilities.

The costs involved were to pay for the transition from departmental to the corporate form. The break-up was: income-tax (Rs 1,800 crores), additional wages (Rs 1,000 crores), insurance (Rs 200 crores), pension fund (Rs 2,200 crores) and interest on borrowed funds (Rs 3,700 crores).

This at a time when the planning commission asked the department to prune its eighth plan programmes from Rs 40,000 crores to Rs 20,000 crores. And the commission agreed to allocate only Rs 16,000 crores and asked the department to raise the remaining amount on its own.

Opinion within the government varied as the department has been restructured three times in the last decade—separating telecom and postal services, setting up of the high-powered telecom commission and the dual structure of MTNL and DoT running the national telecom services.

While a decision on this step is still pending, the new minister, Mr. Rajesh Pilot's ambitious plan to provide 75 lakhs telephone connections in the next five years in addition to installing a telephone in each of the 2.2-lakh panchayat villages has thrown the DoT into disarray.

Though the country manufactures nearly five lakhs telephone lines a year, the installation rate has not exceeded 3.5-lakh per annum. At this rate, not more than 17-lakh connections could be provided in five years.

The department mooted a plan to interconnect all the 450-odd districts through the subscriber trunk dialling

(STD) facility in 1981. But the plan may materialise only by 1995 or at the end of the eighth plan. Similarly, a target of laying 2,200 kilometres of high-tech optical fibre cables was set for this year. About 400-km of these cables are only likely to be laid by March next.

An internal expert committee has identified that revenue worth crores of rupees are lost due to outdated technologies still in use. The leakage occurs due to diversion at the subscriber-end. At cabinets, diversion at main distribution frame, disabling of meters (non-computerised sections), or improper accounting at trunk exchanges etc.

A coherent telecom policy is yet to be formulated but there are plans to introduce new technologies such as cellular phones, terrestrial flight telephone system (air-to-ground, ground-to-air), voice mail, video text and Integrated Services Digital Network (ISDN).

Experts say that in the absence of a personnel policy, training the existing staff to handle these new technologies is yet to start. The vast network of telecom training centres are now only turning out linesmen and cable jointers.

The nation will have to wait longer for a decent telecom network is in operation while a communication revolution is sweeping the world, bringing closer than ever. Will the New Year ring in a new world for the harassed citizens, at least in this vital sector is still a Rs 8,900-crore question.

#### Upgrading of Telegraph Service Under Way

92WT0091A Madras *INDIAN EXPRESS* in English  
11 Dec 91 p 4

[Article by T. Ramachandran: "Telegraph Service: Modernisation for Survival"]

[Text] Madras—An exercise in the technological upgrading of telegraph services is under way in the country to prevent it from being eclipsed by other communication technologies.

By the end of the Eighth Five-Year Plan period the core of telegraph services will be computerised making the service much faster and more reliable than it is today, according to authorities. This will enable it to stave off the threat of extinction by the other communication technologies like telephone and fax, they say. Telegraphy has already been superseded by these technologies in the advanced countries.

Computerised message handling systems, capable of automatically handling up to a lakh of messages per day, are replacing the existing systems at major centres. In the ultimate stage, once the telegram is fed into the network, it will automatically reach its destination.

A message is handled now by an average of 2.6 employees en route because it is received and manually retransmitted from one centre to another till it reaches its destination. Even if a working line and two employees

are available at either end, the chances of the message getting through in time under the best of circumstances are estimated at 70 per cent.

Already, three 128-line Store and Forward Message Switching Systems (SFMS), capable of handling one lakh messages a day, have been installed in Bombay, Hyderabad and Madras. Calcutta and Lucknow are also being equipped with such systems. Nine 128 line systems will be installed by the end of the eighth plan period.

Similarly, 64-line systems will be functioning at 12 places in the country by the end of the plan period. One is functioning at Bangalore and two others are likely to come up at Coimbatore and Madurai soon. Such systems have also been earmarked for places like Trivandrum and Hubli.

Thirty-seven such SFMS systems of 32 line capacity will also be functioning in the country by the end of the plan period.

According to Mr. C.V. Gopinath, director (telegraph services planning) in the Department of Telecommunication, plans are to spend Rs 208 crore during the Plan period for modernising the network.

The lowermost levels of the network, spread across the rural areas, will also undergo change with the old terminals employing the Morse code being replaced by electronic keyboards. Such custom-built keyboards have been introduced on an experimental basis in Karnataka and Madhya Pradesh.

About 5,000 such terminals will be introduced country-wide by the end of the Plan period. They will make things easier for rural telegraph operators, for whom telegraphy may be only a part-time occupation. Similarly the incoming messages will be stored and displayed on the keyboards enabling them to easily record it. These terminals will be linked up with the network through concentrators.

Meanwhile, the modernisation drive has led to faster communication going by the department's evaluation. In April 1986, only 38 per cent of telegrams were delivered within 12 hours, but by March 1991, the percentage was 85.

The general perception is that telegraphy will be around for a long time to come, especially if members of the public feel that is a fast and reliable service. Given the low density of telephones in the country and its cost, a large segment of the population cannot have access to it or alternate modes of communication like fax.

The decline in telegraph services annually by about one per cent in the last two or three years (compared to the growth of 2.5 to 3 per cent recorded during previous decades) can be reversed, the authorities hope. More so, if the employees change their "work culture" given the reassurance that they will not be disturbed.

### Space Agency Chairman Tells Satellite Plans

92WT0096A Madras *THE HINDU* in English  
13 Dec 91 p 3

[Article: "ASLV Launch in March '92"]

[Excerpt] Madras, Dec 12—The third ASLV (Augmented Satellite Launch Vehicle) will be launched from Sriharikota in March 1992 and the launch campaign was already under way, Prof. U.R. Rao, Chairman, Indian Space Research Organisation, said.

The ASLV would put into space a satellite called SROSS (Stretched Rohini Satellite Series) which would carry payloads designed for conducting experiments in the ionosphere and find out the origin of the gamma rays in space. (The region of the earth's upper atmosphere where part of the gases are ionised is called ionosphere. It "reflects" radio waves facilitating long distance communication.)

Scientists from the National Physical Laboratory, New Delhi and the Physical Research Laboratory, Ahmedabad would conduct the experiments in the ionosphere and the ISRO scientists would do the gamma ray burst experiments.

The ASLV could not be launched this month because Sriharikota had been hit by cyclones.

Prof. Rao said the configuration of the ASLV had been strengthened and many changes made. (The last two ASLV launches had failed. "We have enormous data on what went wrong (in the last flight) and the data related to every micro-second. We have made it as humanly as possible that it will be a success," the ISRO Chairman said.

**INSAT-IIA launch:** There was a "race" between the ASLV and the second-generation INSAT-IIA as to which should be launched first, he said. The INSAT-IIA spacecraft, which had been built by the ISRO Satellite Centre, Bangalore, would be launched by the Ariane vehicle of the Arianespace from Kourou island in French Guyana in March 1992. The ISRO would transport the satellite from Bangalore to Kourou in January, 1992. Right now, the satellite was going through a battery of tests in the space simulation chamber in Bangalore.

The INSAT-IIA had more capacity than the satellites of the first generation INSAT-IA, IB, IC and ID. It would have 18 transponders instead of the 12 transponders its predecessors had, besides a better meteorological imaging system. The Ariane would also orbit the INSAT-IIB a year later. The ISRO had not yet decided whom to contract for launching the INSAT-IIC.

The ISRO would launch the PSLV (Polar Satellite Launch Vehicle) from Sriharikota before the end of 1992. It would orbit a 1,000 kg remote-sensing satellite called IRS-IE. [passage omitted]

## IRAN

### Paper on the Coming of Satellite Reception

NC0502112992 Tehran KEYHAN in Persian 2 Jan 92  
p 18

[Unattributed article including interview with Engineer Majdmanesh, director of satellite affairs in the Iranian Telecommunications Organization; place and date not given: "Cultural Offensive: Questions and Answers"]

[Text] Mohammad Reza Afshari from Tehran has asked: If we get satellite reception, how will it be done? KEYHAN says:

Various views have been expressed on whether technically and legally speaking satellite programs can be transmitted in Iran. Some insist that satellite reception will come while others consider transmitting satellite programs technically and legally impossible or, at least, difficult without the government's agreement.

In an interview with KEYHAN on 4 Tir 1370 [25 June 1991], Engineer Majdmanesh, director of satellite affairs in the Iranian Telecommunications Organization, answered a question on whether U.S. and European programs would be transmitted:

[Majdmanesh] Each country should have an International Telecommunications Union [ITU] permit to own and launch a satellite, with which ITU member countries must agree before the applicant can place its satellite in a specific orbit. Based on international laws and regulations, no Western country can launch a satellite in our airspace.

Nor can they do so secretly, because at least five years are needed from design to the time the satellite is launched, during which time the countries will realize what is going on and will protest. So far no such cases have been recorded.

It would be uneconomical for the United States to design a satellite for Europe and then to alter its direction to cover Iran, because it would lose out on the \$100 million minimum investment it had to make to cover Europe.

Apart from being illegal, technically, it will not be easy to cover Iran because an ordinary television set cannot receive satellite pictures, which can only be received by installing special antennae and receivers.

