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JPRS Report

Telecommunications

28 May 1991

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Telecommunications

JPRS-TTP-91-003 *28 May 1991*

CONTENTS

Siemens, NTT To Build Fiber-Optic Broadband Network

91MI0163X Duesseldorf HANDELSBLATT in German 14 Jan 91 p 16

[Text] In an international tender floated by the Japanese telecommunications company Nippon Telegraph and Telephone Corporation (NTT), in which all major telecom companies in the world participated, Siemens was the only European company selected to take part in NTT's VI + P (visual, intelligent, personal) program.

This program will develop and set up the infrastructure for the digital broadband network of the 21st century, which will provide all communications services from narrow- to broadband, including video communications.

The billion-German mark development is split into two projects, in both of which other leading companies on the international communications technology market will also participate. Fujitsu, Hitachi, NEC, the American subsidiary of Canada's Northern Telecom, Oki, and Toshiba will all contribute to the switching technology. The American giant AT&T, Fujitsu, Hitachi, Mitsubishi, and NEC will work with Siemens on the transmission technology.

Asynchronous glass fiber cables will be used for the new network. Siemens supplied the Bundespost with an initial switching system in asynchronous technology (ATM [asynchronous time multiplexing]) for its broadband ISDN [integrated services digital network] BERKOM project in Berlin back in 1989. Siemens is also participating in the development of the European broadband communications network IBCN (Integrated Broadband Communication Network) under RACE [Research on Advanced Communication in Europe]. Installation of the broadband glass fiber networks is due to begin in 1995 in both Europe and Japan. This is why NTT's VI + P project schedules prototypes of all switching and transmission systems for completion by mid-1992, and series products for delivery by 1995.

ANGOLA

Ministry Announces Plans for Telecommunications

91P40218A Luanda JORNAL DE ANGOLA in Portuguese 22 Mar 91 p 3

[Text] A reliable source revealed in Luanda that telecommunications links to the outside will be automated by 1992.

Vice Minister for Telecommunications Licinio Tavares told ANGOP [Angolan Press Agency] that the project falls within the framework of a telecommunications development program financed by the African Development Bank for $150 million. The program involves a series of projects of which the most outstanding is "Ango-Sat," a satellite transmission project estimated at $38 million.

According to the vice minister, this project envisages the completion of the Transhorizonte system in some provinces and the replacement of the microwave system in others. The new system, which will permit outside links, will consist of 26 networks for 26 localities and will get underway in the provincial capitals. Licinio Tavares mentioned that, following independence in 1975, the installed capacity at the central exchange was 48,000 lines; currently it is 78,000, not all in use.

The vice minister said that the sector also approved other "important projects" such as the creation of a Telecommunications Institute, cable network connections, central exchange, and accommodations for employees in the "Ango-Sat" stations. "Angola's telecommunications system reached its highest point in 1984," he added, and stressed that at that time 40 localities were covered, facilitating links between the provincial capitals and the nation's capital.

Vice Minister Licinio Tavares pointed out that because of political instability, the interurban transmission network was completely destroyed in the three subsequent years. He said that the Cacolo and Kabatuquida-Kulilana stations were destroyed, thus severing communications in Lunda-Sul, Lunda-Norte, and Moxico Provinces. In the north, the two microwave relay stations were destroyed in Curi and Kambungo which also affected communications in Uije and Zaire. In the south, UNITA [National Union for the Total Independence of Angola] destroyed the Gabela station which cut communications to Porto Amboim and Sumbe.

Licinio Tavares said that rural communications were relegated to second place because of the intensification of the political-military crisis; this can be seen in the state of interprovincial communications.

According to the Angolan vice minister for telecommunications, the program to rehabilitate the sector has lost some of its relative significance. "Not everything attracts the investor, which means that we run the risk of implementing one part of the program and not the other," he concluded.

SEYCHELLES

Outer Islands To Get Direct Phone Service

91AF1018Z Victoria SEYCHELLES NATION in English 20 Mar 91 pp 1, 2

[Text] Residents of several outer islands will soon be able to phone Mahe and even abroad directly following the installation of a new 10-metre earth station at the main office of Cable & Wireless (Seychelles) Ltd.

Engineers are fixing the reflector surface to the supporting structure while Island Development Company (IDC) has almost completed work on the equipment building and foundation for the tower mount for smaller parabolic antennas on the islands of Coetivy and Desroches.

The Project's Manager, Mr. Philip Sumser, said that telephone service to these two islands would be available in early July, with messages being beamed to Mahe via one of the Intelsat satellite hovering 22,000 miles above the Indian Ocean. The small 4.5-metre diameter stations on the outer islands will run unattended, with maintenance visits being carried out by C&W engineers every three months.

Mr. Sumser said Coetivy and Desroches would be the first to get the satellite communication links because developments on these islands required good communication, both with Mahe and internationally. He cited the important prawn project being implemented on Coetivy and the expanding hotel complex on Desroches as examples where good communication was essential in order to administer and develop these facilities.

After Coetivy and Desroches work will start on the construction of similar stations on Farquhar and Assomption. Later on, Alphonse and Remire will also be connected into the system.

Each island will have up to four direct exchange lines connected via the Victoria exchange either to local subscribers on Mahe or the international circuits. It is planned that one of these lines on each island will be a public cardphone to enable workers on the islands to keep in touch with friends and families, whilst the other lines will be used for administration purposes and for hotel guests.

Mr. Sumser said the 27-million rupee project was being implemented in line with Government's policy of actively developing the outlying islands, and the provision of good communication was essential in order to successfully achieve this goal.

Mr. Sumser also told Seychelles Nation that next year some of the international traffic on major routes would be transferred to the new Victoria station. This would

provide Seychelles the benefit of an alternative international route as the Victoria station will operate on a different satellite to the existing station at Bon Espoir. With the anticipated growth in international telecommunications traffic the Bon Espoir station was rapidly approaching its original design capacity and hence the need to transfer some of the traffic to the new station in Victoria.

SOUTH AFRICA

Navy Upgrading Telecommunications System

91AF0961Z Johannesburg ENGINEERING NEWS in English 28 Mar 91 p 8

[Text] The South African navy's telecommunications networks at Salisbury Island and the Bluff, Durban, are being revamped.

An existing system is being upgraded and moved from the Bluff to Salisbury Island to give this base a bigger communications facility with room for expansion.

A smaller system is being installed at the Bluff base, which will be linked up to the one on the island.

"The systems we are putting in will be ideal for the Navy's current needs in Durban and will provide for growth in future communications requirements," says Gordon Harvey, a Natal manager of Philips Telecom which is carrying out the revamp.

ZIMBABWE

Local Transmitter To Supplant RSA 'Propaganda'

91WT0125A Harare THE HERALD in English 15 Mar 91 p 4

[Text] Chiredzi—The new $4 million radio and television transmitter in the Lowveld was yesterday commissioned by the Minister of Information, Posts and Telecommunications, Cde Victoria Chitepo.

Cde Chitepo said the transmitter marked the end of the bombardment of the area by propaganda from South Africa and was the beginning of a new era in furnishing the people of the Lowveld with information on development taking place in their country.

"The people in this area can now listen to daily broadcasts from the ZBC containing the latest local and international news, as well as receive up-to-date information on farming, cooperatives, health and other developmental issues, which will benefit the people of the Lowveld and help them raise their standards of living.

"This transmitter station has been installed here in order to improve radio and TV frequencies in the Lowveld region, so that everyone can have access to news and information from the ZBC.

"As you are aware, the people of the Lowveld have been captive to propaganda from Radio Truth (Chokwadi) of South Africa and other broadcasts there because they could not receive ZBC signals," she said.

This was undesirable, as it exposed the region to subversive influences and kept the people ignorant of developments and progress taking place in other parts of Zimbabwe.

The transmitter, built by a French engineering company Aftroneit, is the 22nd radio transmitter and the 13th television transmitter installed in the country since independence.

This, said ZBC officials here, should go a long way towards enabling the corporation to reach more than 96 percent of the country's population on FM radio and television frequencies by the end of this year.

They said to fulfill these goals, programmes were under way to install new transmitters at Mutoko, St. Albert's Mission on the Zambezi Escarpment and Kariba.

These programmes were meant to improve reception in Mutoko and the Zambezi Valley. In addition, the ZBC was in the process of upgrading the transmitter at Victoria Falls to boost transmission in the area, they said.

Speaking at the same occasion, the ZBC director-general, Cde John Tsimba said the creation of the transmitter was another landmark in the corporation's drive to expand its transmitter network throughout the country so that services could reach as many people as possible.

"Further," Cde Tsimba said, "the existence of this station will improve the quality of both radio and TV reception in the Lowveld."

First Domestic DS5 Optical Terminal Unveiled

91P60157Z Beijing JISUANJI SHIJIE [CHINA COMPUTERWORLD] in Chinese No 10, 13 Mar 91 p 43

[Untitled news brief by Yi Bei [0001 6296]]

[Text] The nation's first [domestically made] 565 Mb/s [the DS5 transmission rate] optical terminal has been unveiled at Wuhan. This fifth-generation fiber-optic communications product, developed by the [Ministry of Posts & Telecommunications'] Wuhan Institute of Posts & Telecommunications Science, can simultaneously transmit 7680 voice circuits over optical fiber: this is four times the capacity of the DS4 [140 Mb/s, 1920 voice circuits] optical terminals now commercially available worldwide. The new terminal's features include high speed and transmission capacity, low power consumption, and low bit error.

Jiangsu Rural Telephone Network Adds DMW Line

91P60152Y Beijing DIANXIN JISHU [TELECOMMUNICATIONS TECHNOLOGY] in Chinese No 2, Feb 91 p 48

[News brief by Jin Yuqi [6855 6877 3825]: "Short Waves From the Provinces"]

[Text] Another 2GHz 34Mb/s 480-channel digital microwave (DMW) communications line for Jiangsu Province's rural telephone network was completed in November 1990 at Meili Town in Changshu County, signifying that Jiangsu's rural telephone communications are making great strides toward the digital era. This project uses domestically made equipment throughout: the microwave transceivers are the model WSF2-01, manufactured by MPT's Xian Microwave Equipment Plant [see JPRS-CST-91-007, 25 Mar 91 p 26], and the PCM [pulse code modulation] terminals are model MDT2-01, manufactured by MPT's Shanghai Communications Equipment Plant. The two-station range is 14 km, and the initial installation consists of four PCM primary-rate 120-channel-capacity circuits, which will provide a basis for automation of the rural telephone network.

Shanghai Installs IDR Equipment, Expands Services

91P60152Z Beijing DIANXIN JISHU [TELECOMMUNICATIONS TECHNOLOGY] in Chinese No 2, Feb 91 p 48

[News brief by Shen Xin [3947 0207]: "Short Waves From the Provinces"]

[Text] The Shanghai Satellite Ground Station has installed new IDR [intermediate data rate] equipment. Since it incorporates new technologies such as speech compression and digital [speech] interpolation [DSI], it can raise the circuit utilization factor by 400 percent; with added terminal digital multiplexing equipment, a total of 1,000 circuits can be opened up. As of now, 419 international satellite circuits have been opened up toward the U.S. and Hong Kong, and other international circuits for Australia and elsewhere are about to be opened up.

Fiber-Optic Technology, Projects Reported

Equipment Accredited

91P60153Z Beijing DIANXIN JISHU [TELECOMMUNICATIONS TECHNOLOGY] in Chinese No 3, Mar 91 pp 47-48

[Article by Wang Li [3769 4539] of MPT's Science & Technology Department: "DS5 Bit-Error Analyzer, Three Other Scientific-Research Achievements Pass Ministry-Level Appraisal"—see earlier report in JPRS-CST-91-004, 5 February 1991 pp 30-31]

[Summary] Up to now, China has been forced to import test equipment for DS4-and-higher [140Mb/s and higher rates] fiber-optic communications systems. To foster development of the nation's indigenous fiber-optic communications industry, MPT [in 1986] assigned to its [Beijing] Instruments & Meters Research Institute the development of appropriate test instruments. This State Seventh Five-Year Plan project has now been completed, with the official accreditation of four types of instruments on 26 December 1990 by an MPT-sponsored panel of technical experts. The four instruments are a DS5 bit-error-rate (BER) analyzer which operates at a maximum rate of 622 Mb/s, a DS4 phase-jitter tester, a digital transmission system analyzer for DS1-DS4 [DS1 = 2 Mb/s, DS2 = 8Mb/s, DS3 = 34 Mb/s] systems, and a signal monitor [not mentioned in earlier report].

The DS5 BER analyzer directly generates four pseudo-random-number sequences at a relatively low speed and then again at a higher speed; this technique overcomes drawbacks in heavier-volume high-speed devices that operate only at the higher speeds. It is estimated that in the Eighth Five-Year Plan there will be a heavy demand for this domestically made instrument, whose cost is only one-third that of the comparable imported item.

In the DS4 phase-jitter analyzer, jitter modulation and jitter measurements are realized via a dual phase-comparator scheme. The values for testing accuracy and intrinsic jitter are better than CCITT-recommended standards. The jitter transmission element employs precision amplitude-control technology, improving stability. This test instrument will be a major boom to the domestic development of high-capacity fiber-optic communications systems.