[Correspondent] If it becomes possible to receive satellite pictures in Iran, will there be a way to counter the attempt?

[Majdmanesh] A foreign satellite can be confronted by jamming the frequency on which it transmits its programs.

If, however, we can receive satellite programs in future, there are some points to which we must refer:

1. Cultural officials and nonofficial sources (particularly magazines serving the cultural offensive) insisting that satellite reception will be possible has a special meaning.

These people want to set aside cultural and religious sensitivities with the coming of satellite reception and allow everyone to do and publish as they please! They ask: Why are we so sensitive about films, magazines, and radio and television programs now that satellite programs may be transmitted? They ask: Why is everyone upset when religion is insulted in a film? Will satellite transmissions tomorrow not insult every sanctity? They say: It is shortsighted to get upset about propagating licentiousness and about love scenes in a domestic film! What will these people do when satellite programs come?

They say: Why are you criticizing the policy of issuing permits to anyone and any group to publish magazines (be they atheists and counterrevolutionaries, antipopular, or servants of the Shah and of the United States)? Satellite reception will come. Can you stop it?

They say: Since satellite reception will come we should take the first step ourselves. They say that satellite reception will destroy all geographic boundaries, so why do we want to maintain the ideological walls, and so on and so forth.

### PTT Minister on Satellites, Telecommunication

NC0302122392 Tehran Voice of the Islamic Republic of Iran First Program Network in Persian 0500 GMT  
3 Feb 92

[Recorded interview with Post, Telegraph, and Telephone, PTT, Minister Mohammad Gharazi by unidentified correspondent from the "Report" program; place and date not given]

[Excerpts] [Correspondent] I congratulate you on the auspicious 10 days of dawn ceremonies and ask you to speak about telecommunications in detail.

[Gharazi] [passage omitted] To date we have given the people many figures. But now we are taking longer and more extensive steps, and by injecting the modern technology we have promised throughout the years, we inform the people that this year we will fulfill our objective. We are proud to say that this year in Tehran only more than 400 km of fiber optics are serving the people. Last year sending faxes was very difficult. But now we announce that throughout the country and whichever point is served by the telecommunications network, anyone—in whatever business—can receive a fax. Today's fax network is such that it establishes a link among all people easily. The postal services have been equipped with the fax network.

In the expansion of the telecommunications network, we are gradually finding it difficult to cite figures. In other words, I frankly do not know how many villages will be linked to the telecommunications network during the auspicious 10 days of dawn. I remember that three or

four years ago we had people who had asked for telephone lines and had been waiting 10 years. We can meet their demands immediately today. [passage omitted]

[Correspondent] Minister Gharazi: This is a good opportunity for me to ask you about satellites and to ask you to talk about the progress made by the PTT Ministry in this advanced technological field.

[Gharazi] The good news that we have is that the planning, consultations, and call for bids in this field have been completed. God willing, within the next couple of months we will own a satellite after deciding which bid we will accept. Once the winner is determined, it will take a few years—two to three years—for this project to start offering its services. In short, the country's telecommunications network needs various technology, namely microwave systems, fiber optics, and a satellite communications network. We are using a satellite now too and, God willing, we hope to be able to say one day that we have both a satellite and 10,000 ground stations which will offer all services. In other words, we hope to have both audio and video, fax, and telex services so that all the points in the country—from the deserts to the mountains—and points on sea, on board ships, or in a plane—can be covered. Some of the farmlands that belong to the public and private sectors are willing to pay up to 4-5 million tomans for a telephone line. But we are unable to meet their needs now because of technical difficulties and because we cannot draw a telephone line from Tehran to dozens of kilometers outside Tehran. With a ground station, however, this can be done. We have made many promises and we have taken some steps. A satellite will be able to cover the entire country with ground stations. [passage omitted]

[Correspondent] I want to ask you to discuss your future programs and projects in the telecommunications and postal services.

[Gharazi] Two extremely immense projects are pending in telecommunications and we hope to be able to complete them, God willing. One of these is paging. The technology of being able to page someone from one end of the country to the other exists in the world today. [passage omitted]

Our next project is the mobile telephone. We are trying to follow up this technology so that we can, God willing, implement it.

Another project is the data service which is being discussed in the government today. God willing, we will be able to link the computers to (?camera communication) [preceding word in English]. There are between 40,000 to 50,000 computers nationwide and there is no way to link them together. But with the formation of a data company and its necessary switching network known as packet switch [preceding word in English], we will be able to complete this project.

We have, thank God, been able to manufacture telecards in the country. Various manufacturers have come here. We hope to be able to say one day that we have 50,000 telecard telephones for use inside the country and for intercity communication.

In the postal services, we want to be able to turn the cash postal services into a data and electronic network by which instead of receiving cash, you will receive a renewable card where you can use everywhere. The special characteristics of this is that the expenditures that the country is shouldering for printing and destroying money and the risk of losing cash will be completely removed. We want to mechanize all our postal offices in the future, God willing. [passage omitted]

Thank God, we have gradually instilled confidence among the people that nothing is lost in the post. This confidence should be complemented with scientific, technical, and modern equipment. Postal personnel can offer this service to the people when its own mind is mechanized, and the mechanization of an employee increases his output tenfold. [passage omitted]

### Civil Use of Military Communications Satellites Urged

PM0602093092 *Moscow IZVESTIYA in Russian*  
5 Feb 92 (Morning Edition) p 7

[Article including interview with reserve Colonel Yuriy Pigasov, former satellite communications center commander, by Nikolay Burbyga at IZVESTIYA editorial office; date not given: "Space Communications Stand Idle While Conventional Channels of Communication Are Overburdened"]

[Text] About 10 communications satellites, capable of effecting all kinds of communications with any point on the planet, are currently constantly in operation, in geostationary and elliptical orbits, in the interests of the Armed Forces. However, the military make continuous use of not more than 30 percent of the channels, out of an available total of 1,500 telephone channels and about 1,000 telegraph channels.

The remaining 70 percent, as reserve Colonel Yuriy Pigasov, former satellite communications center commander, said on a visit to the editorial office, are idle. Even during periods of military exercises, Pigasov explains, the technical potential of the satellite communications system is only 60 percent utilized. But there are never more than 60 such days in a year, and in the light of the dismantling of the Warsaw Pact the number has fallen considerably.

What is to be done with the "superfluous" military communications channels? In Pigasov's opinion it is expedient to lease them to the Ministry of Communications, which could use them to meet the needs of the population and enterprises throughout Commonwealth territory, and if necessary outside it.

"Experts have calculated," Pigasov explains, "that it is economically advantageous to effect telephone and telegraph communications via satellites. At existing rates, the cost of the use of a single telephone channel for one minute over a distance of between 600 and 3,000 km is 1 ruble [R]. The minimum charge for transmitting one word in a telegram is 20 kopeks, the maximum—60 kopeks. So revenue from the use of telephone and telegraph channels could amount to more than R2 billion. In view of the ever increasing demand for telexes and faxes on the part of joint enterprises, associations, concerns, and various kinds of commodity exchanges and commercial organizations, the income could be increased many times over."

[Burbyga] How could satellite communications channels be connected to oblast, city, and rayon communications networks in the CIS [Commonwealth of Independent States]?

[Pigasov] It is not difficult technically. In Moscow and Smolensk Oblasts there are two major permanent Armed Forces satellite communications centers which, using terrestrial communications facilities belonging to the

Ministry of Communications, connect the communications channel to military facilities in Moscow and the oblast. By means of very simple switching operations, satellite communications channels are simply switched over to meet the population's needs. As for peripheral oblasts and cities, there military satellite communications stations installed on all-terrain vehicles could be used. The troops have hundreds of these stations.

[Burbyga] But as I understand it the military could reasonably object that as a result of such redesignation, combat readiness will suffer....

[Pigasov] It will not suffer, since those categories of troops and branches of the Armed Forces that are on permanent alert status would remain inviolate. Only facilities that are currently idle would be used for "peaceful purposes."

### Local Authorities Contest Yeltsin Decree on Moscow TV

PM1102102092 *Moscow PRAVDA in Russian*  
10 Feb 92 p 3

[Reports by TASS correspondents Yelena Khoreva and Vladimir Shevel, and commentary by Tamara Martynova, under the rubric "Top Un-Secret": "When He Makes a Mistake, He Puts It Right"]

[Text] [Khoreva report] The Kremlin, 24 Jan—At that address and on that date, yet another decree of the president of the Russian Federation was born. It was devoted to "the organization of the Russian Moscow Television and Radio Broadcasting Company 'Moskva,'" whose founders were named as the labor collectives of Moscow television and radio studios, Moscow City Hall, and the republic Ministry of Press and Information. The head of state also resolved: "That all the technical facilities, material and technical supplies, and broadcasting channels and volumes currently in use be handed over to the 'Moskva' Television and Radio Broadcasting Company."