The digital transmission system analyzer is designed for comprehensive testing of transmission system performance, including measurement of BER, number of bit errors, intrinsic jitter, input jitter margin, and jitter transfer characteristic, and can also analyze bit error and

phase jitter. The instrument utilizes microcomputer control technology, with software providing the functional control; it comes with a GP-1B interface, permitting link-up with computers to create an automated testing system.

The XJ-01 signal monitor is used for monitoring digital circuit signals, multi-frequency signals, all kinds of alarm signals, and voice circuits, and has functions such as statistical call-completion rate and print-out. When used for process control, this instrument provides monitoring with uninterrupted service, and is easy to maintain.

Lines Approved

91P60153Y Beijing DIANXIN JISHU [TELECOMMUNICATIONS TECHNOLOGY] in Chinese No 3, Mar 91 p 48

[News brief by Jin Yuqi [6855 6877 3825]: "Short Waves From the Provinces"—see earlier report in JPRS-CST-91-004, 5 Feb 91 p 30]

[Text] An MPT eighth Five-Year Plan priority project—the Shanghai-Nanjing fiber-optic cable project, including its fiber-optic cable feeder line running from Suzhou through Changshu to Zhangjiagang—passed the design hearing conducted on 12 November 1990 in Changzhou, Jiangsu Province, and is thus formally approved. This project, consists of a 402-km-long trunkline and its 90.6-km-long feeder line. Ground-breaking for the project will take place in 1991. Completion of this project will ease the overcrowded state of the long-distance communications circuits between Shanghai and Nanjing as well as inter-city lines in all the provinces, and further promote economic development in East China and the Changjiang [i.e. Yangtze River] Delta area.

Fujian Line Being Built

91P60153X Beijing DIANXIN JISHU [TELECOMMUNICATIONS TECHNOLOGY] in Chinese No 3, Mar 91 p 48

[News brief by Chen Min [7115 7044]: "Short Waves From the Provinces"]

[Text] The Fujian Yong'an-Xiamen long-distance fiber-optic-cable project is now fully under construction. This project, a major element in Fujian Province's communications development, will pass through 10 countries and cities, is 431 km in length, and has a longer repeater range. The terrain along the line is difficult, necessitating several cable-laying modes. While the line's technical complexity is high, its completion will lay a solid foundation for long-distance communications within the entire province and between the province and other nations.

AUSTRALIA

OTC Increases Research, Development Investment

91AN0184A Chichester INTERNATIONAL TELECOMMUNICATIONS INTELLIGENCE in English 26 Nov 90 p 15

[Text] OTC Ltd has opened new Research and Development (R&D) facilities in Sydney to support its future commitment of a record 16 million Australian dollars (A$) for R&D activities for the remaining part of 1990 and through 1991, up from A$10.7 million last year.

Future R&D will be targetted in the following areas:

—**Value-added services:** visual communications including the development of a variable bit rate video codec to provide high-quality video services in the new Broadband Integrated Services Digital Network (B-ISDN) and investigation of hierarchical video coding algorithms; multimedia applications including multipoint communications, OSI protocols and video integration; fast packet switching; and customer access technologies including personal communications and photonics research;

—**Service enhancement:** quality improvement for telephones and facsimile machines; speech technology and the development of specialised equipment for measurement, interfacing and control in international telecommunications;

—**Networks:** broadband networks, including the introduction of the B-ISDN and new broadband customer services, the conducting of international field trials and development of an experimental broadband digital network using OTC prototype ATM switches; design and control of intelligent networks and avanced software;

—**Transmission:** research into operation in the higher-frequency Ku band, increased receiver sensitivity and selectivity, and lower customer terminal costs; VSAT (very small aperture terminal) systems research; optical fibre and satellite communications including earth stations equipment and baseband equipment; and development and simulation of a range of application-specific integrated circuits;

—**Commercial Products:** development of digital modems for transmission on coaxial submarine cables; fast packet switching; antenna development and tracking; speech synthesis and signalling protocol converters.

In 1989-90 internal R&D accounted for A$7.2 million, while external R&D contracts to Australian universities and companies were valued at A$3.5 million.

R&D highlights of 1989-90 included:

—The development of a switching system to direct information through the network more rapidly and accurately. Under an agreement with Telecom New Zealand, this system will be trialled between Sydney and New Zealand, firstly by satellite, then by the new submarine optical fibre system, Tasman 2, at the end of 1991;

—The successful development and testing of SCANTS (Supplementary Capabilities Node for Telephony Services), a software/hardware system that transforms standard exchange services into customised, high-performance telephony services;

—The development of a prototype multi-media communications system combining full-motion colour video, stereo sound, text, graphics, images and computer applications.

—The production of a multichannel synthetic speech using an integrated circuit, believed to be a world-first. Developed by the University of Sydney under an OTC R&D contract, this integrated circuit will convert English into high-quality synthetic speech when combined with software for translating text into sound. The software is currently being developed through another R&D contract at Macquarie University.

LAOS

Lao-Australian Ground Station Described

91WT0123A Vientiane PASASON in Lao 22 Feb 91 p 2

[Article by Kh. Thammavong: "The Lao-Australian Satellite Ground Station"]

[Text] Before the construction of the Lao-Australian Friendship Satellite Ground Station at Nathom in Vientiane Municipality, communications with other countries were limited and outmoded. They were carried by one channel through Moscow via the Intersputnik satellite, one shortwave radio channel through Hong Kong, and a number of microwave channels through Thailand. To summarize, it was apparent that this did not meet the needs of society with regard to quality and quantity. It made communications abroad very congested.

After construction of the Lao-Australian ground station (called the Visata satellite) was completed in 1990, the quality and quantity of communications with the rest of the world increased. Telephone, teletype, and telegraph communications with other countries became very efficient. This ground station has a total of 16 channels. At present eight channels are used, of which seven channels are for telephone and one channel is for data. Five channels involve telek [dialing] through the operator, one channel is for long-distance dialing, and one telegraph channel can be expanded to 20 channels. This not only solved the problem of communications abroad but also made internal communications much more convenient. Every day this ground station provides telephone service to four provinces: Luang Prabang Province,

Khammouan Province, Savannakhet Province, and Champasak Province. These provinces can communicate abroad via Vientiane.

The Lao-Australian ground station is one of the benefits gained from taking gratis foreign aid. It is valued at $1.788 million [Australian dollars], which is equivalent to 653 million kip. Of this the gratis foreign aid from the Australian Government amounted to $1.78 million [Australian dollars], which is equivalent to 640 million kip. Funds provided by the Post, Telecommunications, and Telephone Enterprise amounted to 2.909 million kip. It is felt that this ground station employs very modern technology. The technicians there say that the antenna has a diameter of 7.5 meters, the antenna control mechanism is linked automatically with the satellite, the transmitter is 75 watts, the receiver is less powerful but of high quality, there is an alarm system which signals immediately if there are any problems, there is a fire alarm system which would signal if fire developed, for example, in the container box (equipment container), and there is a generator that starts automatically in case of a power outage.

This ground station at Nathom not only made our communications system more modern, ensured communications between central authorities, the provinces, and various districts and made communications abroad quick and clear, but has also earned foreign currency from the operations of the Post, Telecommunications and Telephone Enterprise and has created more income for the nation. For example, the income figures for the enterprise for February 1990 totaled 58 million kip, but the income figures for December 1990 totaled 103 million kip.

THAILAND

Thailand To Boost Telephone System

91AN0165A Maidenhead TELEFACTS in English Nov 90 p 2

[Unattributed article: "Thailand To Gain Three Million New Lines"]

[Text] Thailand's telephone system will get a boost when an additional three million lines are added by 1996. This follows the Thai cabinet's approval to award a tender to a Thai-British consortium.

The Chareon Pokphand Group of Thailand and its partner British Telecom will implement two projects over a four-year period to install two million lines in Bangkok and one million lines to the provinces. The additional lines will bring the total to more than five million lines throughout the country.

Thailand currently has only 1.6 million lines for a population of more than 52 million people. In Bangkok, the country's capital of six million people, only 8,000 lines are in use.

The ambitious $6 billion project is the biggest utility project launched by the Thai government as part of its efforts to provide sufficient infrastructure to support its expanding economy. The Telephone Organization of Thailand will hold ownership of the entire telephone system.

The Chareon Pokphand/British Telecom consortium will also be the operator of the expanded systems for the next 25 years. Under its revenue-sharing pact with the Thai government, it will give 16 and 22 percent of its revenue, from the Bangkok and the provincial projects respectively, to the government.

The consortium had to stave off competition from four rival consortia to win the contract. The other bidders included Toyo Menka Kaisha, Alcatel CIT of France, L.M. Ericsson of Sweden, and Mitsui & Company of Japan.

HUNGARY

Telecommunications Firm To Bid for Broadcasting

LD2204165691 Budapest MTI in English 22 Apr 91

[Text] Budapest, 22 April 1991 (MTI-ECONEWS)—When the frequency moratorium is lifted in Hungary, the broadcasting technology branch of BHG Telecommunications Company will be raring to go.

In anticipation of business, it is urging the Ministry of Transport, Telecommunications and Water Management to release the list of companies that have already applied for a broadcasting licence.

Over a hundred companies are believed to have applied for permits to run radio stations here.

BHG has been in the telecommunications equipment business for about sixty years now, and all Budapest's radio stations use BHG-made transmitters and antennae.

BHG's broadcasting technology department accounts for only a fraction of the company's overall production: The firm's main line is telephone exchanges.

Last year, BHG had an income of 5.371 billion forints (72 million USD), and exports of 2.46 billion forints (33 million USD).

The broadcasting technology department made sales of 207 million forints (2.4 million USD).

The company made profits of 104 million forints last year.

The book value of BHG's assets is 6.5 billion forints.

This year, BHG expects an income of 5.5 billion forints, and exports of 2.3 billion forints.

The broadcasting branch expects to cash an income of 205 million forints.

Company profits will probably work out at 500 million forints (6.7 million USD).

Much of the company's business this year depends on Soviet orders.

Hungary Receives EIB Funding

91AN0124A Brussels EAST WEST in English 9 Nov 90 p 7

[Unattributed article: "EIB To Give ECU80 Million to the Hungarian Telecom"]

[Text] The European Investment Bank (EIB) has announced that it will give 80 million European Currency Units [ECU] to the Hungarian telecommunications company MTV (Magyar Tavkozlesi Vallalat) for the extension and modernization of the telecommunications network. The loan will finance the first stage of the 10-year modernization program. In essence, the first stage will connect enterprises and other larger users to a new digital network which will be superimposed over the existing analogue network. It also includes the establishment of digital telephone and telex exchanges and the construction of a cable network for broadcasting. The overlay network will eventually replace the existing analogue network. The first stage is to be completed by the end of 1993.

The money will be granted for 15 years. The World Bank is also participating in the cofinancing of the first stage.

Readers will remember that this is already the third loan extended to Hungary by the EIB since Hungary first met the EIB's requirements in 1989. The EIB has earlier extended to Hungary ECU25 million to be used for the financing of small and medium-size enterprises and ECU15 million for the modernization of the electricity distribution system.

POLAND

Fiber-Optic Link to Denmark Installed

91AN0186A Chichester INTERNATIONAL TELECOMMUNICATIONS INTELLIGENCE in English 10 Dec 90 p 3

[Unattributed article: "Poland's Fibre Links to The West"]

[Text] The Danish company NKT has completed installation of a 150 kilometre-long submarine fibre-optic cable to connect Poland with the Danish island of Bornholm. The $4.5 million, three fibre pair cable will operate at 140 Mbit/s terminating in Koszalin in Poland and at Ronne on Bornholm, crossing the Baltic Sea. Special concessions were gained from Cocom in February of this year to install the higher-speed equipment, original plans specifying a 34 Mbit/s system.

Co-owners of the cable are the PTTs from Sweden (Swedish Telecom), Norway (Norwegian Telecommunications Administration), Finland (P&T Finland), Denmark and Poland (MPT). The contract was awarded early in 1989.

This cable will link up with a larger capacity cable recently installed, again by NKT, between Ronne and Stevns, near Copenhagen. This 60 million Danish Kroner cable has six fibre pairs, operates at 140 Mbit/s and was completed in November 1989. The distance is 155 kilometres and the cable will use a receiver module developed by NKT in association with Jutland Telephone, Telecom Denmark and the Telecommunications Research Laboratory, obviating the need for repeaters over this distance.

Consequently, Poland now has fixed digital links to Denmark and, thus, to the UK, via UK-Denmark IV and the Danish national network and then on to the United States. Access to Scandinavia via links from Denmark to

Sweden, over a fibre-optic cable supplied by NKT from Helsingor to Helsingborg in August 1989, are now also available via the Ronne-Stevns link.

A radio link will connect Koszalin with Warsaw later this month—manufacturer not known—to provide access to the 5-ESS international digital gateway supplied by AT&T and being installed in Warsaw with cutover expected early next year.

Order on State Radio Communications Agency

91EP0480Z Warsaw DZIENNIK USTAW in Polish No 26 Item No 110, 30 Mar 91 pp 374-375

[Executive Order of the Ministry of Communications dated 22 March 1991, granting a statute to the State Radio Communications Agency]

[Text] Pursuant to Article 35, Paragraph 3, of the Law dated 23 November 1990 on Communications (Dz.U.[DZIENNIK USTAW], No. 86, Item No. 504), the following is hereby ordered:

Paragraph 1. A statute, constituting the Appendix to this Executive Order, is hereby conferred on the State Radio Communications Agency.