Moscow, 28 Jan—"We drew up a joint decision on the transfer to Moscow and the Moscow region (among other shareholders) of the third television channel," Dmitriy Katayev, chairman of the Moscow City Soviet interdepartmental commission for social associations and the mass media, stated. "But neither Moscow City Soviet nor the oblast leadership is listed among the founders in the document that came out. Moreover the project, on which City Hall is 'calling the tune,' was not submitted for discussion by the Russian Supreme Soviet Committee on the Mass Media. This alone is a gross infringement. Deputies consider the decree unlawful and will appeal against it."

This is also the position of Moscow Oblast Soviet and Moscow Oblast government. The common opinion is that the decision flouts the right to objective coverage of the processes taking place in a region of nearly 7 million

people. This view was expressed by Aleksandr Pryanichikov, chairman of the Moscow Oblast Soviet Standing Commission on Glasnost. He stressed the patent desire of Moscow City Hall to exercise a monopoly of the media, which simply must not be allowed. The decree should be suspended, and the oblast has decided to put that proposal to the Russian president.

[Shevel report] Moscow, 29 Jan—The routine Moscow City Soviet session adopted a decision expressing the deputies' attitude to the decree, which, they believe, will prevent open monitoring of the administration's actions and will further exacerbate the conflict between City Hall and Moscow City Soviet.

Moscow City Soviet submitted a request to the Russian Supreme Soviet Committee on the Mass Media that the Supreme Soviet session consider the question of suspending the presidential decree in the event that the cofounders listed in the decree do not agree to equal participation by Moscow City Soviet, Moscow Oblast Soviet, and the Moscow Oblast administration. It was proposed, as a legislative initiative, that the future law on television and radio broadcasting contain a provision on equal cofounder status for the representative organ of power and the regional administration.

The session also decided to appeal to all journalists actively to oppose monopolism and defend freedom of speech, irrespective of their political sympathies. Freedom of speech is indivisible.

[Martynova commentary] Maybe these TASS reports seem to require no commentary, because you are right,

of course, esteemed comrade deputies. But it is well known that the only man who makes no mistakes is the man who does nothing. Our president and his team work so hard that you, the people's elected representatives, should certainly be able to see it, if the whole people can see the results day by day and hour by hour.

Recently our television and radio colleagues have been aware of special concern and attention on the part of the head of state. Not a month had passed after Yeltsin's decree on forming the Ostankino television and radio company, when a new one followed—on organizing the Moskva company. And one must agree with the latest innovation, given its good intentions (and we quote): "providing comprehensive information to the population of Moscow and the neighboring regions on the capital's social, economic, and cultural life...." If the document has a substantial, indeed crucial, omission—no problem.

As you know, Boris Nikolayevich possesses a rare quality: If he makes a mistake, he himself puts it right. Remember his decree on suspending publication of certain newspapers in August of the notorious year 1991. Yeltsin later declared the decision invalid. Remember how he revoked (true, not without help from elsewhere, but that does not matter) his own decrees "On the Imposition of a State of Emergency in the Chechen-Ingush Republic," "On the Formation of the RSFSR Ministry of Security and Internal Affairs," and so on, and so forth.

So maybe Moscow City Soviet, Moscow Oblast Soviet, and the Moscow Oblast leadership need not get upset just yet? Let us hope that Boris Nikolayevich will rectify his own mistake once again.

## REGIONAL AFFAIRS

### Agency To Establish Belgian Subsidiary

92WT0077C Helsinki HELSINGIN SANOMAT  
in Finnish 31 Dec 91 p B3

[Unattributed article: "Post and Telecommunications Office Gets Permit To Set Up Company in Belgium"]

[Text] The Post and Telecommunications Office is venturing into the telecommunications market in the European Community area. The Council of State has granted the Post and Telecommunications Office permission to set up a subsidiary in Belgium. The purpose of the company is to provide Finnish companies operating in the EC area with telecommunications services. The company will probably begin operating in Brussels right from the start of the year.

Through the company, they will try to strengthen the Telecommunications Office's position on the international market in competition in the European Economic Area. Activities will be primarily aimed at telecommunications service activities that have been opened to free competition. Such being the case, the company does not have to obtain operating or other permits.

### Telenokia Gets Contract for Hong Kong GSM Net

92WT0088C Helsinki HUFVUDSTADSBLADET  
in Swedish 20 Dec 91 p 12

[Unattributed article by Finnish News Agency: "Telenokia Mobilnet to Hong Kong"]

[Text] Telenokia is to deliver a complete digital GSM [Special Mobile Group] mobile telephone net to Hong Kong. The value of the agreement with Hong Kong Telecom CSL amounts to approximately 110 million markkaa. The first shipments will commence in June.

"The agreement with Telecom CSL constitutes the first GSM deal in Asia, which makes it very important both for GSM and Telenokia," said Sari Baldauf, CEO for Nokia Cellular Systems.

Last Thursday Nokia Mobile Phones also announced that the company would deliver 20,000 GSM mobile phones to the German company Mannesmann Mobilfunk. The new digital mobil phone network will become operative next year.

Sales Manager Anssi Vanjoki stated that the agreement was the first large contract in Europe involving the delivery of digital mobil phones. By the year 2000 the GSM system is expected to have 20 million subscribers.

### Telenokia, NordicTel To Set Up Swedish Mobile Net

92WT0077B Helsinki HELSINGIN SANOMAT  
in Finnish 31 Dec 91 p B3

[Unattributed article: "375-Million-Markka Mobile Phone Network From Nokia for Sweden; Buyer Is NordicTel, a Private Company That Competes With Telecommunications Office"]

[Text] Nokia is to supply Sweden with a mobile phone network worth 375 million markkaa.

Nokia and the private Swedish mobile phone company, NordicTel, have signed a contract according to which Nokia is to supply NordicTel with a digital GSM [global system for mobile communications] mobile phone network in 1992-93.

According to Nokia, what is involved is one of the biggest private mobile phone system sales in the world. Equipment shipments to Sweden are to begin right away, in January, and, according to Nokia, the first phase of the network will be completed in six months.

NordicTel is one of the three companies in Sweden that provides GSM mobile phone services. It competes with the state Televerket [Telecommunications Office] and the private firm, Comviq.

According to Nokia, GSM is to be introduced in 18 European countries and there will probably be a total of 15 million subscribers. The system is also spreading to, among other areas, Asia, where Nokia will be delivering 100 million markkaa worth of equipment to Hong Kong in June.

### For Handsets

NordicTel general manager Flemming Orneholm said that his firm competes on the Swedish GSM phone market by building its network rapidly and with customer service, which is why the network is right from the start being built for handsets.

According to Telenokia mobile phone network, Nokia Cellular Systems, manager Sari Baldauf, the transaction will increase the importance of Sweden as an important market area for the company.

It is estimated that there will be nearly 2 million GSM subscribers in Sweden by the end of the decade and about 15 million in all of Europe.

In Finland the Radio Line Company began a trial run with a GSM system supplied by Nokia on 1 August, which was internationally designated as the opening day for the introduction of the GSM. On that occasion, Nokia presented a production-ready GSM phone.

**CYPRUS****CyBC To Operate Second TV Channel**

*NC2101214992 Nicosia Cyprus Broadcasting Corporation Radio Network in Greek 1700 GMT 21 Jan 92*

[Text] Operation of the Cyprus Broadcasting Corporation's [CyBC] second television channel, to begin on 1 February, has been described as a milestone in CyBC's radio and television work and for the country in general.

At a news conference this afternoon, details were released about the programs for the second channel. CyBC Programming Director Kharilaos Papadhopoulos said the goal for the second channel is to complement the first one and provide another option to television viewers.

Broadcasts on the second channel will begin at 1600 and end around midnight Monday-Saturday. On Sunday they will begin at 1200. At 1700, 2100, and 2300 brief newscasts will be broadcast.

**DENMARK****Teledanmark's Mobile Phone Venture Saves Industry****Large Exports Expected**

*92WT0069A Copenhagen BERLINGSKE TIDENDE in Danish 13 Dec 91 Section II p 1*

[Article by Asbjorn Jorgensen: "New Firm To Save Danish Telephone Industry"]

[Excerpts] Export to all of Europe and hundreds of jobs in the depressed electronics industry will be the gain if a new cooperation between the electronics firm of Soren T. Lyngso, Inc., and Teledanmark Mobil succeeds.

The Danish traditions in telephone production, previously upheld by firms such as GN Store Nord and Alcatel Kirk, will thus be saved. The cooperation, however, does not apply to telephone instruments, but advanced products for the GSM [global system for mobile communications] mobile telephone system. [passage omitted]

Soren T. Lyngso has many years of experience in electronic guidance, measurements, specialized computers, and automation. Through the agreement with Teledanmark, the large electronics enterprise moves into the mobile phone area, which is predicted to become the major growth area of the 1990's. GSM will really fly next year.

Control by means of GSM may apply to tank wagons, water towers, fire engines, etc.; this is today done by means of private radios or fixed wires.

Position-fixing by way of satellites and traffic guidance are other possibilities. According to information obtained

by BERLINGSKE TIDENDE, the agreement between Lyngso and Teledanmark applies to everything out of the ordinary. [passage omitted]

**Based on GSM Technology**

*92WT0069B Copenhagen BERLINGSKE TIDENDE in Danish 14 Dec 91 p 6*

[Article by Asbjorn Jorgensen: "New Electronics Firm Will Cover Europe"]

[Text] As mentioned in BERLINGSKE TIDENDE yesterday, the electronics concern of Soren T. Lyngso, Inc., and the state-controlled telecommunications company of Teledanmark have joined forces on the development, production, and marketing of highly advanced systems for the coming European GSM mobile telephone system. They will stay away from ordinary speech transmission; the firm will produce specialized products for guidance of cars, control systems, and so forth.

"The target group is the 20 million European GSM users at the turn of the century," says Jakob Lyngso, managing director.

Members of the staff of the two concerns have already started on the work, and will be going into the market to find good products and staff.

Teledanmark Mobil and Lyngso have not decided how much to invest in the company. It will probably be between 10 and 30 million kroner. They stress, however, that it will be a question of hundreds of jobs.

With the new company, it is the second time within a couple of weeks that the Teledanmark concern announces close cooperation with a private Danish firm.

Telecom (the former Statens Teletjeneste) and the A.P. Moller firm of Maersk Data have invested 20 million kroner in a joint subsidiary by the name of Temanet, which will sell highly specialized communications services in all parts of the globe. Telecom has equipment and expertise, Maersk has, in particular, the ramified network throughout the globe.

The Teledanmark companies of KTAS and Jydsk Telefon have also subsidiaries within the trades and industries.

"We are now fulfilling the intentions underlying the formation of Teledanmark," says Gregers Mogensen, president of Teledanmark. One of the very intentions was to create new growth areas for Danish industry.

**New Partner Joins**

*92WT0069C Copenhagen BERLINGSKE TIDENDE in Danish 20 Dec 91 Section II p 2*

[Article by Asbjorn Jorgensen: "Teledanmark Enters Into Another Alliance"]

[Text] With an agreement with the Data Processing Center of the Agricultural Sector (LEC), Teledanmark Mobil has completed the circle around its GSM mobile telephone system.

A couple of weeks ago, Denmark's two large distribution chains for mobile telephones, Team Motorola and Talkline, were recruited. Last Friday, a joint subsidiary was formed with the electronics firm of Soren T. Lyngso. That company will develop advanced solutions for the GSM network in the hope of export to all of Europe.

And now the agreement with LEC on the use of GSM in the transfer of data.

#### Data Processing Solutions

While the Lyngso firm will develop and produce instruments and software for the collection of data, for monitoring and remote control of automobiles and machinery, LEC will develop data processing solutions. When data have been collected and transmitted through air and ground wires, GSM customers will thus be able to use data in their own data processing systems.

LEC will develop data bases and prepare data processing in their central plants and will make data processing systems for customers and various branches within the trades and industries.

"The customers cannot use signals from 500 cars or 1,000 environmental measuring stations without data processing and presentation taking place," says Keld Balle-Mortensen, managing director of Teledanmark Mobil.

With the agreement, Teledanmark also gains direct access to the many potential customers, LEC's primary circle of customers, the agricultural sector: farmers, processing, and the entire retail trade.

#### Orders Secured

No joint subsidiary will be established, as was the case under the Lyngso agreement, even if the production will run into tens or hundreds of millions of kroner. LEC will be working ad hoc.

Both Lyngso and LEC were together with Maersk Data in the consortium that was regarded as the favorite competitor of Teledanmark in the GSM network. The consortium lost, but both firms have thus now, nevertheless, secured GSM orders.

#### Phone Firms Merge To Form NKT Telecom

92WT0098G Copenhagen BERLINGSKE TIDENDE  
in Danish 22 Jan 92 p 6

[Text] The two independent subsidiaries of NKT Telecom—NKT Elektronik and NKT Telekabler—have now been merged into one company, which has been given the name NKT Elektronik.

The firm of NKT, under which all the companies will fall, estimates it will do better business with a common business area and stronger project management in connection with bigger contracts.

The merger will occur shortly and the name change will take effect as of 1 February 1992.

Also as of 1 February director Ole Steen Andersen will be replaced by divisional director Poul Friis, who has simultaneously been named managing director of NKT Elektronik, Inc.

The NKT Telecom board will assume the management of the new company. However, director Ole Steen Andersen will succeed board director Knud Rasmussen as chairman of the company's governing board.

NKT has reported that the merger of the two divisions will mean that 50 to 60 jobs out of 580 will disappear.

#### Phone Company Chief on Project in Poland

92WT0098F Copenhagen BORSENS  
NYHEDSMAGASIN in Danish 29 Nov 91 pp 40-41

[Article by Eigil Evert: "Danish Telephones for the Polish Lady of the Lake"—first paragraph is BORSENS NYHEDSMAGASIN introduction]

[Text] This is the story of how the "Social Democratic" Danish telephone style outcompeted the multinational giants in the EC competition for telephones for East Europe.

The hotel room cost 12 kroner a day, including full board, when director Thomas Andresen, 42, on five occasions as of last October spent a couple of days in a hotel in the small Polish provincial city of Krzeszowice 10-15 kilometers from Krakow.

But that princely investment has now paid off: Andresen and his partners at Danish Telecom International, DTI, have brought home orders worth a good 30 million kroner to the Danish telecommunications industry—and have expectations that this could develop into new orders worth perhaps an additional 500 million kroner—in Poland alone.

Because, surprisingly, the Danes took over in the first EC-financed project involving telecommunications equipment for the new friends in East Europe, and this happened in an offer for bids involving 20-25 of the major players in the telecommunications industry, including various multinational giants such as Siemens, Philips, and Alcatel.

"We won because we in Denmark are very efficient about providing telephony to the Lady of the Lake—telephone solutions that don't cost an arm and a leg. Good old Danish Social Democratic style works just fine with an impoverished system such as the Polish one which, as elsewhere in East Europe, has very poor telephone service," Andresen said.

The reason Andresen knows something besides a low-tech, Social Democratic Lord's Prayer is that en route to the order, DTI had to contend actively with what were presumed to be dirty tricks from the major competitors.

"Corruption isn't dead in the East European countries simply because they've gotten rid of Communism. From good sources we had clear indications that in each case one of our competitors tried to get help from a Polish deputy minister with a simple bribe. We countered sharply by getting our own communications minister, Torben Rechendorff, to write a letter to his Polish counterpart. This letter said that we had received information to the effect that our offer had come out well in the competition, and that we would be pleased to come and do the job. At the same time a copy of the letter was sent to the EC, so at the end of the decisionmaking there was a bit of pressure," said Andresen, who feels that—in matters of this sort and in that part of the world—it is not entirely uncommon for a political favor from a minister to "be rewarded" with money paid into an account in Switzerland so "he can live normally when he retires as a minister."

"Our accountants would also like to acknowledge things like this, but we don't want to," said Andresen, who on the other hand made these numerous visits to Krzeszowice to bring local knowledge to the Danish project—and so the local authorities would not be unfamiliar with the DTI logos on the ring binders in the proposal material when matters got serious.

"A dinner or an airplane trip to Denmark isn't the same thing as what the big guys do," Andresen said.

In addition, a few of the competitors in the EC bidding process made a major departure from the required bidding form with its detailed arrangement and practically promised to give their solutions to the Poles for free.

"That was a cheeky, haughty attitude. It's like when a pusher in the drug trade gives the first two hits away for free, and fortunately the Poles and the EC didn't like it," said Andresen, who to begin with was aware that exporting telecommunications equipment very quickly takes on political overtones.

#### **Opportunity for a Good Reference or Making a Big Fool of Yourself**

As seen through Andresen's eyes, the opportunity in the order is almost incomprehensible.

The offer for bids covered the first four of a total of 300 projects that the Poles now wish to initiate to acquire a more up-to-date telephone system, and the Danes participated in only two out of the four projects they won.

"I think we could have gotten the other two as well if we had tried. We'll now look at these two which in any event are pilot and demonstration projects, where we'll get an opportunity for a good reference—or to make big fools of ourselves. If we manage as we hope to, then there's no

doubt that we'll be in a good position when the next jobs need to get underway, and there will also be attention paid to the jobs in the other East [European] countries," Andresen said.

#### **Almost Like Being Hooked on the Television Series "Matador"**

In the competition DTI did not come up with technologically very advanced solutions but came up instead with a system which has been thoroughly tested in thinly populated areas in Denmark.

Involved are small, flexible, digital central exchanges, autonomous units which can be "hidden" in a roadside box or a village hall, and expanded in small modules.

When the competitors talk about small systems, they are talking about central exchanges for 400-800 subscribers, but which DTI and their partners, primarily DIAX in Struer, which is owned by L.M. Ericsson and B&O, have commercial applications if just 20 subscribers can be found in an area.

"So the systems can be expanded. On the other hand our solutions are not quite as competitive when we get into areas with 10,000 subscribers or more," said Andresen, who, among other things, was in charge of international sales for Danfoss in Germany for nine years.

"East Europe is something entirely different. The Polish cities we're now going to work in remind you of the cities we saw on episodes of the television series 'Matador' from the 1940's—and we feel unbelievably welcome...." Andresen said.