Paragraph 2. The Chairman of the State Radio Communications Agency is authorized to merge, shut down, or transform organizational units within the Agency's National Board, and to merge, shut down, or transform the organizational units of its district boards upon the recommendations of the board directors.

Paragraph 3. This Executive Order takes effect on the day of its publication.

Minister of Communications: J. Slezak

Appendix to the Executive Order dated 22 March 1991 of the Minister of Communications (Item No. 110)

Statute of the State Radio Communications Agency

Paragraph 1. The State Radio Communications Agency, hereinafter referred to as "the agency," is an organ of the minister of communications established chiefly with the object of supervising radio communications networks, lines, and facilities, as well as supervising adherence to the use of assigned frequencies, call signs, and identification signals.

Paragraph 2. The agency performs in particular the following tasks:

1) Monitoring of radio communications networks, lines, and facilities.

2) Monitoring of the utilization of the assigned frequencies, call signs, and identification signals.

3) Taking steps to ensure the needed frequency intervals for the Republic of Poland.

4) Recording and analyzing operator requests for radio frequencies.

5) Handling technical and administrative aspects of the monitoring and elimination of radioelectrical disturbances.

6) Collecting fees for the use of frequencies and for the operation of radio communications equipment.

7) Submitting to the minister of communications proposals concerning:

a) The allocation of frequencies or frequency intervals to the Armed Forces and the organizational units subordinate to the minister of internal affairs.

b) The determination of the requirements for the allocation and use of frequencies by the entities competitively applying for such allocation.

8) Handling systems for collective wireless reception of radio and telephone broadcasts from ground and satellite stations, as well as systems for the wire transmission of these programs, to the extent of:

a) Defining the frequencies that can be utilized within a given area and allocating these frequencies to system operators.

b) Preparing proposals of technical requirements for systems and equipment from the standpoint of preserving electromagnetic compatibility with other radio communications systems and equipment operating in the same area.

c) Monitoring the performance of systems and equipment from the standpoint of preserving electromagnetic compatibility with other radio communications systems and equipment operating in the same area.

9) Performing, upon the recommendation of various research entities, measurements and technical expertises relating to its statutory activities.

10) Engaging in the needed bilateral and multilateral international cooperation and participating in the work of specialist international organization, and in particular of the UIT [International Telecommunications Union], the CEPT [Conference of European Postal and Telecommunications Administrations], and the IEC [expansion unknown].

11) Cooperating with the State Telecommunications Inspectorate as regards identifying the sources and causes of disturbances in the performance of telecommunications networks due to the operation of radio communications equipment or other equipment that generates electromagnetic fields.

12) Performing other tasks specified in separate regulations.

Paragraph 3.1. The agency consists of the following organizational units:

1) The National Board.

2) District boards.

3.2. The activities of the National Board are directed by the chairman of the national board, hereinafter referred to as "the chairman," who represents it outside. The activities of district boards and their outside representation belong within the competences of district board directors, who are directly subordinated to the chairman.

Paragraph 4.1. The activities of the National Board are directed by the chairman with the aid of deputy chairmen and directors of departments or equivalent units. 4.2. The chairman may authorize the persons referred to in Paragraph 1 and district directors to take decisions in his name.

Paragraph 5.1. The chairman is appointed and recalled by the minister of communications.

5.2. Deputy chairmen and district directors are appointed by the chairman.

Paragraph 6. The chairman submits for acceptance by the minister of communications an annual report on the activities during the preceding year and a plan of work for the coming year.

Paragraph 7.1. Acting under the chairman is the Council for Frequency Utilization, hereinafter referred to as "the council," which is the chairman's advisory body on the general policy for utilizing the frequency spectrum in this country.

7.2. The council is chaired by the chairman, who appoints and recalls its members.

7.3. The chairman may, as the need arises, appoint other advisory bodies.

Paragraph 8. The economic and financial activities of the agency conform with the regulations governing the institutions funded by the State Budget.

Paragraph 9.1. The offices of the agency's National Board are in Warsaw.

9.2. District offices of the agency are situated in the following locations and have the following territorial scope:

1) District Office in Warsaw, for the following voivodships: Warsaw, Ciechanow, Ostroleka, Plock, and Siedlce.

2) District Office in Bialystok, for the Bialystok and Lomza voivodships.

3) District Office in Bydgoszcz, for the Bydgoszcz, Torun, and Wloclawek voivodships.

4) District Office in Gdansk, for the Gdansk and Elblag voivodships.

5) District Office in Katowice, for the Katowice, Bielsk, Czestochowa, and Opole voivodships.

6) District Office in Kielce, for the Kielce, Radom, and Tarnobrzeg voivodships.

7) District Office in Koszalin, for the Koszalin and Slupsk voivodships.

8) District Office in Krakow, for the Krakow, Nowy Sacz, and Tarnow voivodships.

9) District Office in Lublin, for the Lublin, Bialsk Podlaska, Chelm, and Zamosc voivodships.

10) District Office in Lodz, for the Lodz, Piotrkow, Sieradz, and Skierniewice voivodships.

11) District Office in Olsztyn, for the Olsztyn and Suwalki voivodships.

12) District Office in Poznan, for the Poznan, Kalisz, Konin, Leszno, and Pila voivodships.

13) District Office in Rzeszow, for the Rzeszow, Krosno, and Przemysl voivodships.

14) District Office in Szczecin, for the Szczecin voivodship.

15) District Office in Wroclaw, for the Wroclaw, Legnica, Walbrzych, and Jelenia Gora voivodships.

16) District Office in Zielona Gora, for the Zielona Gora and Gorzow voivodships.

Paragraph 10.1. The National Board consists of the following organizational units:

1) Department for the Coordination of Frequency Utilization and International Cooperation.

2) Department for Policy on the Development of Radio Communications Services.

3) Radio and Television Department.

4) Department of Standardization, Technology Research, and Inspections.

5) Department of Economic Policy, Finance, and Administration.

6) Team of Legal Advisers.

7) Bureau for Organizational Matters, Personnel, and Training.

8) Broadcast Monitoring Service Board.

9) Computer Services Center.

10.2. The internal organizational structure and detailed scope of activities of the above units as well as the operating procedure of the National Board are defined in the rules manual issued by the chairman.

Paragraph 11. The detailed scope of activities of the district boards is defined in the rules manual issued by the chairman.

ARGENTINA

Public Telecommunications Operator Privatized

91AN0128A Chichester INTERNATIONAL TELECOMMUNICATIONS INTELLIGENCE in English 19 Nov 90 pp 9-10

[Unattributed article: "Telefonica/STET/France Cable et Radio Complete ENTel Takeover"]

[Text] The future of ENTel—Argentina's public telecommunications operator—was signed and sealed on 8 November when President Carlos Menem finally put pen to paper and transferred ownership of 60 percent of the old ENTel organisation to two international consortia which included three European companies, Telefonica of Spain, Societa Finanziara Telefonica of Italy, and France Cable et Radio, a subsidiary of France Telecom.

The long and drawn-out privatisation of ENTel will bring an injection of cash into Argentina and will make significant reductions in the country's foreign debt. Total consideration paid will amount to $218 million in cash and $5,030 million in foreign debt certificates.

Telefonica's Cointel investment company will control 60 percent of Telefonica de Argentina, which will have a seven-year—extendable for a further three years—monopoly on the operation of the telecommunications system in the south of Argentina. This includes the provinces of San Luis, San Juan, Mendoza, La Pampa, Neuquen, Rio Negro, Chabut, Santa Cruz, Tierra de Fuego, and "the islands of the southern Atlantic" (not specified).

Telefonica de Argentina will also provide services in practically all of the province of Buenos Aires and in the southern half of the capital city itself with a line of demarcation drawn on the street known as La Avenida de Cordoba. Telefonica claims that this southern half of the city contains the main banking and business areas which generate high international traffic.

The company will also establish new jointly-owned companies in Buenos Aires city with the telecommunications companies of the consortium which purchased the northern half of ENTel—STET and France Cable et Radio—to provide international, value-added, and advanced services.

Telefonica indicated that there exist some 1.7 million lines in its area of operation, serving a population of 17 million. Telefonica de Argentina plans to spend $1,000 million between now and 1999 to install between 610,000 and 810,000 lines and up to 12,000 public telephones in this region.

The investment plan for the first year of operation of Telefonica de Argentina foresees investment of $370 million.

Installation of new lines and replacement of obsolete equipment will account for 41 percent of this total. During 1991, a total of 128,522 new lines will be installed with a further 72,575 being installed during the remainder of this year.

Nearly 24 percent of the investment will be spent on updating and improving the trunk cable network and, during 1991, 2,000 kilometres of fibre-optic cable will be installed.

Cointel has acquired 60 percent of Telefonica de Argentina for $114 million in cash and $2,720 million in foreign Argentinian debt. Telefonica's investment is described as $30 million in cash and loan guarantees.

Ownership of Cointel, which has a capital of $1,240 million in ordinary shares and $1,480 million in preferred shares, is as follows (according to voting rights):

Company	Percentages
Telefonica	10.0
Citibank	20.0
Banco Rio	20.0
Techint (Inversora Catalina)	9.9
Banco Central (Spanish)	8.4
Banco Republica	7.5
Banco Hispanoamerica (Spanish)	5.0
Bank of Tokyo (Japanese)	5.0
Banco Commercial Plata	5.0
ABC (Aresbank, Spanish)	4.1
Banco Macro	4.0
Banco Atlantico (Spanish)	0.9

The remaining 40 percent of Telefonica de Argentina is shared between a 30-percent offering for the Buenos Aires stock exchange and 10 percent which will be distributed to employees through share ownership schemes.

The ownership of 60 percent of ENTel's northern Argentinian operations has been purchased for $104 million in cash and $2,300 in Argentinian foreign debt certificates by Nortel, a holding company owned by France Telecom's 100-percent-owned subsidiary, France Radio et Cable, and Societa Finanziaria Telefonica or STET, the Italian state-owned holding company which controls the majority of telecommunications operations—and to a certain extent, manufacturing—in Italy. Each company has 32.5 percent of Nortel.

The remaining portion of Nortel is shared bewteen Perez Companc, an Argentine company, and JP Morgan.

It is thought that the government will offer the remainig 40 percent in the northern operations—as it will with the southern share—to the public and employees.

Nortel intends to invest some $2,000 million over the next six years to provide an extra 700,000 lines and to upgrade 400,000 existing lines. The northern sector of the ENTel network is smaller than the southern half with just 1.3 million lines.

Telefonica confirmed that consortia led by Nynex, by Cable and Wireless and, by GTE withdrew from the bidding process back in May this year.

Telefonica now owns significant shares in two South American national post and telecommunications offices (PTOs)—ENTel of Argentina and a controlling interest in Compania de Telefonos de Chile. It has also been instructed by Chilean authorities to dispose of its 20 percent shareholding in EnTel of Chile, the country's main long-distance operator. It is also seeking support for its bid for a small stake in Telmex.

The recent purchases of shares in operating companies in Argentina and Chile and the pending sale in Mexico present manufacturers already supplying infrastructure equipment to the acquiring operating companies for their domestic networks with tremendous opportunity.

Telefonica already uses switching and transmission equipment from AT&T, Alcatel, and Ericsson in its network, while STET's main manufacturing subsidiary, Italtel, has development and production agreements with AT&T Network Systems International.

France Telecom relies heavily on Ericsson and Alcatel switching and transmission equipment, while Alcatel recently acquired Telettra (Italy) from FIAT via the General Electricity Company (CGE). Spain, Mexico, and Italy are all already heavy users of Ericsson's AXE equipment, although penetration into Argentina and Chile is still very limited.

Telefonica also stated recently that it is looking to dispose of its 10 percent shareholding in Telettra (Italy), but wished to keep its 10 percent in Telettra Espana.

BRAZIL

Satellite Launch Vehicle Bidding Heats Up

U.S. Pressure Alleged

91SM0299Z Sao Paulo O ESTADO DE SAO PAULO (Economic section) in Portuguese 1 May 91 p 1

[Article by Jorge Zappia: "Growing Competition To Launch Rocket"]

[Text] The competition to launch the first Brazilian artificial satellite has led Frenchmen and Americans to band together to put on pressure to prevent the awarding of the contract to a consortium in which the Soviet Union would be supplying the technology. In this conflict of interests, ironically, a U.S. company—Space Commerce Corporation—is working in favor of the Soviets and thus against another U.S. firm—Orbital Science Corporation—which is an ally of the French.

Sergio Roberto Pinto Teixeira and Omar Gattas are superintending director and commercial director, respectively, of Elebra Defense Systems, Ltd., which has formed the consortium with the Soviet firm Glavkosmos and the North American Space Commerce Corporation (SCC); the two directors have written to ESTADO DE SAO PAULO complaining that U.S. Government officials have "warned" Brazilian technicians and military officers about the "problems" which the country would face if it awarded the contract to the Soviets. The "problems" would include difficulties in transferring sensitive technologies and a harder line in the negotiations regarding Brazil's foreign debt.

According to the Elebra directors, as a part of this pressure game, Gen. Agenor Homem de Carvalho, chief of the Military Household of the Presidency, received a memorandum from the European space consortium Arianespace advising that the Western countries would view the possible choice of the partnership with the Soviets as an indication that Brazil is seeking to acquire strategic technological capability for military purposes. Approached by ESTADO DE SAO PAULO, Jacques Mercier, Arianespace representative in Brazil, refused to say anything on the subject.