#### **Firms Join To Launch Mobile Phone Export Effort**

*92WT0098E Copenhagen BORSENS  
NYHEDSMAGASIN in Danish 29 Nov 91 pp 12-13*

[Unattributed article: "One Billion at Stake"—first paragraph is BORSENS NYHEDSMAGASIN introduction]

[Text] GN Store Nord and the partners in Dansk Mobil Telefon will be successful with their billion-kroner investment in a new mobile telephone network only if they take over half of the market. That will be difficult. The publicly-owned TeleDanmark is gearing up the old NMT network and is far along with its own digital system.

Denmark is a nation of mobile telephoners. By the spring we will have 200,000 mobile telephones. Only in the other Nordic countries is the system more widespread.

So a motivated market will be waiting when, on 1 March 1992, GN Store Nord and the partners in Dansk Mobil Telefon have their first discussions of the digital GSM [Special Mobile Group] network.

The greater Copenhagen area is the stage for this premiere, but Ole Mikkelsen, the director at Dansk Mobil

Telefon, "would commit himself to saying" that two-thirds of Denmark will be covered by the end of the year. By 1994 at the latest the entire country should be covered.

But oddly enough the great spread of mobile telephones could prove one of the biggest obstacles to GN Store Nord's success.

Because at present Danes chat on the well worn NMT network. And GN Store Nord will be marketing a new network which by the end of 1994 will have the same coverage as the old network.

That is why TeleDanmark has not thought about giving up the current NMT network. And TeleDanmark can ride two horses at the same time. Indeed the state-owned company is also the operator of the GSM network.

"I would strongly caution against seeing GSM as a miracle, everything fluctuates up and down. We are thinking about selling NMT late in the year 2000. Otherwise we would already be starting to pull in the throttle—and we're not doing so. Quite the contrary, we want to invest in both better coverage and new facilities," said TeleDanmark's sales director Peder Egmose.

The opportunity offered by the new GSM network is primarily that users can make calls abroad. To 18 different countries by next year. They can also transfer data and—somewhat later—video on the network via their mobile telephone.

The analogous NMT network is not that smart. But TeleDanmark wants to make it more attractive by installing intelligent functions, for example a mailbox to receive messages. In addition TeleDanmark will soon make a super offer to people with leisure time. Outside of business hours, they can make calls for next to nothing.

Christian Rovsing, a civil engineer, was a member of one of the consortia which bid on the GSM license. He says the answer to the question of the expansion of the GSM network lies with TeleDanmark:

"All the installation costs (presumably one billion, editor's note) will be written off onto NMT. The system functions very well indeed and it's well run. My assessment is that TeleDanmark can bring the price of NMT down and still earn money on it. If they do, then GSM will not be as widespread in Denmark as it is elsewhere."

But TeleDanmark does not want to slash the price of NMT, where a call currently costs 2.80 kroner per minute. Not right away, at any rate.

"The market doesn't react that much to price. That is why we and Dansk Mobil Telefon will go out and invest approximately two billion [kroner] in the next few years. We will get interest on that money, so there's scarcely any basis for price competition," said Peder Egmose.

So even if there are two competing networks—and two operators for one of them—calls will cost the same.

Approximately 2.80 kroner a minute and 240 kroner in quarterly subscriber charges.

#### **Distribution and Marketing Will Determine the Telephone War**

The two competitors for the GSM network will divide on the issue of so-called smart cards. These are small cards which the user inserts into the telephone which identify the user and calculate the length of the call. Will TeleDanmark Mobil or Dansk Mobil Telefon's name be on the card?

Dansk Mobil Telefon is waiting for there to be one-half million mobile telephone users in 1999. Two-thirds of them are on the GSM network. "Of them at least half the customers are with us," said director Ole Mikkelsen. Based on known prices, that would produce phone call revenues of a good one billion [kroner] per year by the year 2000 for Dansk Mobil Telefon, according to BORSENS NYHEDSMAGASIN's calculations. As early as 1995 there will be revenues of 110-130 million kroner and approximately twice that the following year.

Ole Mikkelsen says these forecasts are not far from his own. If the figures hold up, the company will achieve a positive cash flow in 1997.

Generally speaking all experts agree that by the turn of the century every tenth call will use a mobile telephone (however in its prospectus GN Store Nord talks of at least 11 percent of the population).

But the ways will part when the two networks are assessed. Peder Egmose, TeleDanmark, said: "Nowadays you commit yourself to nothing by waving your hands and talking about major access. But none of us knows what will happen to the market. None of us knows if we're beating the drum too soon. We're not familiar with conservatism. So the only certainty is that major sums will be used to cultivate the market."

Distribution and marketing will be all important. And in this respect TeleDanmark Mobil is several lengths ahead of its private competitor.

In part TeleDanmark can expect that the company's smart cards will be for sale in all the telephone company's phone stores. In part TeleDanmark has an option on an agreement with two private chains, Team Motorola and Talk Line, with almost 100 stores.

At present neither TeleDanmark nor Dansk Mobil Telefon will reveal their market [strategy]. But a lot of thinking is going on—about agreements with Falck, the United Danish Car Owners [FDM], and chains of car dealers or radio stores.

Concerning this competition deputy director Frits Larsen of GN Store Nord said: "We'll sell two identical glasses of water. It's a question of marketing."

**GN Store Nord Laying Cables To Poland, Russia**

92WT0098D Copenhagen BORSENS  
NYHEDSMAGASIN in Danish 29 Nov 91 p 14

[Unattributed article: "Gilt-Edged Cables to the East"—first paragraph is BORSENS NYHEDSMAGASIN introduction]

[Text] It is an absolute certainty that GN Store Nord will earn money on its underwater cable to Russia and its land cable through Poland.

The buying frenzy exceeded all expectations last week when 25 dealers from foreign telecommunications companies met at the Hotel Sheraton in Copenhagen. On a single day Tele Danmark sold 90 percent of the capacity in its half-share—the first 630 kilometers of a soon to be laid Danish-Russian underwater cable.

Tele Danmark had expected to sell only 70 percent. The sale meant that Tele Danmark got 225 million kroner of its 250 million kroner investment refunded then and there. Before the cable was put into service.

The major sale reflects a similar interest in the second half of the underwater cable, viz. the 630 kilometers which are owned by the Russians but being financed by GN Store Nord.

The Russians do not wish to sell off their cable but are sitting pretty waiting for future traffic profits. And GN Store Nord as well must await the actual outcome of events. But if reality comes up to the optimistic expectations, GN Store Nord will see its financial outlay very well repaid.

The Danish-Russian Cable Project, which is its official name, will become the first fiber optic cable to Russia. It can handle 8,000 conversations at a time, transmission time is very rapid, and the project has a significant lead on the other planned cables—among them the English [firm of] Cable & Wireless intends to lay an optical cable between Aberdeen and Kingisepp through Sweden.

Initially a radio link will link the Danish underwater cable with Moscow 810 kilometers away—and with St. Petersburg 124 kilometers away. The radio link will cost 100 million kroner and be paid for jointly by Tele Danmark and GN Store Nord. The sum is not mentioned in GN Store Nord's stock market prospectus. Later the radio link will be supplemented by an underground fiber optic cable.

**Russians Hold Out Prospect of New Work to GN Store Nord**

In their work together thus far, GN Store Nord and Telecom have earned the admiration of the Russian government.

"We were offered many projects. But the Danish project was very well prepared. For us it is important that the Danes have a good understanding of current Russian problems and that they will support us with technology

and training," Aleksandr Kudriavtsev, the deputy communications minister, told BORSENS NYHEDSMAGASIN.

GN Store Nord will be on solid ground when the negotiations get underway for a 6,600-kilometer-long optical cable running from Moscow to Vladivostok on the Pacific Ocean. This cable is expected to be completed by the year 2000 at the latest and represent an investment of approximately seven billion kroner.

Aleksandr Kudriavtsev stated that he sees the Danish-Russian cable project as the start of the trans-Soviet cable project: "We are very satisfied with our work with GN Store Nord, and we are seriously thinking of continuing with it on upcoming projects."

GN Store Nord's second cable project is called the Poland North South Link, an investment of 210 million kroner. The Nordic Cable and Wire Factory, Inc. [NKT A/S], the Danish cable manufacturer, will be responsible for installing and starting up the cable, which is owned by Poland but being financed partially by GN Store Nord and Telecom, which have shares of 95 million and 31 million kroner respectively. Repayment will occur when the parties benefit from the traffic revenues for the next 15 years.

According to BORSENS NYHEDSMAGASIN sources, what is involved here is approximately 15-20 percent of the revenues, and that, viewed conservatively, represents significantly more than the market rate of return.

Even today the telecommunications link between Warsaw and Copenhagen is a significant lifeline for Poland. One year ago Tele Danmark laid a fiber optic underwater cable to Bornholm which was later extended to Poland's Baltic Sea coast. The traffic here has already increased more than expected.

"I'm 100-percent certain the telecommunications traffic through the Polish cable will increase in the years to come. We are already underway laying the cable, and we got there first," said GN Store Nord deputy director Frits V. Larsen.

He based his prediction on the assumption that several international underwater cables, among them cables from Norway, Canada, Germany, and Holland, will be established on the west coast of Jutland in the next two years. These links will increase the transit traffic through Denmark to and from Poland and the Soviet Union.

Further, GN Store Nord has had discussions with Czechoslovakia about extending the cable from Poland's southern border further south and all the way to Vienna. In the meantime several international network operators are also planning to lay cables through Poland, among them the Deutsche Bundespost, which expects to lay a cable from Frankfurt to Warsaw in 1993 and later extend it to Moscow. Thus GN Store Nord will share the telecommunications traffic with other cable networks.

### GN Store Nord Boosted by Foreign Contracts

92WT0098C Copenhagen BORSENS  
NYHEDSMAGASIN in Danish 29 Nov 91 pp 10-11

[Article by Hans Boving and Morten W. Langer: "Store Nord Thinking Big"—first paragraph is BORSENS NYHEDSMAGASIN introduction]

[Text] Last summer GN Store Nord tried to seek capital for the new digital GSM [Special Mobile Group] mobile telephone from a number of pension [plan] treasuries. They said no thanks. The company will now be seeking a cool one-half billion [kroner] on the Copenhagen Stock Exchange. Both the risk and the profits potential are very high. On the other hand, profit is certain with two other projects: an underwater cable to Russia and a telecommunications cable through Poland.

GN Store Nord—the old Danish telegraph company—is aiming to achieve some of its former glory from the 1870's, when the company linked continents and laid cables to the Far East, the Soviet Union, and North America.

Ever since then things have gone downhill with these famous cable projects. The company has been experiencing bad economic times, and recently managing director Thomas Duer has sold off huge parts of the companies and instead built up a treasury of almost 1.2 billion kroner. The treasury consists of ready cash, securities, and rental properties.

The remaining companies—which are mostly within the telecommunications field—are suffering from particularly poor earnings. Even GN Store Nord says that several of the companies have "structural problems." Profits come primarily from yields on the treasury.

At the same time it is this very treasury which provides a solid base for the major investment-intensive projects which GN Store Nord is currently promoting.

In the years to come, the company will become involved in investments worth many hundreds of millions [of kroner] divided among three major projects which could be the first step toward new glory: a telecommunications cable from Albertslund through the Baltic Sea to St. Petersburg, a cable through Poland, and nothing less than GSM, the digital mobile telephone network of the future, in which GN Store Nord is a participant in a consortium which will compete with the other licensee, Tele Danmark.

GN Store Nord's investment will run in excess of 600 million kroner. This is a sum which the company can take out of its own treasury without any problems. Director Thomas Duer nevertheless hopes that the company will maintain a solvency of over 60 percent.

As a result of this strategy, the company has now turned to investors on the Copenhagen Stock Exchange, where it has offered to sell them 1.7 million shares at the preferred rate of 300 [kroner per share]. The stock issue will

produce 500 million kroner, of which the guarantors Unibank, Den Danske Bank, and Hafnia Erhvervsbank will get a mere 25 million kroner.

However the plan originally called for institutional investors to invest capital in the mobile telephone network. Last summer GN Store Nord negotiated with the Municipal Pension Insurance [Fund], the Danish Engineering Federation's Pension Fund, the Pension Insurance Institution [PFA], and the PKA [expansion unknown] to get them to purchase shares in Dansk Mobil Telefon, A/S, the company which is to be set up to run the network.

Among the reasons for the unanimous no, there was a good deal of uncertainty about future earnings. "We originally wanted to sign up for a smaller share in the Dansk Mobil Telefon consortium. We felt that a 51-percent share was too much of an isolated risk. We decided to find other investors in the project," said Erik B. Rasmussen, GN Store Nord's board chairman.

After the pension funds were sounded out, only the Oresund Cryolite Company remained. The name of its board chairman is—Erik B. Rasmussen. Nevertheless he emphasized that as chairman of the board of the Cryolite Company he had disqualified himself on the issue of this investment. "The negotiations were handled by the board's deputy chair, Leif Arnesen," he said.

The Oresund Cryolite Company is expected to assume a 15-percent share of GN Store Nord's share. Remaining will be a 36-percent share, i.e. more than originally expected. "We have now attracted greater confidence in the project and believe this share is sufficient," said Rasmussen. "Both the risk and the earnings potential in the project are very high."

Now, however, at the end of November, the Cryolite Company has not yet sent the required request to the minister. "A formality," Erik B. said.

Between now and 1994 Dansk Mobil Telefon A/S will invest between 800 million and one billion kroner in its plant, Ole Mikkelsen, the company's director, told BORSENS NYHEDSMAGASIN. Writing on the same subject in its stock market prospectus, GN Store Nord noted that the total investment will be approximately 500 million kroner.

On the subject of the difference, board chairman Erik B. Rasmussen said: "This half billion will only cover the GSM network's plant. To this you have to add administrative costs, marketing, interest payments on the debt, and that sort of thing."

GN Store Nord bases its prediction that this will become a profitable business within the foreseeable future on a number of uncertain assumptions. Dansk Mobil Telefon will capture one-half of the new market for digital mobile telephones between now and the year 2000. That figure could just as well be 30 as it could be 70 percent, observers believe. Shareholders in GN Store Nord are on

safer ground when they evaluate two other major projects: an underwater cable to Russia and a 1,500-kilometer-long telecommunications cable through Poland. In this area GN Store Nord's profit will undoubtedly be well over the market interest rate, albeit with a certain degree of risk.

### Research Institute Closes Telecommunications Unit

92WT0098B Copenhagen BERLINGSKE TIDENDE  
in Danish 28 Jan 92 p 3

[Article by "JJK": "ElektronikCentralen Making Cuts"]

[Text] Leif Rasmussen, 54, the director at ElektronikCentralen, will now be leaving the firm to seek other employment. But, in order to ensure a constructive transition to a new director, he will keep the chair warm until a new director is found.

The technological service institute has embarked on a round of cost-cutting which, among other things, has led to the closing of its telecommunications department which in recent years had found it difficult to find the necessary customer base. In the future ElektronikCentralen will specialize on service to industries in areas where there is a demonstrated need.

In October management adopted a new strategic plan for ElektronikCentralen that strongly emphasized its business mission and deemphasized research and development initiatives.

### Companies Join in Campaign To Boost Exports

92WT0098A Copenhagen BERLINGSKE TIDENDE  
in Danish 28 Jan 92 p 3

[Article by Asbjorn Jorgensen: "Teledanmark and Industry Want To Help One Another"—first paragraph is BERLINGSKE TIDENDE introduction]

[Text] Growing competition in the telecommunications field is forcing the Danish telecommunications industry, service providers, and Teledanmark to come together. The aim for all is strength on the domestic market and export opportunities.

The Danish telecommunications industry and the firm of Teledanmark need one another very badly. Both parties need to be firmly based in the domestic market to be able to export. And the telecommunications and electronics industry in particular needs to export—the Danish market is too small.

On this the parties were in agreement at a closed door conference in Skorping near Aalborg in which leading figures from almost the entire Danish telecommunications industry participated.

"Teledanmark will compete for services. By being open to industry, both we and they can benefit," said Hans Wurtzen, Teledanmark's managing director. He referred

to cooperation on the NMT mobile telephone system, which has resulted in significant Danish production of mobile telephones.

"Of course one conference by itself is not important, it needs to be followed up by specific projects with individual companies." Wurtzen declined to name names.

From industry, the managing director at L. M. Ericsson, Kaj Juul-Pedersen, who is the president of the Electronics Manufacturing Federation, said:

"Teledanmark was founded because the telecommunications companies are in a new competitive situation with the EC's liberalizations. One of Teledanmark's aims was to promote Danish industry. But that is not enough; industry must pitch in as well."

The closed door conference for leaders in the telecommunications industry will be followed up in the spring with, among other things, cooperation on specific projects.

## FINLAND

### Government Wants Competition in Data Transfer

92WT0086A Helsinki HELSINGIN SANOMAT  
in Finnish 21 Dec 91 p B6

[Unattributed article: "Government Would Like To Lift Restrictions on Fifth of Data Transfer; Telecommunications Service Prices To Correspond to Costs"]

[Text] On Friday the government proposed several changes in the laws governing telecommunications to the parliament. The bills remove restrictions on competition in data transfer and change the telecommunications service pricing system.

The government is proposing that an operating permit issued by the Council of State no longer be required for connected data transfer. Data transfer is communication between computers.

In connected data transfer the connection is made individually each time in an ordinary telephone network.

Data transfer is also effected with permanent connections, in which case, for example, a communications line is installed between two places of business of a given company. Data transfer to be conducted with permanent connections is still subject to a permit.

Data transfer sales volume amounts to a total of about 500 million markkaa. Connected transfer accounts for about 100 million of the sales volume.

Both the Post and Telecommunications Office (PTL) and local telecommunications services and Datatie, owned by them, now offer data transfer services. The Communications Ministry is of the opinion that automatic data processing companies will provide data transfer services after the laws are changed.

### Prices Corresponding to Costs

According to the government bill, telecommunications services must price their services so that what they charge reasonably corresponds to the costs incurred in providing these services.

To verify the correspondence to costs, the Communications Ministry will have the right to issue orders regarding the publication and listing of telecommunications fees, among other things.

Telecommunications services can now charge more for some services and less for others. The telephone services, for example, are suspected of charging excessive fees for the installation of telecommunications equipment, since practically speaking they have a monopoly on installation services.