Military sources in Brasilia said they were unaware of the existence of the Arianespace memorandum, a portion of which was published in FOLHA DE SAO PAULO, and denied that there was any pressure. A day after ESTADO sought out technicians and military officers, the Government classified the project as "top secret" and sent down an implicit order calling for silence on the matter—this according to an official of one of the firms that is bidding on the contract. A military officer sounded out by ESTADO said the awarding of the contract is now a political decision.

Options

President Fernando Collor is already in possession of all the technical information needed to decide on one of three options.

The international consortium which Elebra formed in 1989 with the SCC and Glavkosmos, named Alport (Alcantara Spaceport), offers two alternatives for launching the 117-kg satellite built by the National Institute of Space Research (INPE). The first alternative provides for a test launching and then the definitive launching of the satellite in space; the rockets would be launched from a Soviet submarine stationed off the coast of Maranhao. The cost would be $10 million.

The other alternative of the Alport consortium also provides for the launching of two satellites, except that they would be carried in the nose of the Kosmos rocket, which would be launched from the Alcantara space base. The Soviets would install a launch pad and the telemetry equipment to follow the flight; 24 months later, when the

initial investment of $30 million by the Brazilian Government is completed, the Soviets would come to compete, through their consortium with Elebras and the SCC, in the satellite launching market, worth an estimated $6 billion a year.

The second option available to President Fernando Collor is that of the Orbital Science Corporation and consists in launching the INPE satellite by means of a Pegasus-type rocket. Tested for the first time last year, the rocket is fired from the roof of a B-52 bomber at an altitude of 15,000 meters. It costs $10 million. The third option, according to the military officer who spoke with ESTADO, would be to launch the satellite with a rocket of the Scout type, manufactured by the LTV Missile and Electronic Group. In this case, the cost would be $14 million.

These three options were selected from among the 11 analyzed by the Brazilian Commission for Space Activities (Cobae). The two alternatives presented by the consortium led by Elebra came out first from the standpoint of the transfer of technology.

According to Sergio Roberto Pinto Teixeira, the decision in favor of Alport was made on 27 February in a meeting of the Cobae, formed by 12 Government ministries and secretariats. Only the Ministry of Foreign Affairs opposed the decision, arguing that the proposal needed further analysis because the Soviet rocket would be one that is known to be a military launcher. At that time, with the war in the Gulf, the choice of the Kosmos could be seen as politically provocative.

The Gulf War was also mentioned in the memorandum which Arianespace sent to Gen. Agenor Homem de Carvalho. One passage referred to the "illusion" of the transfer of Soviet technology, citing the example of the Scud missiles, which were only developed on acquisition of Western technologies. Gen. Jonas de Morais Correia Netto, then minister-chief of staff of the Armed Forces (EMFA) and of the Cobae, sent the president an explanation of the reasons for the decision and a request for its approval. However, Collor asked for another assessment by six ministries and secretariats and, once again, according to Elebras superintending director Sergio Pinto Teixeira, the Foreign Affairs Ministry opposed awarding the contract to the Alport consortium.

Teixeira and Gattas have no doubt that "there is enormous pressure on President Collor by the Americans and the Frenchmen." The Americans have 40 percent and the French have 60 percent of the world market for satellite launching. "They do not want Brazil to have the ability to compete in the market which they control," claim the Elebras directors, for whom a decision against Alport would mean the loss of $600 million in business which they would obtain if the consortium won the launch contract. The military issue, they maintain, is simply a smoke screen to cover up the Orbital Science Corporation's attempt to win the contract.

Soviet Interest in Alcantara

91SM0299Y Sao Paulo O ESTADO DE SAO PAULO (Economic section) in Portuguese 1 May 91 p 9

[Text] The Soviets are interested in an association with Brazil for the use of the Alcantara base in Maranhao, for purely commercial purposes, said Sergio Roberto Pinto Teixeira, superintending director of Elebra Defense Systems, Ltd. Although the Soviets have a whole family of rockets of proven effectiveness, their launch base—Baikonur, in the south of the Soviet Union—is still closely linked with the nuclear defense system, under military control, and their marketing is not as good as it could be.

These factors are inhibiting potential buyers for their rockets and led the Soviets to seek an association with the North American Space Commerce Corporation (SCC). With the Soviets manufacturing the rockets and the North Americans marketing them, everything would already be working out if it were not for the need to find an alternative to Baikonur. This is where Brazil came in.

The country joined with the two companies under technical cooperation agreements signed with the Soviet Union in 1988. Sergio Roberto Pinto Teixeira sought out the Soviets and presented the proposal for the consortium. His trump cards in this negotiation were the fact that Alcantara already had the infrastructure (at a cost of $400 million), Brazil's influence with the Third World countries, and Alcantara's proximity to the equator. "A Kosmos rocket needs less fuel to reach the stratosphere because it has the advantage of the thrust provided by the movement of the earth itself, so it can easily carry two satellites instead of just one," Teixeira explained.

"It is not by accident that the North Americans built Cape Kennedy at the extreme southern tip of Florida and the French located their Kourou base in French Guiana," said Omar Gattas, commercial director of Elebras. According to Teixeira, if the consortium does not win the contract or if it is delayed for two long, the Soviets could opt to enter into a similar agreement with Australia, establishing a base in the region known as Cape Cord.

Political Decision

91SM0299X Sao Paulo O ESTADO DE SAO PAULO (Economic section) in Portuguese 2 May 91 p 7

[Text] A high-ranking military officer directly involved in the Brazilian satellite launching program described as "healthy" the competition among the Alport (Alcantara Space Port) consortium, the LTV, and Orbital Space Corporation for the contract to supply the rockets. "There is no pressure; it is pure and simple business competition," he said. The military is gathering more information to "prepare the architecture of the contracts" when the president of the republic makes his choice. According to the officer, the decision will be

essentially political, because the best three proposals have already been chosen by the commission charged with the selection.

Technically, on the scale of priorities, which take the transfer of technology into consideration, the Elebra consortium with the Soviets is preferred by the military and by a majority of the civilians on the Brazilian Commission for Space Activities (Cobae). However, there is no elation about the transfer of strategic technologies, or with regard to the rocket navigation systems. "We do not believe there will be a transfer of technologies in any of the cases," said the military officer. Regarding the idea that Brazil could enter the competition for the rocket launching market if it associates with the Soviets, the officer said it was a "very pretentious" notion.

The best thing to do, he said, is to derive the greatest possible advantage from the competitive bidding and thus achieve the primary objective, which is to put the Brazilian satellite in orbit by the first quarter of 1992, when Brazil will host the world conference on the environment. Politically, the officer argued, it will be to Brazil's interest to demonstrate that it has the satellite technology and can use it effectively in the control and collection of data regarding the national territory, particularly the Amazon region.

INPE To Receive Signals From ERS-1

91SM0287Z Sao Paulo O ESTADO DE SAO PAULO in Portuguese 20 Apr 91 p 12

[Article by Cilene Pereira]

[Text] Sao Jose dos Campos—The National Institute of Space Research (INPE) finished work this week on setting up, in Cuiaba, Mato Grosso State, the station that will receive images to be sent by the European Remote Sensing Satellite (ERS-1), a sophisticated piece of equipment that carries an instrument capable of transmitting and receiving radar signals. This means Brazil joins the list of countries that have their own stations for capturing signals emitted by equipment of this type.

In contrast to conventional satellites that use infrared radiation sensors to pick up the heat from the photographed region, for example, the ERS-1 functions like a real radar system, issuing signals on a microwave frequency. Because their wavelengths are much longer than those of visible light or infrared radiation, microwaves are able to penetrate and perforate the thickest cloud layers, like those that usually cover the Amazon region. "The signals picked up by the better-known kinds of satellites cannot get past the series of droplets of which clouds are made," explains researcher Hermann Kux, of INPE's Department of Remote Sensing and Meteorology. He is in charge of coordinating the practical applications work that the images obtained by the ERS-1 will facilitate.

Arianespace

The satellite was built by the European Space Agency (ESA), a 13-nation consortium, and will be launched on 3 May from the space center at Kourou, in French Guiana. It will be positioned 800 km above the surface of the Earth and is supposed to make at least one pass over Brazil every day. Each one of these passes will last an average of six or seven minutes. Its signals will be picked up in Cuiaba and then retransmitted to INPE's image processing station in Cachoeira Paulista, a city near Sao Jose dos Campos.

Like any radar apparatus, the ERS-1 will also have a target; this will be the earth's surface, which will receive the microwave frequency transmitted by the satellite. Depending on the characteristics of the soil being scanned by ERS-1—mainly its ruggedness and humidity—some of these waves will be absorbed, while others will return to the ERS-1 orbit. "The satellite perceives this return and, using the difference between what went out and what came back, can form an image of the terrain," explained Jose Borges Escada, Jr., an engineer, also from INPE.

Floods

One of the principal benefits that the new satellite will bring to Brazil is the possibility of carrying out a variety of research projects covering subjects ranging from geological structure to the monitoring of the effects of floods, such as those that occur in the Mato Grosso swamplands known as the Pantanal. It will also help to accurately monitor the evolution of the Amazon rain forest. "We will be able to identify the deforested areas of the Amazon region more precisely. At present, in certain cloud-covered regions, the images of the other satellites are of poor quality," Escada said.

REGIONAL AFFAIRS

Iraq, Jordan Discuss Communication Links

91AE0386Z Amman JORDAN TIMES in English 21 Mar 91 p 3

[Article by P.V. Vivekanand]

[Text] Amman—The telecommunications corporations of Jordan and Iraq are in contact for resuming microwave links between the two countries, but no clear details have yet been obtained on the extent of damage caused to the system in the allied bombing of Iraqi facilities, a senior official said Wednesday.

"All efforts will be exerted to repair the damages and reestablish the microwave link in the shortest time possible as soon as the damage assessment is carried out," said the official, preferring anonymity.

In the meantime, "there is no communication between Jordan and Iraq, at least not on the civilian side," added the official. "We hope to have a fair picture of the situation soon on the state of Iraqi facilities," he said.

Telecommunication facilities in Iraq, notably in Baghdad, are among the worst hit in the allied air assault which began Jan 17. Several satellite centers in the Iraqi capital have been repeatedly hit, some of them seven or eight times. Indicative of the allied objective of total destruction is the view of a seven-storied building in the heart of the Iraqi capital. Every floor of the building appeared to have been systematically targeted, leaving a steel and concrete hulk with millions of cables hanging loose.

"These are complete write-offs. There is no way anything could be salvaged from the wreckage," according to an Iraqi Information Ministry official who took reporters on a tour of installations damaged in the bombing.

"We have to start from scratch," he added.

Every communication tower and ground facility between Baghdad and Tirbil, on the border with Jordan, has been destroyed; in some cases, the tall steel towers with the satellite dish are still standing in the middle of the desert, but adjoining small buildings which house related equipment have been totally smashed. Some of the steel structures resemble the leaning tower of Pisa.

Officials point out that Iraq had some of the best communications systems in the Middle East although they were never used to their full potential in view of the security situation during the eight years of war with Iran and the no-war-no-peace situation on the front until August 1990. The situation remained static with the Iraqi invasion of Kuwait in early August to the extent that "some of the equipment and systems were never tested for optimum purposes," said an industry expert, offering an explanation to the erratic communications with Iraq even during peacetime despite the availability of sophisticated infrastructure.

Estimates of the damage from the bombing range between $2 billion and $4 billion.

According to experts, the first and relatively easier option available to Iraq is to resurrect the microwave link with Jordan which will facilitate telecommunications between Iraq and the outside world through Jordanian satellite stations.

Postal Services

Meanwhile, moves are under way for Jordan's postal services to facilitate the flow of Iraqi mail through the Kingdom.

"We expect to begin the service in a few days' time," said Dr 'Abdallah Jazi, head of the Post and Postal Savings Corporation of Jordan. "The Iraqis have requested us to handle the mail, which will be sent to Jordan overland bearing Iraqi postal stamps, and to channel it through Royal Jordanian (RJ) planes," he told the Jordan Times.

"We have agreed to the request, and we are ready when the Iraqis are," added Dr Jazi.

Iraq's postal system had been partially active until the outbreak of the war. Iraqi airways used to operate one daily regular flight to Amman until the morning of January 17, when the allied blitzkrieg rendered Baghdad airport inoperative.

Kuwaiti Communications

The Telecommunications Corporations (TCC) said meanwhile that calls had been coming into Jordan from Kuwait through satellite facilities set up in the emirate after the end of the Gulf war.

"People in Jordan can receive calls from Kuwait but not vice versa," said TCC Director-General Muhammad Shahid Isma'il. The system is set up by the American AT&T through its satellite facilities, he said.

"They have established ground facilities with dishes which are hooked up with the AT&T satellite, and this allows them to make calls outside," he told the Jordan Times. But the system does not allow calls into Kuwait from outside pending repairs to Kuwait's own telecommunication facilities," he added.

The Kuwaiti authorities have not approached Jordan to fix its side of telecommunications with the emirate.

According to one Jordanian who received a call from his sister in Kuwait City on March 9, more than one week after the allied forces entered the emirate following Iraq's withdrawal, AT&T has set up several "public call" booths around the city and people are allowed calls outside upon the "discretion of Kuwaiti militiamen."