The bill does not automatically mean that the PTL will have to give up overcharging for long distance calls because the agency's pricing is specified in a law of its own.

The PTL overcharges for long distance calls to cover its losses on local calls in sparsely settled areas. Moreover, the PTL has to debit part of its profits to the national treasury.

If the parliament approves correspondence to costs, it will become increasingly more difficult for the PTL to maintain the fabric of profit debiting.

### Identifying Data to Police

The government proposes that the police be given the right to obtain so-called identifying data on telephone calls. These data are the numbers that are called and the duration of the calls. The telecommunications services gather the information in question for their billing.

At the present time the police have the right to obtain information from a telecommunications service on the origin of calls only when investigating disturbances of the peace. According to the bill, the procurement of identifying data would be extended to situations in which the police are investigating a flagrant crime.

Offenders get at least a year in prison for flagrant crimes. These are capital crimes, flagrant robbery, aircraft hijacking, and flagrant drug crimes.

Providing the police with identifying data does not mean that they are given the right to tap phones.

According to the government's bill, a branch outlet of a foreign company entered in the Finnish Trade Register could engage in telecommunications activities if it obtains an operating permit from the Council of State.

The Communications Ministry reports that it has received inquiries from abroad about getting into the Finnish telecommunications services market.

The bill would also increase competition for telecommunications contracting: An individual or a company that meets the requirements of the Telecommunications Administrative Center could be registered as an authorized telecommunications contractor.

### Phone Company Board Member on EC Tie Impact

*92WT0088A Helsinki HUFVUDSTADSBLADET in Swedish 22 Dec 91 p 5*

[Article by Ingvar S. Melin: "Telecommunications Competition"]

[Text] The telecommunication markets of most EC countries allow much more free competition than the telecommunication field in Finland, writes Ingvar S. Melin, Ph.D., who himself is a board member of the phone company in Helsinki.

A uniform market will exist within the European Community starting in the beginning of 1993. This will mean that competition will be unencumbered by national borders. This intra-European market promotes increased mobility of people, goods, services and capital. It also involves cooperation in the fields of the environment, education, research, consumer issues, etc.

A prerequisite for increased mobility is the replacement of various national rules, which impede trade and other activities, with common uniform rules. These are defined in regulations and so-called directives.

The consumer's freedom of choice has traditionally not been connected to telecommunications services. The EC telecommunication directives are, however, permeated by this spirit in regard to:

- The standardization of customer equipment such as telephones, fax equipment, switchboards;
- Network service, or the possibility of utilizing the telephone exchange and the phone lines; and
- "Upgraded" service, or an assortment of additional services which can be effected with the aid of the phone network.

The opinion of the European Community is that telephone customers should be able to acquire their equipment in a free market: The customer may acquire the equipment he needs either through purchasing or leasing, from any telephone equipment supplier or through any other source within the EC. The telephone equipment must, however, fulfill certain technical requirements. Even the international telecommunications equipment trade benefits from international standardization.

All restraints were removed from the Finnish consumer telecommunications equipment trade in 1987, but in reality market conditions were practically free since the beginning of the eighties. Today there exists a wide selection of terminal equipment and other customer

equipment with a wide array of choices in design, features and price. There are many manufacturers and importers. In this very competitive marketplace the equipment is sold by the telephone companies' telecommunication shops and by various other retailers, including department stores and mail order distributors.

Within the Economic Community, the regulation of telephone networks follows the same principles which apply to public utilities. The premise is that public or, in other words, monopolistic or concession-based telephone services are not subject to competition. On the other hand, some very specific requirements are prescribed, and their implementation is controlled by the EC.

The main operator of the telephone network is required to follow some basic principles, such as:

- All users of a telephone network must be treated equally, in respect to what is included in the service and the price of the service; this also includes providers of competitive services;
- The pricing must reflect costs, without subsidizing various activities;
- Public procurement by the operator, meaning that all interested suppliers within the EC are publicly given the opportunity to submit bids, which result in the lowest bidder being chosen as the supplier, without having to or being allowed to favor domestic suppliers, as is now the case. The procurement directives for telecommunication equipment within the EC, apply to all purchases exceeding 600,000 ecu, which is about three million markkaa.

These rules are going to apply in those EC countries where the network operator is a government owned phone company alone, or where such a company is dominant. It remains to be seen how government owned telephone companies are going to adapt to a situation where they are not allowed to earn substantial revenues by charging long distance and international callers excessive rates.

The Finnish telecommunication laws do not attempt to shape the field or control the number of operators, but instead control it through concessions. The government issues telephone service concessions after careful consideration and the telecommunication laws do not prohibit the issuance of parallel concessions. The concessions which apply to the existing telecommunication functions have been granted:

- Mainly to consumer owned regional telephone companies,
- To the Finnish Post Office Administration, which operates under civil law, and
- To some telephone network companies, which are also owned by the users, and are engaged in data transmissions, limited voice transmissions and wireless telephone traffic.

Today the Finnish telecommunications customer already has various options in his choice among data transmission and mobile telephone services and among internal telecommunication services within larger companies. In the data field, the private telephone companies are probably the market leaders, even on the national level.

As far as mobile telephone services are concerned, the new GSM-net (Global System for Mobile Communications), which replaces today's NMT-net, will be introduced in the beginning of 1992, and will eventually cover all of Western Europe.

An application for a parallel concession for domestic long distance telecommunications traffic was filed last October by Fjarrnetet Nian Ab, which was formed by the private regional telephone companies. When this concession has been issued, the individual telephone owner will also be offered a choice of long distance carriers. He can access this inexpensive network, by striking an additional digit when dialing a long distance number.

If he continues to choose the government operated long distance network, he will contribute to the support of the public administration with its inflated work force, which was apparently created by overly ambitious investments. It is therefore in the consumers' interest that the concession in question be granted as soon as possible, as it is a well known fact that the Finnish post and telecommunications administration is charging long distance callers unreasonable rates.

Consumers of telephone service in other European countries do not yet appear to have this much freedom, because it is harder to break the dominant monopolies there.

In November 1991, the Finnish Government granted the Helsinki telephone company the concession for telephone service between Helsinki and Tallinn. This enables various parallel telephone services with Estonian partners.

The Finnish authorities have thus given the Helsinki telephone company an opportunity to also develop international cooperation.

We are referring to add-on services when we talk, for instance, about such data transmissions where in addition to providing a link, the information is also "improved" within the system by manipulation or storage of the data in either a preprogrammed or terminal-directed manner.

According to the Economic Community, interested suppliers of these services should be provided with transfer capacity within the network. The users of the service, will, in other words, have some options to choose from if more entrepreneurs are participating.

The structure of the Finnish system basically agrees with the EC's principles. We have many networks with various features designed for manipulation of data, such as the distribution of electronic mail.

The framework for competition in the telecommunications field, which has been created within the EC, has to a large extent been voluntarily realized in Finland, even before the EEA-agreement and independent of it. In this respect we are way ahead of the development in most of the nations in the European Community.

## FRANCE

### National Research Network Proposed

92WS0236X Paris AFP SCIENCES in French 5 Dec 91 pp 20, 21

[Unattributed article: "Research Computers To Be Connected in National Network by 1995"]

[Text] Paris—With every passing year, informatics plays a bigger role in scientific research: Individual researchers and large research organizations in every sector are using more computers and finding more uses for them, in administration as well as basic and applied research.

Without computers, research becomes impossible; without networks of interconnected computers working faster and faster, the big research programs in nuclear technology, climatology, physics, chemistry, biology and materials... would not exist or would be severely handicapped.

This was why Mr. Hubert Curien in his 4 December message to the Council of Ministers underlined the importance of a 1991 initiative in this area that has involved civilian research program authorizations amounting to more than 700 million French francs [Fr] and total outlays of more than Fr1 billion (taking personnel costs into account).

All types of computers, from micros to supercomputers, are used in French research programs. A microcomputer in a research facility is typically used by five laboratory researchers, costs on the order of Fr0.15 million per year, and must be replaced every four years.

Departmental mainframes, which cost Fr0.7 million per year and may be used by groups of about 20 researchers, must be replaced about as frequently. The computer centers [CDC's], which can accommodate 1-2,000 users, cost Fr70 million per year; fortunately, however, their equipment does not have to be replaced so often.

Another indication of the importance of computers in research: According to estimates from the [research] ministry, data processing expenses average out (depending on the accounting method used to figure them) to between Fr25-60,000 per user per year.

Big research organizations like the National Institute for Research on Data Processing and Automation (INRIA), the Atomic Energy Commission (CEA), and the National Scientific Research Center (CNRS) have diverse data processing needs; as a consequence, they use different approaches and require different system architectures.

Real-time computing is vital for operating experimental nuclear reactors such as Tore-Supra, the Cadarache fusion research machine, and particle accelerators like the Large Heavy-Ion Accelerator (GANIL) at Caen.

Simulations used in studies in the fields of aerodynamics (space, aviation), climatology, oceanology, meteorology, biology and geophysics require the resources of big CDC's equipped with the Cray-II or a "Connection Machine," with its massively parallel architecture in which the equivalent of hundreds or even thousands of microcomputers work together to solve a problem faster.