INDIA

Recommendations on Telecom Expansion Noted

91WD0635A Madras THE HINDU in English 12 Mar 91 p 4

[Excerpt] New Delhi, March 11—A committee of experts constituted by the Department of Telecommunications (DoT) and headed by Mr. B.N. Bhagwat, Secretary of the Telecom Commission, in its report submitted last week, has recommended that future expansion of the telecom system in the country, especially during the Eighth and Ninth Plans, should be based on either CIT Alcatel's E-10B or the indigenous C-DoT technology though their area of operation may be mutually exclusive.

Based on this recommendation, the Ministry of Communications is understood to have placed orders on eight parties—Bharat Electronics Limited (BEL) and Instrumentation Limited (IL) Kota (both in the public sector), MELTRON and Punjab Communications (in the joint sector) and four private sector units namely Indchem Electronics, W.S. Industries, L&T and Nelco—for supplying to DoT over 2.5 lakh telephone lines based on C-DoT technology. This would be over and above the order for manufacturing one lakh lines already placed on the public sector Indian Telephone Industries (ITI).

According to informed sources, the DoT, in a parallel move, has also convinced the Ministry of Industry to permit the manufacture of telephone exchanges of up to 10,000 lines. The existing provision of the industrial policy limits the private sector to the manufacture of exchanges no larger than 2,000 lines. An official notification amending the rules of industrial policy in this regard is to be issued shortly. While the ITI has reportedly expressed unhappiness over the large scale involvement of the private sector in the exchange manufacture business, the officials at the DoT explained that the private sector besides the two public and joint sectors have turned out better products as per the initial quality assurance (QA) assessment. Moreover, they also saw nothing wrong in entrusting indigenous C-DoT technology to Indian companies be they in the public or private sector.

Ulsoor exchange: The pilot exchange loaded up to 4,500 lines at Ulsoor in Bangalore is reported to be working satifactorily. Steps have been initiated to take the Ulsoor exchange capacity to 10,000 lines with modifications in the Central Module (CM). Besides, the Base Module (BM) of 512 port exchange was also being upgraded. Once the upgradation job was completed, C-DoT would complete the transfer of technology to the eight parties which have been given orders by the DoT.

As of now, these eight companies are expected to manufacture C-DoT 512 port exchanges in the configuration of 400 lines, 1,000 lines and 1,500 lines which do not require a central module. But as they go in for bigger exchanges, they would need the central module and it was in this context, the upgradation of the central module at C-DoT assumes importance. The testing of the central module for quality assurance is in progress and it will then be submitted for the environmental test. Sources in DoT indicated that the eight chosen companies would be in a position to manufacture exchanges up to 10,000 lines hopefully by 1992.

The sources said by June 1991 it would be possible for the ITI to offer its first 10,000-line exchange at Ulsoor and based on its experience, the other eight companies would follow with their production programme.

In any case, it was pointed out that the demand was not only for 10,000 lines exchanges but for ones below that capacity as well. During the Eighth Plan, the demand for exchanges has been estimated at 75 lakh lines and only in the four major metros was there demand for more than 10,000-line exchanges with a total requirement of nearly 30 lakh lines. The sources said this demand could be met by E-10B technology now used by the ITI's Mankapur factory which has an annual capacity of 5 lakh lines. Besides, both Rae Bariely and Bangalore units of the ITI were also being revamped to produce at least 50,000 line cards annually.

Overall, the demand for exchanges above 4,000 lines has been estimated in terms of exchange capacity at 57.5 lakhs. The balance of nearly 20 lakh lines can in any case be met with C-DoT technology as there was sufficient demand for it in various circles and minor telephone centres. With each of the eight companies investing about Rs. 5 crores it would be possible to produce more than five lakh lines a year, the sources said.

Upgradation of technology: The Department of Telecommunications, in view of the decision not to go in for a third technology, has asked the ITI to negotiate with CIT Alcatel of France to upgrade the technology supplied by it. As per the original agreement, with Alcatel, ITI had the option to go in for upgraded technology from the French company free of cost. The option, however, had to be exercised before March 1993. The sources said while upgraded technology may come free, the French company in any case will have the inevitable advantage of making profits on selling proprietary components.

In this context, it was stated that technology shift from the present CSC analog concentrators to CSN digital concentrators would involve a large complement of equipment of proprietory nature for which ITI will have to pay in hard currency. An ITI team is expected to go to France to tie up the technology upgradation for while software required has been proven in France, it may require modification if it were deployed in India to accommodate ISDN as well. This particular version of the E-10B exchange is said to be capable of handling eight lakh busy hour call attempts (BHCA) as against 1.75 lakhs of the Mankapur version. But the question is do we require exchanges with such high BHCA because

the experience in India points towards a fall in the calling rates per line as the number of lines increase. [passage omitted]

Satellite Progress Reviewed; Launching Planned

Space Chairman's Lecture

91WD0636A Madras THE HINDU in English 25 Mar 91 p 4

[Text] Madras, March 24—Prof. U.R. Rao, Chairman, Indian Space Research Organisation, says that satellite communication is the only practical answer to combat illiteracy in India whose population will reach one billion by the end of the century and 35 per cent of whom will remain unlettered.

For developing countries, only satellite communication could provide a cost-effective solution for information-gathering and dissemination, business communication, sending telegrams to remote areas, mobile communication, battling disasters such as floods and oil slicks, he said.

Prof. Rao, who delivered the first Institution of Electronics and Telecommunications Engineers-Solidaire Endowment lecture on Friday last, said that space was the only medium which could transform the Indian society which lay dormant under 300 years of colonial rule. It touched every facet of human development, be it telecast, predicting weather, agriculture, forestry, fisheries, water and land resources, ecology and sustainable development. Space science alone could ensure that progress occurred all over, especially in rural areas, in a phased manner.

"If we can make sure that our rural people are literate, the entire scenario will change and it can be done only through education," he said. There were 180 universities in the country with 7,000 colleges and seven million students. "This will not change the face of illiteracy unless we develop a system which can dramatically combat illiteracy" and this could be done only through satellite communications.

Realising this, the ISRO started off with the SITE (Satellite Instructional Television Experiment). This largest sociological experiment for a year in 1975-76 made a demonstrable impact by providing audio-visual education through community TV sets in villages on health and agriculture. There was feedback from the villagers as well. Similarly, with the aid of the Franco-German "Symphonie" spacecraft, a series of innovative communication experiments were conducted under the STEP (Satellite Telecommunications Experiments Project).

APPLE was a milestone: ISRO achieved the next milestone when the indigenously-built APPLE, an experimental telecommunication satellite, was used fof dissemination of news, telecasting important national events such as the Air Force's firepower display, beaming of educational course of robotics, cyclone and flood relief operations. "In essence, APPLE became the stepping stone for conception and design of INSAT systems for the country."

The INSAT spacecraft, viz, 1A, 1B, 1C and 1D were unique because they were multipurpose satellites that could beam telephone calls, help in TV and radio broadcasting and also provide imageries for predicting weather.

100 disaster warning systems: More than 100 disaster warning systems (DWS) had been set up to warn about cyclones and floods. The most dramatic use of the DWS was during the cyclone that hit the Andhra Pradesh coast on May 9, 1990 when the Government evacuated 1.7 lakhs of people, saving thousands of lives. The INSAT system also provided dedicated terminals to the ONGC, GAIL, NTPC, etc. THE HINDU used the INSAT for bringing out facsimile transmission of fully composed pages for its edition from Delhi.

THE HINDU had earlier combined with the Department of Space in using the APPLE for a similar purposes. The INSAT had enabled the setting up of rural telegraphy in the Northeast, helping people to send telegrams which reached the remote areas faster. The INSAT helped locate accident sites such as the place of a plane crash. When a plane carrying a U.S. Senator crashed in Ethiopia, "we were the first to provide information on this crash," Dr. Rao said.

Wide TV coverage: Before the advent of the INSAT, there were only 12 television stations in the country, with 10 per cent of the population having access to television programmes. Now, there were 520 TV stations, covering 75 per cent of India's population. The meteorological payload viz., very high resolution radiometer (VHRR) on board the INSAT-1B had taken more than 30,000 imageries. It could take an imagery every half hour and it could send two or three imageries every half hour when cyclones were about to strike. The VHRR on the INSAT-1B was the longest living instrument for more than seven years and it was used recently, during the Gulf war, to look at the oil slick which spread from an area of 600 sq. km to 40,000 sq. km. The INSAT had also helped provide information on cyclones to Mauritius and Bangladesh.

Need for trained manpower: Mr. O.P.N. Calla, President, IETE and also Deputy Director, Space Applications Centre, Ahmedabad, said the requirement of trained manpower in electronics and telecommunications would be large in future. Therefore, the IETE had proposed to establish a polytechnic, a staff college and an open university. The IETE would also form telecommunications and broadcasting society and electronics and informatics society, Mr. Calla said.

Mr. A.N. Srinivasa Rao, industrialist and Mr. A.N. Ramana Prasad, praised the progress achieved by ISRO.

Prof. K.S. Hegde, Chairman, IETE, Madras centre, who welcomed the gathering, said the Madras centre had acquired a building of its own from today. Mr. S.S. Soundara Rajan, Secretary, IETE, Madras, proposed a vote of thanks.

Geostationary Launch Plans

91WD0636A Madras THE HINDU in English 25 Mar 91 p 4

[Text] Madras, March 24—India's first Geostationary Satellite Launch Vehicle (GSLV), which can deploy a satellite weighing 2.5 tonnes, will blast off from Sriharikota by 1995-96, according to Prof. U.R. Rao, Chairman, ISRO. "We are confident that the first GSLV will be launched by 1995-96," he said.

He told reporters here on Friday that if the Centre approved the building of GRAMSATS (Grameen Satellites), the GSLV to be flown in 1995-96 would carry the first GRAMSAT.

The GRAMSET which existed only in concept now would be dedicated spacecraft that would be tailormade to meet the basic demands of rural areas for information on health, hygiene, environment, family planning and better agricultural practices. It would also provide continuing education to workers on the shopfloor to update their technical skill. GRAMSATS would help in providing adult education programmes, supplement educational programmes for primary and secondary school children, etc. In essence, they would provide education to rural masses and thus combat illiteracy.

Prof. Rao said the Centre had already approved of the GSLV project in September last and so "we are moving fast" on it now. The GSLV would use a cryogenic stage, viz., it would have liquid oxygen and liquid hydrogen. "Work on cryogenics has started in great earnest," he said.

A regret: "I want the first GSLV to carry the GRAMSAT... The GRAMSAT should not be misused. It should be used for education," he said. He regretted that INSAT-1 spacecraft were being used for entertainment and beaming advertisements. These advertisements created a demand for products which the villagers did not need.

IRAN

Siemens Wins Digital Exchange Lines Contract

91AN0185A Chichester INTERNATIONAL TELECOMMUNICATIONS INTELLIGENCE in English 26 Nov 90 p 20

[Text] Following extensive efforts by Iranian authorities to upgrade its war-battered telecommunications network, Siemens has been awarded a large contract by the Iranian Ministry of Posts, Telephones and Telegraphs.

This four-year contract, for the supply of 150,000 EWSD [Electronic Digital Switching System] digital exchange lines and for the construction of an EWSD manufacturing plant in Iran, is similar to one signed with SEL Alcatel in October. Under that agreement, SEL will supply 450,000 System 12 lines directly and will establish a manufacturing plant capable of producing 450,000 lines annually over the next three years.

Siemens spokesmen were suprisingly reluctant to talk about the deal and would give no further information, indicating that they would be publishing details at a later date.

Card-Operated Telephones To Be Installed

91WT0119A Tehran JOMHURI-YE ESLAMI in Persian 14 Mar 91 p 14

[Text] News service. Soon, 300 card-operated international and inter-city public telephones will be installed and begin operation in Tehran.

In recent years, numerous problems with coin-operated public telephones have forced the producers of these communication tools to build a telephone which works without coins and calculates and collects the charges for calls indirectly.

With the manufacture of card-operated telephones, this has become a reality. At the present, city, inter-city and international public telephones in most developed countries of the world are of this kind.

In early 1367 [1988], the Iranian communications company began designing and manufacturing "smart card" telephones, the prototype of which took four months to build.

At the present, the electronic and mechanical assembly and testing of a telephone can be completed by almost anyone in three hours. The assembly plant for the card-operated telephones is located in Meshkinabad of Karaj and is capable of assembling and preparing 800 telephones by the end of next year.

Every telephone manufactured in the country will cost $300 in foreign currency and 280,000 rials in domestic currency, whereas the foreign price is $2,800. To enable the people to use the 200 telephones which will soon be installed throughout Tehran, 100,000 smart cards at 5.5 francs each have been purchased from France. Every smart card which is really a smart credit card is made of two parts of plastic and a memory.

In order to produce one million credit cards in the country, the communication factories of Iran-Shiraz (KOMA) have agreed to produce the plastic part and the Shiraz parts manufacturing factory to manufacture the memory. With the production of one million credit cards by these factories, one million francs in foreign currency will be saved.

The smart credit cards are of two kinds. One kind can be used only once and the other kind 64 times. In other words, it can be programmed for 64 times.

If the people accept this telephone, even the city public telephones will be card-operated in the future.

In the future, two kinds of credit card, one red in color and the other blue, will be sold to the general public.

The credit card for international communications is 40,000 rials and for inter-city calls, 8,000 rials.

After the installation of the control systems in the telephone centers, card-operated telephones will have the capability of reporting all problems automatically to the center. As a result, the dear compatriots will face fewer out-of-order telephones.

The instructions for using card-operated telephones are as follows:

1. Pick up the receiver.

2. On the upper right, on a screen, the phrase "INSERT CARD" will appear which means place the credit card in the designated slot.

Note. If after 20 seconds the card is not inserted in the slot, the phrase "TRY AGAIN" and the alarm will indicate that in order to make contact, you must start over.

3. Place your credit card in the slot. At this moment, the monetary value of the card will be displayed on the screen.

4. You will have a dial tone and you can dial.

Note. If the card is a forgery or lacks credit, the phrase "CARD INVALID" will appear on the screen.

5. When you start dialing, the figures showing the value of the card will disappear form the screen and be replaced with the telephone number you are dialing.

6. Once the person you are calling picks up the receiver, his number will disappear from the screen and be replaced by the calculation of the time of the call and the charges.

7. After the call is completed, the remaining credit on the card will be shown on the screen.

Note. In international communications, if the code of a country is dialed mistakenly (and that code does not exist) the phrase "UNDEFIND" will appear on the screen and the alarm sound will be heard.

Gulyaev Assesses Telecommunications

91AN0277A Maidenhead TELEFACTS in English Jan 91 pp 4-5

[Interview with telecommunications specialist Yuri Gulyaev by Andrew Hussey of Datapro Research; place and date not given: "Yuri Gulyaev Assesses Soviet Telecoms"]

[Text] The following interview with Yuri Gulyaev was conducted at the Financial Times World Telecommunications Conference in London on 3 December. Mr. Gulyaev is chairman of the Subcommittee on Communications and Informatics of the Supreme Soviet and Director of the Institute of Radio Engineering and Electronics of the USSR Academy of Sciences. The interview is part of Datapro's ongoing investigation into eastern European telecommunications.

[Hussey] To what extent have political events in the past year, particularly the policy of sovereignty in the Republics of the USSR, influenced telecommunications policy in the Soviet Union?

[Gulyaev] This is a large question. It is our opinion that any long-distance telecommunications network, in the whole of the USSR and all international links, must be under the control of the central USSR administration. This includes all long-distance railways, air and sea transportation, defense facilities and all other activities which are common to the whole Union. But it is possible for local communications networks to be under control of regional Republican administrations.

The cellular mobile communication network of Kharkov in the Ukraine, for example, was installed through the sole decision of the Kharkov Soviet and no one else. But its link by trunk lines to other Ukrainian cities is going to be under the control of the Ukrainian Republican Soviet. Trunk lines to other Republics and to foreign countries will be controlled by the Supreme Soviet of the USSR through its Commission on Transportation, Communications and Informatics and through the USSR Ministry of Communication. It is through these bodies that we can control such things as standards and frequencies.

I think that the sovereignty of the Republics is generally a good thing for the development of telecommunications in the USSR because it raises the level of activity in this area. They become more effective at finding and distributing resources than if they were controlled from the center.

[Hussey] What was the reaction in the USSR to the CoCom decisions concluded in the summer of this year?

[Gulyaev] One of our main concerns was the development of the trans-Soviet Union fiber-optic line from Europe to Vladivostok and then Japan to complete a fiber-optic communications ring around the earth. We will start work on this in 1991. CoCom have prohibited US West and other western companies from participating with us on this project and we cannot buy the equipment with 565 Mbps which we need.

Obviously, there is disappointment at this decision, but the work will go on. We have the scientific and technical potential to continue the work and so the CoCom decision will delay us, but we will work intensively to realize this project. I am optimistic for other projects and I think that CoCom will next year change many things.

[Hussey] How successful has the Soviet Union been in developing joint ventures with other countries?

[Gulyaev] We have been looking to form joint ventures for some time, mainly in the cellular area which is now almost absent in the Soviet Union. We have plans to develop cellular in big cities and the countryside with different cell sizes and production of radio telephones. It is a big program and we need capital. We have had partnerships with countries like Poland, and with smaller countries like Pakistan and Afghanistan who can use our satellites, but we are interested in western investment.

There are some successes. For instance, between Kiev Telecommunications Enterprises and Siemens, there is the company "MKM Telecom", and between Leningrad Enterprises and Bell Company (Belgium), there is "Len-Bell-Telephone". Both of these companies produce electronic switching stations. Also "Tellur", formed with Spanish company "Amper," produces telephone apparatus, "Komstar" with the British GPT, with international telephone and telefax services, and "AMT" with the Finnish Nokia has a mobile communications license in Moscow.

The first joint venture was formed in 1989, between Soviet Institute VNIIPAS and San Francisco/Moscow Teleport Inc. The company is called SOVAM and provides electronic messaging, data communication links, and so on. It is a good success.

The Supreme Soviet always regulates activity, as well as development of certain important areas of telecommunications and regional systems with its tax policy. I am sure that next year the Supreme Soviet will change the law on property (in particular the law on intellectual property) and the law on enterprise and this will make western companies more interested in development in the Soviet Union.

Now, under Perestroika conditions, things are not so easy in the Soviet Union for western companies, or anybody, but I am sure that in the future things will become stable and telecommunications in the Soviet Union will be an interesting market for everybody.

REGIONAL AFFAIRS

EC Updates Satellite Communications Policy

91AN0207A Brussels EUROPE in English 19 Jan 91 pp 11-13

[Unattributed article: "Telecommunications: The European Commission Has Proposed Four Major Changes to the Regulatory Environment To Allow the Community To Fully Exploit the Potential of Satellite Communications"]

[Text] Brussels, 18 January 1991 (Agence Europe)—In its Green Paper on a common approach in the field of satellite communications in the European Community, the European Commission states that four major changes are needed in the regulatory environment in order to allow the Community and all of Europe—the EFTA countries and, in time, all of Eastern and Central Europe—to exploit fully the potential of satellite communications. The Commission deems the current situation to be unsatisfactory: The single market of satellite communications is extremely compartmentalised, which can hamper the development of the European satellite industry, which, in terms of services, is in the early stages despite its advanced technological position. The Commission considers a change to be necessary because, in the run-up to 1993, the fragmentation of the Community satellite communications market cannot be maintained. It is for this reason that it has proposed four changes to the regulatory environment, as follows:

1) The full liberalisation of the earth sector, including the abolition of all exclusive or special rights in this area;

2) Free (unrestricted) access to space segment capacity;

3) Full commercial freedom for space segment providers;

4) Harmonisation measures as far as required to facilitate the provision and use of Europe-wide services.

The Commission has projected that a certain number of Community measures will be necessary to facilitate trans-European services and to implement the above proposals in a harmonized way:

a. The mutual recognition of type approval for satellite communications terminal equipment. This measure will extend the coverage of the directive on the approximation on the laws of the Member States concerning telecommunications, including the mutual recognition of their conformity. This recognition is being studied for all transmit/receive satellite earth stations as well as for receive-only satellite earth stations connected to the public switched network.

b. A Community scheme concerning the mutual recognition of licenses for satellite terminal networks, laying down the conditions for the Community-wide operation of terminal networks and possible conditions regulating hub station operations. This directive will facilitate the establishment of two-way networks across the Community by providing for class licenses for networks operating within frequency bands designated with priority to Community-wide satellite applications. These class licenses should give the possibility of operating, e.g., VSAT networks throughout the Community under a single license, without any need of frequency coordination for the individual participating satellite terminals in the Member States. Networks operating within non-exclusive frequency bands should be licensed with a minimum of compulsory procedures for frequency coordination.

c. Strengthened frequency coordination related to satellite communications, in order to support Community-wide licensing, building on the current reform of the European Radiocommunications Committee and the establishment of the European Radiocommunications Office set up by the European Conference of Postal and Telecommunications Administrations (CEPT), and taking full account of the coordination procedures for frequencies and procedures for equitable access to the geostationary orbit globally agreed and established with the Radio Regulations and administered by the International Frequency Registration of the International Telecommunications Union.

d. Greater coordination of Member States with regard to services to/from non-Community countries, in order to develop common procedures with regard to these services, building on the general principles which are in the course of being defined within the framework of the overall GATT negotiations.

e. Specific definition of open network provision (ONP) concerning the connection of satellite terminal networks to the terrestrial public network infrastructure, subject to the constraints and regulatory safeguards set out in the proposed positions in order to provide Europe-wide harmonised interfaces between satellite systems and the public network infrastructure, based on the principles of equitable, non-discriminatory and cost-oriented access. This would extend the coverage of the ONP to satellite communications and would therefore substantially facilitate the effective operation of the Community-wide licensing scheme set out above;

f. Harmonisation of identified future transmission techniques for satellite broadcasting to the general public.

The draft directive will replace the 1986 directive, as stipulated in the Commission communication of 21 February 1990 concerning audiovisual policy. Preparation of future action concerning broadcasting techniques in this sector should take into account the fact that the harmonised introduction of a high-definition television (HDTV) standard at EC level constitutes, for the near future, a major challenge in which the use of satellites will play a vital role as the initial transmission medium. It would also be necessary to draw conclusions from the fact that technical development makes it increasingly difficult to distinguish between "Broadcasting-Satellite

Services" according to the definitions used internationally of the ITU Radiocommunications ruling and broadcasting applications operating in the framework of the "Fixed-Satellite Services."

The Commission has also proposed a certain number of long-term action lines in order to create an environment which would be favourable to full implementation of the guidelines and measures proposed. In particular, this concerns changes which will be necessary in the international environment of satellite communication, the production of standards, and the promotion of the full use of satellite technology by those providing services and by telecommunications organisations. All the above activities must have the aim of creating a strong European position. The Commission thus intends to launch the following lines of action:

i) Work towards revision of the Eutelsat (European Organisation of Telecommunications Satellites) convention and its operational agreement. The revision should in particular authorise the necessary modifications in order to guarantee direct user access to Eutelsat satellite capacity, the future handling of technical coordination procedures provided for in the Convention, and the mechanisms making it possible to guarantee that the tariffs applied to users are fixed in relation to costs;

ii) Definition of a common position in international fora related to satellite communication, and, in particular, Intelsat (International Organisation for Satellite Communication) and Inmarsat (International Organisation of Maritime Satellites). The major changes called for by the Commission could take time and necessarily depend upon the development of the world situation. The Commission has nevertheless considered that measures could be taken, notably: Member States must, as regards their own representation, strictly apply the principle of separation of regulatory and operational functions; they must support Intelsat proposals underway and aimed at rationalising the economic harm coordination procedures;

iii) Accelerating standardisation work in the European telecommunications standards institute with regard to satellite communications equipment. In particular for the earth station equipment sector, standards are indispensable for the effective implementation of the mutual recognition of type approval and licensing of one-way and two-way satellite systems. The Commission intends to give high priority to this area in its working relations with the European Telecommunications Standards Institute (ETSI).

iv) Promotion of the full use of satellite technology applications by service providers and by telecommunications organisations. This promotion is in particular with regard to services for the less-favoured regions and the countries of Central and Eastern Europe which are now integrating themselves into the European telecommunications area. The Commission proposes as major objectives: the full use of the technological potential of the European Space Agency; the full use of satellite communications systems in the implementation of Community policies; particular attention to be given to the future role of satellites in the context of forthcoming telecommunications development within the EC, in particular for pan-European services, and the development of IBC (Integrated Broadband Communications).

EUROPE recalls that the traditional applications (intercity long-distance telephone and the major selective transmission band needs such as TV broadcasting from studio to studio) still make up a major—although decreasing—share of international satellite services. Satellite connections still represent today nearly 60 percent of transatlantic telephone communications, but this share should fall to 30-40 percent in 1995. In Europe, vocal telephoning by satellite represents 2 to 3 percent only of intra-European national and international long-distance communications. Almost 75 percent of revenue comes from televisual distribution. With the exception of television, which still has an important role, the role of satellites in the next ten years will be marked by two fundamental characteristics: i) short term deployment; and ii) distinct specialised markets. Forecasts indicate that although telecommunications and radiocommunications bodies will remain dominant for providing communications services by conventional fixed satellites in Europe, new European markets will also develop in areas such as satellite television, private commercial services, specialised mobile services, and the transmission of information by satellite. They will develop, the Commission states, if the present restrictions imposed on the use of the earth segment and the space segment are reduced and replaced by appropriate regulatory protection.

It should also be noted that if the role of satellites is essential for services and coverage for companies and consumers on a Europe-wide basis, according to projections, total earnings for satellite services will not exceed 1.5 to 2.5 percent of all telecommunications service earnings in Europe in the year 2000. At present, all earnings of satellite telecommunications companies in Europe account for no more than 0.4 percent of overall telecommunications earnings in the Community.

Finally, it should be noted that the policy of deregulation and technical harmonization that the Commission would like to see applied in the area of satellite communications contains the implication that radio broadcasting to the general public by satellites will continue to be the subject of specific regulations established by the Member States in accordance with Community law, particularly the 1989 directive concerning television without frontiers.

EC on Satellite, Mobile Communications

91AN0246X Amsterdam COMPUTERWORLD in Dutch 23 Jan 91 p 21

[Interview with Pieter S. Weltevreden, EC Commission DG XIII director, by Paul Ruell; place and date not given: "Open Network Provision, ONP, Must Guarantee

Fair Competition; European Commission Works on Measures and Directives"—first three paragraphs are COMPUTERWORLD introduction]

[Text] The European Commission has recently published a Green Paper on Satellite Communications. A similar publication covering mobile communications is in preparation.