Some large CDC's serve users on a regional or even nationwide basis, and in light of the high cost of cutting-edge data processing equipment, civilian and military researchers are forced to share computer time.

In an effort to further optimize and rationalize the use of these computer resources—and facilitate nationwide and international utilization through collaboration between research teams—the Ministry of Research has decided, in cooperation with the Ministry of National Education, to accelerate the implementation of Project RENATER (National Telecommunications Network for Research).

The project's aim is to offer research teams in academia, technology and industry an advanced electronic message service and a communications infrastructure comparable to what is available to their foreign counterparts.

RENATER is therefore going to link existing regional networks into a national information grid that can transmit data at a rate of 100 to 140 megabits per second and interface with European and American networks. France Telecom will participate in construction of the network in the coming months. Some 50 sites will be linked up by the end of 1992; later on, the number will grow to about 100, and 3000 to 400 sites will be connected by 1995. As it grows, RENATER will also clearly have to keep in step with changing needs and technologies.

## SWEDEN

### Large Phone Rate Increase To Aid Modernization

#### Element in Privatization

92WT0075A Stockholm DAGENS NYHETER  
in Swedish 17 Dec 91 p 5

[Article by Ake Ekdahl: "Agreement That Rates Should Be Increased"]

[Text] "The Televerk and the Riksdag are in agreement that the prices of telephone calls must better reflect reality," Allan Bengtsson, the director of telecommunications in Stockholm wrote in a letter to all households about the new telecommunications rates.

In the letter he also explained that the state, its owner, expects a higher yearly yield from the Televerk and next year wants to have a one-time payment to the national treasury of seven billion kroner.

Each and every word is true. Why then are politicians and the Televerk making a fuss? The start of the big telephone ruckus, which will be decided by the Riksdag on Thursday, goes all the way back to May 1988. At that time the Carlsson government established a parliamentary committee which after a short time proposed that "user fees and rates should be equalized between different geographic areas."

#### Decision by Riksdag

In a decision by the Riksdag in the spring of 1988 there was also widespread agreement that the telecommunications system should contribute to regional balance and take social factors into consideration.

On 7 February of this year Rune Molin, the minister of industry in the Social Democratic government, again came up with a comprehensive program for growth and the privatization of several state-owned businesses, the Televerk among them. The postal and telecommunications commission had then determined that the business side of the Televerket should be more strongly emphasized while the authority's role as a state agency should be more deemphasized. In several instances, the authority has sought to avoid the appearance of an authority, the commission said.

Throughout, to date, the political consensus has been great. In June the Riksdag approved what the government had proposed, including a stringent requirement for receipts and dividends from the Televerk.

#### Price Ceiling

Indeed on its own the Televerk had compiled a sort of price ceiling for telephone service according to which telephone rates would go up a maximum of 70 percent of the change in the net price index, i.e., consumer prices less the effects of indirect taxes.

Then the price of a local phone call rose 140 percent in the regional equalization scheme which the Televerk worked out in accordance with the politicians' wish.

Then the Social Democrats got cold feet. After the change of government they expressed reservations about their old proposal to the standing committee on finances and proposed a six-month postponement in the rate increases. New Democracy attempted to pressure the Televerk into concessions on behalf of the elderly, but fell short and has now made common cause with the Social Democrats.

#### Minister Defends Fees Rise

92WT0075B Stockholm DAGENS NYHETER  
in Swedish 17 Dec 91 p 5

[Article by Dick Ljungberg: "Real Fix for the Televerk; Communications Minister Blames Social Democrats for Confusion"]

[Text] "The Televerk will keep itself in a state of high preparedness so the Riksdag can delay the 1 January rate increase. But how long it will take to again reprogram the telephone stations I'm not competent to say."

This is what Communications Minister Mats Odell (Christian Democratic Coalition) told DAGENS NYHETER when it emerged that the Televerk has already reprogrammed 7,000 telephone stations for the 1 January rate increase although the increases could be halted by a Riksdag majority on Thursday.

The situation is awkward for Mats Odell. As the official politically responsible, he cannot permit a state-owned company to disavow a decision of the Riksdag. He could be reported to the standing committee on the constitution.

At the same time he has received a clear message from Tony Hagstrom, the head of telecommunications, that they should not interfere again with the reprogramming of stations before the end of the year.

"Until the Social Democrats made a U-turn, the Televerk had no reason to believe anything other than that the agreed upon change should be implemented," Odell said.

#### U-Turn

In June the Riksdag decided that the Televerk should freely establish its rates as of 1 January 1992. When news of the Televerk's planned increases came slightly more than a month ago, the Social Democrats moved that the increases be postponed to 1 July 1992.

"The Social Democrats made a populist retreat. They went over to a line they thought New Democracy would follow in order to make life a bit complicated for the government," Odell said. At the agency they are helping put New Democracy on the right track.

He stated that the Televerk's rate increase will be within the limits of last spring's decision by the Riksdag, viz. that the increases must be below 70 percent of the inflation rate. However former Finance Minister Allan Larsson believes the rate increase is greater than the growth of the consumer price index which exerts an influence on inflation.

#### Retirees' Discount

The communications minister has not received any news to the effect that Tony Hagstrom is reported to have promised New Democracy to expand the 08 [Stockholm] dialing area to soften the effect of the rate increase. On

the contrary, he learned that the chief of telecommunications would write to the standing committee on finances that retirees would get a discount on their quarterly phone fees.

"After the increase, a retiree in Stockholm who does a lot of phoning will get a phone bill which will still be less than comparable retirees in the rest of the country," Mats Odell said.

"The estimates I have seen show that those in the Stockholm area who will be the most affected will see an increase of 20-25 kronor, which roughly corresponds to the decrease in quarterly fees for retirees."

### Competition

"Up till now pensioners in thinly populated areas have subsidized pensioners in Stockholm, and the company has subsidized households' telephoning at the rate of approximately 1.6 billion [kronor] per year."

"Now that competition has come into the picture, the Televerk will lose business customers to Tele 2 if they still want to offer home calling. Then the Televerk would have to increase home rates even further if nothing is done."

"The Social Democratic government knew this when they proposed the change," said Mats Odell. "With this retreat, they're just making trouble for themselves."

### Fees Schedule Explained

92WT0075C Stockholm DAGENS NYHETER  
in Swedish 17 Dec 91 p 5

[Article by Anita Sjoblom: "Like Stopping a Jumbo Jet"]

[Text] "To stop the change in telephone rates is like stopping a jumbo jet which is just about to take off." This was the comparison made by technicians at the Televerket, who ever since last summer have had thousands of people busy with the rate increase.

At the moment the Televerk's technicians wonder whether they will have to apply the brakes on Thursday. Then the Riksdag will decide whether it will change its previous decision to let the Televerk determine its rates and instead urge that the Televerk maintain the old rates for six months.

"As early as last spring we began to plan for this rate increase," said Lars Rydin, a department head, and Stig Andersson, an engineer at the Televerk. The change on New Year's Day does not mean only that the rates both go up and come down. The big problem has to do with the new alignment of area codes.

### A Thousand People

Beginning on 1 January 1992 it is estimated there could be three different rates: local, regional, and national rates. In a somewhat simplified fashion, it could be said that local phone calls will become more expensive, whereas long-distance and foreign calls will become cheaper.

"As far as the customer is concerned, there will be a more equitable price in relationship to the costs of different types of phone calls. We have the biggest costs for local calls, whereas long-distance calls have become cheaper and cheaper with fiber optics," Lars Rydin said.

To implement this major change of the rate system, a thousand people have been working on it since last summer.

"If we had had the AXE [Ericsson] system throughout the country, this change would have been a lot easier. Then we would just have reprogrammed the computer system," Rydin said. "But as yet only one-half of our subscribers are connected to it."

"Our other subscribers will have their calls connected via electromechanical telecommunications stations. Approximately 4,000 of the country's 7,000 telecommunications stations still have this technology, which was introduced in the 1940's and 1950's."

### Soldering Iron

This means that about 500 people have rebuilt the switching equipment in these stations and, using soldering iron, have transferred a large number of wires onto 20,000 so-called registers.

At the same time reprogramming of close to 700 time interval transmitters, TIT's, has occurred. This is a register which records which telephone number you're calling and which rate should apply. Then the TIT will determine the rate per minute.

"These things must be coordinated for the rate system to work. It's a job which won't be finished before New Year's Eve. Certainly it is entirely possible to halt the entire rate change if the Riksdag so decides. But then the system will be uncoordinated and unreliable."

"Some subscribers will pay too little and some too much. And it wouldn't be right to say which customers would be affected," said Lars Rydin. "If everything is supposed to change, then we'll be busy for three to four months and resolder everything."

### Like a Jumbo Jet

"This is like a jumbo jet about to take off. When the plane has built up enough speed you can't apply the brakes, so you have to take off and fly around before you land again," said Stig Andersson.

If the Riksdag changes the rates, then in next year's phone book all subscribers in the Stockholm area will have erroneous rate information.

"The Stockholm phone books have already been printed," said Kjell Palmqvist, the Televerk's press officer. "But we always put in a disclaimer about rate increases in the books. We can also send out information on phone bills about changed rates and errors in the phone books."

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