The Commission appears to be making good progress, but friction among its various directorates is still leading to delays and a lot of red tape.

Here is an interview with Pieter S. Weltevreden, director for telecommunications policy and head of DG XIII, the European Commission's directorate-general responsible for telecommunications and information.

[Ruell] Not long ago the Green Paper on Satellite Communications was published. Have reactions been positive?

[Weltevreden] Yes, reactions were in general positive, but several interesting comments were also received. The Green Paper argues in favor of more liberalization, but various institutions such as Inmarsat, Eutelsat, and Telsat are arguing for greater caution and a restriction in the number of license holders. An inquiry is under way and all interested parties will be able to present their case. We, as the European Commission, are endeavoring to reconcile these positions.

[Ruell] What is ONP and within which framework does it fit?

[Weltevreden] ONP stands for Open Network Provision. It consists of measures and directives which must ensure fair competition. The European Commission states simply that "there must be at least one license holder." Most countries have adopted this directive, and only the United Kingdom has more than one license holder. In addition, the license holders (the PTTs) are permitted not only to act as network operators, but also as suppliers of services on the network in direct competition with private services suppliers. You can understand that this creates a potentially difficult situation. Indeed, there is a danger that the PTTs could abuse the fact that they operate the network on which their competitors also offer services.

That is why it is necessary to formulate conditions for accessing the network. This is what ONP is aiming for. It is quite clear: ONP contains all the conditions necessary for a liberalization of the sector.

[Ruell] How far has the development of ONP progressed?

[Weltevreden] General directives have already been laid down. Now it is a matter of filling in specific details, especially in the field of rental lines and integrated services digital networks (ISDN).

[Ruell] Will the Commission also be involved in the setting of tariffs?

[Weltevreden] Yes and no. We will not say what tariffs should be charged—because national disparities are allowed—but we do say on what basis the tariffs should be calculated.

[Ruell] Meanwhile a new Green Paper on Mobile Communications is in preparation. When do you expect this to be ready?

[Weltevreden] Sometime during 1991.

[Ruell] This Green Paper will be important because of the large number of present and future telephone applications and technologies it will cover: cordless telephones, paging systems, Telepoint, the Digital Cordless European Telephone (DECT), the proposed GSM-standard for cellular mobile telephone systems.... What do you intend to do?

[Weltevreden] The important points for us are the pan-European dimension, together with digital technology. Our approach relies on these two principles. We have refused from the beginning to consider Telepoint because it does not conform to either of the two criteria. Perhaps Telepoint will find a gap in the market somewhere, but it is not a technology of the future. You might know that Telepoint is suffering; well, we are not unhappy with the situation. As far as DECT and GSM are concerned, both will be introduced officially during the course of this year.

[Ruell] There has also been talk of PCN—personal communication networks....

[Weltevreden] PCN belongs to the next generation of hardware. It could perhaps be useful to talk of it now, but it is still to a large extent a wonder of the future.

[Ruell] Will credits be released for the development of ISDN terminals?

[Weltevreden] No, DG XII will not make any development credits available, but do not forget that under the European Strategic Program for Research and Development in Information Technology (ESPRIT) there is a great deal of attention being given to multifunctional terminals.

[Ruell] When will there at last be a definite decision on terminal equipment?

[Weltevreden] At the moment this directive is going through a second reading in European Parliament and I would imagine it will continue for at least another six months. Parliament has put forward a great number of amendments, of which some are acceptable. We are talking here of an important matter which is far from simple and has led to very detailed discussions. Manufacturers are following the affair closely and have put forward specific demands, for example in the field of test procedures. At the moment, each piece of equipment has

to be approved by the various national testing centers. This does not accord to the wishes of the manufacturers, who are desperately pressing for uniformity, simplicity, and speed.

[Ruell] Recently IBM decided to move its international telecommunications headquarters from the United States to London. A sign for the future?

[Weltevreden] I do not think so. Perhaps IBM's decision should be seen less in the light of the European Community but rather in the light of a possible collaboration with British Telecom. I have heard rumors that IBM and BT are indeed contemplating cooperation, but that it is not yet completely clear what form this cooperation should take.

[Ruell] It is often said that there is friction between the various EC Directorates. DG IV (competition) blames DG XIII (telecommunications) for a certain lack of speed and a tendency toward bureaucracy. Are there any difficulties between DG IV and DG XIII, or is there nothing the matter and is cooperation optimal?

[Weltevreden] The answer is in each case negative. No, there is no friction, and no, cooperation is not optimal. I am in regular contact with my colleague from DG IV and these contacts are always excellent. There is no hint of friction or envy. Even so, exchanges between the directorates are not always speedy, simply because their respective points of view and basic assumptions are so different. Every comparison is difficult, but you should look at it like this: DG XIII is the architect of the future data communications infrastructure of the European Community, DG IV is the policeman. Each directorate's responsibilities are fundamentally different.

[Ruell] The telephone infrastructure in the East European countries—to put it euphemistically—leaves something to be desired. Is anything being done to improve this?

[Weltevreden] Well, the European Commission is obviously concerned about the situation in Eastern Europe, and not long ago launched the PHARE [Poland-Hungary: Assistance to Restructure Their Economies] program to the tune of millions of ECU's [European Currency Units]. Improvement of the telecommunications infrastructure forms a part of this, a part which falls under the jurisdiction of DG XIII. What we are doing can be summed up in five points: one, providing assistance with the establishment of good regulations; two, supporting the East European PTT's [Post-Telephone-Telegraph Companies] with modern management techniques; three, coordinating standardization efforts—shortly Poland and Hungary, among others, are to become members of the European Telecommunications Standards Institute (ETSI); four, organizing seminars; and finally, five, material support by delivery of equipment. We shall nevertheless not be too hasty in this and wish to be certain that the money is being well spent.

BELGIUM

Belgium Expands Packet-Switching Network

91AN0125A Chichester INTERNATIONAL TELECOMMUNICATIONS INTELLIGENCE in English 12 Nov 90 p 1

[Text] Following delivery earlier this year of an EWSP [expansion unknown] test exchange for the Belgian packet-switching network, Siemens was recently awarded a $13-million contract to supply equipment for expansion of the Telegraph and Telephone Authority (RTT) network.

Under the contract, Siemens' Belgian subsidiary Atea NV will install 172 Siemens HNN EWSP high-performance network nodes and two backup management centres for the network's Data Communications Service.

In addition to expanding the network by 5,000 ports, the EWSP system will provide cost-effective user access in areas where subscriber density is low.

Siemens says Belgium is the ninth country to opt for the EWSP system and follows a recent order placed by El Segundo, California-based network services company, Infonet, for an EWSP system for use in its global data and information network.

This latest contract follows another placed by the Belgian PTT [Post-Telephone-Telgraph] at the end of last year when Siemens was chosen, along with Philips, to supply equipment for the Belgian section of the pan-European digital telephone service. The agreement called for Siemens to supply two EWSD [expansion unknown] switches.

DENMARK

National Telecommunications Cable Faulted

91WT0122A Copenhagen BERLINGSKE TIDENDE in Danish Sect II, 26 Mar 91 p 2

[Article by J.J. Kjaersgaard: "The Hybrid Network Weakens Danish Industry" — first paragraph is BERLINGSKE TIDENDE introduction]

[Text] "The plan would hardly have been adopted if we were to discuss it today," says Tarja Cronberg, Doctor of Technical Sciences.

"The agreement on the hybrid network was a political failure and a lesson on how not to make decisions in the area of technology," says Tarja Cronberg, lecturer on technology evaluation at Danmarks Tekniske Hojskole.

"If we were to discuss the hybrid network today, it would hardly be adopted. Technology optimism has to be firmly anchored in the Danish reality. Avoiding bad investments is also a competitive advantage. Since

developments take place at a dizzying pace, we have to take the time to evaluate what is needed," says Tarja Cronberg.

In her opinion, the decision in 1985 weakened Danish industry, which will not get the opportunity to participate in the development of ISDN, a transmission network with much lower capacity that is now being introduced around Europe. The visions went bankrupt. A broadband network will only be implemented after the year 2000. And pressed by consumers, the telecommunications companies have eased their monopoly to take down TV signals from satellites.

Tarja Cronberg presents the problems in the periodical TEKNOLOGIDEBAT as a prelude to a hearing on 24 April on politicians' possibilities of decisionmaking regarding major technical systems.

Voice-Response Phone System Inaugurated

91WT0122B Copenhagen BERLINGSKE TIDENDE in Danish 25 Mar 91 p 2

[Article by (RB): "500,000 Danes To Get Service Telephones"]

[Text] Copenhagen: Today, the municipalities will be taking their first major step toward the citizens' own service via a so-called voice-response phone system. To begin with, half a million Danes will be given the opportunity of tapping into tax information via a push-button telephone of the Municipal Service Telephone, the magazine COMPUTERWORLD writes. Later on, all of the country's municipalities will be hooked up, so that it will be possible to obtain information from a broad range of local, municipal data bases. The inauguration of the new service telephone will take place in the municipalities of Aalborg, Viborg, Morso, Odense, Ballerup, Skaevinge, Skibby and Kalundborg, where the citizens may now obtain advice and guidance regarding income tax returns and annual statements, and it will also be possible via telephone to order income tax return forms. The service telephone will be kept open night and day during all of the seven days of the week, and the citizens will only have to pay the regular charges for calls.

FINLAND

Nokia Chief on Firm's Annual Report, Outlook

91WT0114A Helsinki HUFVUDSTADSBLADET in Swedish 2 Mar 91 p 10

[Article by Tomas Hellen: "German Buying Fervor Helped Nokia"]

[Text] Good sales, especially on the German market, enabled Nokia to increase its operating return by a good 100 million marks to a total of 1.083 billion marks, according to the international accounting system (IAS). Nokia earned 5.47 marks per share last year compared with 4.36 marks the year before.

The IAS profit before minority shares and taxes rose from 604 to 711 million marks.

At the same time the group's sales declined by 700 million marks to 22.1 billion marks. If changes in the firm's structure, such as the sale of the paper division, and shifts in exchange rates are taken into account, business volume increased by 6 percent, according to Nokia.

The stock market was expecting the improved results on the basis of the company's eight-month report. It was somewhat surprising, however, that the group's consumer electronics division showed a positive result after several years in the red. In August the division's results were still negative.

The mobile telephone unit, which showed a small loss last year, also shifted to a clearly satisfactory result this year and increased its sales by 40 percent.

Consolidation

According to the notes on the financial statement the structure of the group was consolidated, all divisions increased the efficiency of their operations and the conditions for success in the current competitive situation were improved during the year.

However the outlook for this year is clouded by the weak economic development in some central market areas, primarily in northern Europe, according to the report.

"Internally our fortunes have now turned, but the Iraq war, the uncertain situation in the Soviet Union and the threat of recession are making us very cautious," said Kalle Isokallio, deputy group chief who is favored to succeed Simo Vuorilehto when he retires in 1993. Isokallio says that after the big company purchases in 1987 and 1988 they have concentrated on strengthening profitability and balance sheets.

"Our supply of capital is now in an entirely new situation."

Nokia's liquidity is extremely strong. At the end of the year the group had 3.2 billion marks available, a level it will try to maintain, according to Isokallio.

More Electronics

Last year Nokia increased its electronics operations even more. The branch increased its sales share from 62 to 68 percent.

Cable and Machine Industry's share rose from 19 to 24 percent while Basic Industry's share fell from 19 to 8 percent. This was because Nokia sold off most of its interest in tissue paper manufacturing and sold its footwear unit during the year.

Nokia does not publish any profitability figures by division, but the results for electronics industry as a whole (Consumer Electronics, Mobile Telephones, Telecommunications and Data) clearly improved. Its operating results totaled 522 million marks compared with 230 million marks the year before.

This year for the first time Nokia describes results for the various units, but only in words. Profitability, measured as yield on working capital, was good (over 20 percent) for Nokia Telecommunications, satisfactory (10-20 percent) for Nokia Mobile Phones, unsatisfactory (0-10 percent) for Consumer Electronics and negative for Nokia Data.

The Cable and Machine Industry division's productivity declined 6 percent to 383 million marks and Basic Industry's fell 29 percent to 246 million marks. Measured in terms of yield on capital, however, the profitability of both branches was satisfactory.

Data the Problem Child

Nokia's problem child last year was Nokia Data which showed a loss. The economic recession in Finland and Scandinavia, which each account for a third of Nokia Data's sales, dealt a hard blow, causing the big customers in the banking branch and the public sector to reduce their purchases. A sales increase of 20 percent was noted in the rest of Europe and there were several reference contracts for bank systems in particular, but this was not enough to offset the decline in the Nordic region.

The cleanup is now being accelerated at Nokia Data where former Olivetti man Vittorio Levi is trying to break up the oversized organization around the headquarters in Kista, outside Stockholm. Thousands of employees have already been dismissed, mainly in Sweden.

TV a Hit in Germany

Last year Nokia's 1987 purchase of the German TV manufacturing firm of Standard Elektrik Lorenz finally appeared to be almost a stroke of genius. Both West and East Germans bought TV sets at an unprecedented rate—the market grew from 4 to 5.4 million sets last year and Nokia succeeded in holding onto its 11-percent market share.

The purchase in May of an assembly plant in what used to be the GDR also helped here. The Stassfurt factory has increased its annual volume from 60,000 to more than 200,000 units.

The improvement in profitability was also due to the fact that Nokia remodeled the entire German retail network last year and succeeded in getting rid of the devastating discount system that was in effect for years on the German market.

Under the leadership of two executives who were recruited to the consumer electronics headquarters in Geneva from French competitor Thomson, Jacques Noels and Manfred Schmidt, Nokia is now trying to establish a profile in the highest quality segment.

The profusion of brands has been drastically reduced. ITT, Nokia and Salora now remain as international brands along with Luxor, Oceanic, Graetz and Schaub Lorenz as special regional brands.

Since 1988 the number of TV models has been cut from 125 to 57, 17 TV chassis have become three and factories have become highly specialized: Germany in long production runs, Portugal in small sets and monitors and Finland in the highest segment. The problem child, Luxor in Motala, Sweden, has been given new hope through the emphasis on satellite receivers, a market that is now taking off after the merger of British competitors BSB and Sky.

Mobile Phones Uneven

The fluctuations in Nokia's markets are also illustrated in the mobile phone branch which managed to avoid a price war last year and clear up the lack of capacity that squeezed profits in 1989. However the upturn is by no means guaranteed in the long run.

"The shakeout in the branch has begun and will continue for two or three years," said Nokia Mobile Phones president Jorma Ollila.

Nokia Mobile Phones purchased the British company Technophone in January and strengthened its position as second largest in the world in the area of hand-held telephones. The deal, worth more than 300 million marks, also strengthened product development capacity, which already amounted to 10 percent of Mobile Phones' sales.

Same Dividend

The board of directors proposed an unchanged dividend of 2.80 marks per share, the same as the year before. Due to the new avoir fiscal system of company tax payments the dividend will be considerably more expensive for the company than it was before.

The avoir fiscal system was one of the reasons why Nokia paid 80 million marks more in taxes last year. In addition the group had to pay 69 million marks in extra taxes because of the transition. However this money will help to offset taxes in 1991.

Finnsatel May Use Tele-X Satellite

91WT0114B Helsinki HUFVUDSTADSBLADET in Swedish 4 Feb 91 p 9

[Finnish News Agency, FNB, report: "Finnsatel To Use Tele-X"]

[Text] (FNB)—Finnsatel, which is owned by Nokia, the Telecommunications and Telephone Administration's association, has been given a concession to use the Tele-X satellite. However the right to use the satellite

applies only to stockholders' internal telecommunications. Finnsatel is the first company to obtain a concession for telecommunications activity with other countries that is independent of the Post and Telecommunications Administration.

The concession gives the company the right to conduct telecommunications activity via its telenetwork in Finland and connections to other countries. Telecommunications traffic between the company's network and the regular telecommunications network will also be permitted.

The company would need a special concession, which can be granted by the ministry, before it can offer telecommunication services to any but associated companies. But Finnsatel announced earlier that interested Finnish companies and organizations can buy stock in the company.

The Trade and Industrial Affairs Ministry granted the company's joint owners user right to the Tele-X satellite time at Finland's disposal in September. Under the terms of the concession Finnsatel must reserve capacity in the network for the state's technical research centers and colleges. The colleges will probably use the satellite service for long-distance instruction, among other things.

Finnsatel has access to around 3 percent of the Tele-X capacity. More capacity can be purchased. Tele-X was launched into its orbit around the earth several years ago and is expected to function for another five years.

Nokia's Takeover of Technophone Detailed

91WT0113A Helsinki HELSINGIN SANOMAT in Finnish 18 Feb 91 p B10

[Unattributed article: "Nils Martensson Sells British Mobile Phone Company to Nokia; Technophone Needed More Help"]

[Text] Nils Martensson became a very rich man last week. He made several tens of millions of markkas by selling Nokia his share of Technophone, which manufactures mobile telophones.

Visiting in Helsinki last weekend, Martensson did not want to say what he is going to do with the millions he will be getting from Nokia: "I do not plan to do anything with them.... Maybe we will get ourselves a fourth dog!"

Nokia paid about 240 million markkas for the British company, Technophone. Martensson had owned 40 percent of the company.

Technophone is one of the few success stories of the European electronics industry. Founded in 1984, the company is the second-biggest manufacturer of mobile phones in Europe. The biggest is Nokia.

Born in Sweden, Martensson has worked with mobile phones throughout his entire career. Martensson, who has studied engineering, is still attracted to participation in the work of product development at Technophone.

Telephones interest him because so much is happening in that field. Every year, 20 new countries join mobile phone activities. Mobile phones are also constantly being technically improved.

"What the hell can you do with a washing machine? A washing machine is a washing machine," he said.

Too Small To Make It

Martensson admitted that Technophone is too small a company to make it by itself in an ever-tighter mobile phone market.

During the fiscal year that ended last March, Technophone's sales volume was 350 million markkas. The company has 750 employees. Last year, the sales volume of Nokia's mobile phone division was about 2.3 billion markkas.

"For a couple of years now, we had been thinking about how the company could continue to expand. During a recession, it does not pay for a company to be listed on the stock exchange. As a stock exchange company, we would have had to simultaneously pay dividends and research and product development costs," Martensson said.

Nokia offered to buy Technophone about a year ago. "This merger is a good one because both companies are tough, bold, and oriented toward the future." Technophone turns out about 200,000 phones a year. Nokia did not report its own figures, but its annual production is estimated at about 600,000 phones.

After the American firm Motorola, Nokia is the biggest producer of mobile phones in the world.

The primary reason for Nokia's buying Technophone was obviously the British company's highly regarded product development operation. In addition, the Finnish company acquired factories in Great Britain and Hong Kong as part of the deal.

Founded seven years ago, Technophone is the second-largest producer of mobile phones in Europe. According to Martensson, this achievement "was in principle impossible, but it did happen."

The British Government decided to initiate mobile phone service in 1983. "This got the company started, but the rest was largely luck."

In the first half of the 1980's, many British war-industry firms cut back on their radio engineer personnel. During the same period, many American companies were withdrawing from Europe. Technophone was easily able to hire experienced engineers, an indispensable requirement for a communications technology firm to succeed.

"This was pure luck. Two years later it would not have been possible."

Mobile phone sales throughout the world increased by 60 percent last year. Technophone grew by 250 percent.

Martensson denied that the exhaustion of management funds in connection with this rapid rate of growth was the reason for selling Technophone. He pointed out that the company had never produced a loss.

GSM Phones Not Before 1993

Mobile phone technology is developing rapidly, and firms invest sizable sums in research and product development. Of Technophone's 750 employees, 150 develop new products.

The next revolution in the mobile phone industry will be the shift from the present analog computer technology to the digital computer technology generally employed in communications technology. In Europe, the shift will also mean a network covering Western Europe: One will be able to make calls to anywhere in all of these countries with the same phone.

During the past few months, the GSM [expansion unknown] network has run into difficulties because equipment manufacturers have been squabbling over patents, and many experts claim that the GSM technology that was chosen is already becoming obsolete.

Equipment manufacturers had also originally hoped that the European system would spread to the rest of the world, in which case it would have been easier to cover GSM product development costs. Now the United States and Japan are going their own ways.

The GSM difficulties elicited a deep sigh from Martensson. He lowered his head for a moment and gazed at the floor.

"It's a sad thing that four different standards appear to be coming into being in the world—one European, one Japanese, and two American."

Technophone will not begin to produce GSM phones until it can sell from 3,000 to 4,000 of them a month. Martensson predicted that production would not begin before 1993.

The production technology for Technophone's GSM microchips will be ready in a year's time, at the earliest.

The telecommunications services have agreed that the first parts of the GSM network will be in operation as early as this year.

"I Don't Miss Sweden"

Martensson, who was born and grew up in Sweden, vehemently declared that he does not miss the land of his birth. He is homesick for France.

"Perhaps the French life-style is the reason. Every time the plane lands in Paris, I feel that I've come home."

He had worked for the British firm Plessey in France for many years before founding his own company.

"In Sweden, there is no longer a spirit of adventure. In France or in Great Britain, there is no safety net that catches you if you fail."

Nils Martensson does not plan to take things easier now that he has sold his business: "That's not my style. I do this because of the competition and the excitement."

FRANCE

Thomson Launches HDTV-Compatible Set

91WS0187X Paris LE MONDE in French 13 Feb 91 pp 1, 24

[Article by Michel Colonna d'Istria: "Screens of the Future: Thomson Markets a High-Definition-Compatible Wide-Screen Television Set"]

[Text] On Monday, 11 February, the French government-owned Thomson group officially launched a new high-end rectangular-screen television set for the consumer market.

Despite its square shape, the Grand Arch of the Defense was probably the only possible choice for the official unveiling of Thomson's new television set, the first in its line of high-definition-compatible sets. Everything is grand about this new product: the screen, the stakes, the research costs, and the consumer price.

The Space System will be commercially available in France by early March, before summer in Germany and Italy, and later elsewhere in Europe. It is the first consumer television set in the world to adopt the new 16:9 wide-screen rectangular format (16:9 is the aspect ratio), which contrasts with the almost-square 4:3 format of current sets. This new format is what is used in the movies and, more importantly, what will be used for future high-definition broadcasts (1250-line HDTV [high-definition television]), which this set will be able to pick up as soon as they become available, with the addition of the appropriate decoder.

The Space System already accepts all the existing broadcast standards: PAL [Phase Alternate Line], SECAM [Sequential Color and Memory], NTSC [National Television System Committee], and, with an optional decoder, D2-MAC [Definition 2 Multiplexed Analog Component]. The decoder plugs into one of the five Peritel sockets.

Its memory capability even allows it to reproduce these images with unparalleled sharpness by "doubling" the number of lines displayed. With a 93-centimeter diagonal screen, a system for reframing the picture to the desired shape, picture-in-picture capability, and five speakers to deliver the quality of stereo digital sound allowed by D2-MAC, the Space System offers a maximum of innovations. Its price (35,000 French francs

[Fr]) is commensurate and limits it to an upscale market. In fact, the German Villingen plant will probably produce under 1,000 units a month. Nevertheless, Thomson Consumer Electronics (TCE) is betting heavily on this line of television sets, because it is the final component in the 16:9 D2-MAC broadcast system, which is preparing the way for HD-MAC [High-Definition Multiplexed Analog Component] in 1995. Mass production should make it possible to fill out the product line and bring down the price.

A Concept and a Product

"This is a decisive step. We had a concept, and now we have a product," Industry Minister Roger Fauroux said in congratulating the manufacturers. He recalled that the time for a wait-and-see approach is past. There was a "support policy" to go along with the hardware policy, in the form of satellites like TDF or TV Sat, cable networks that would soon be able to transmit D2-MAC in France and Germany, and test terrestrial broadcasts in that standard.

The problem remains of stimulating a greater selection of programs, which is currently quite limited. Canal Plus and Channel 7 will initially restrict their 16:9 broadcasting to a few films, with Channel 2 going a little further on its satellite channel.

Despite this sour note, Thomson and the ministries involved remain firmly convinced of the soundness of their HDTV strategy. Neither satellite setbacks nor reports of the development of digital technologies in the United States (LE MONDE, 12 Feb) can shake their confidence. "D2-MAC has 10 years ahead of it, with a picture and sound quality that only it will be able to deliver for a long time," a ministerial advisor said. "The first digital consumer products will come out in the year 2000—if everything goes well. Besides, we are not absent from digital HDTV. Two thirds of the HDTV research expenditures of Thomson and Philips (Fr20 billion in five years, including Fr3 billion in government research funding) are not standards-related, since they involve basic technologies."

Mr. Bernard Iseautier, who heads Thomson Consumer Electronics, is also a believer. "D2-MAC is the only current option for providing the consumer with obvious improvements in picture and sound quality. The 16:9 format is going to take hold in the coming years and will account for half of television sales in Europe by the year 2000." With its Space System, Thomson hopes to prepare for the future and consolidate its high tech image—even if it must live with the smaller margins of today's television sets.

France Telecom To Run National Research Network

91WS0189X Paris AFP SCIENCES in French 7 Feb 91 p 17

[Text] Paris—The French ministers of research and technology, national education, and posts and telecommunications signed an agreement protocol on 5 February to implement the National Telecommunications Network for Research, which will be operational in 1992.

At the request of the three ministries, France Telecom will be chief contractor for the network, which will be geared toward all research organizations and the universities. The public company will also perform the engineering study after completion of a needs analysis, then set up and operate the network. The study should be completed next June.

"This network meets a demand expressed by all the technicians and researchers in our country," stressed the minister of research, Mr. Hubert Curien. "It will be a gigantic data bank and a unique computing tool for French research."

The network will make it possible to facilitate collaboration and transfers of knowledge, through: national and international electronic mail; files; access to large data bases; enormous computing power; gathering, exchange and collection of results; etc. Graphic documents and pictures will also be useable from a distance.

With its large-band, 100-megabit network (compared to 64 kilobits for the Numeris network) "it will also be an opportunity for experimentation, and a forerunner for the integrated-services digital network that we will have at the end of the century," said the minister of telecommunications, Mr. Paul Quiles.

The network will cost about 30 million French francs a year over three to five years, according to a France Telecom estimate, and will be made up of the 15,000 computers and work stations now used in research. Already existing campus and regional networks will also be linked to it.

GERMANY

Private Satellite Networks Introduced

91AN0126A Chichester INTERNATIONAL TELECOMMUNICATIONS INTELLIGENCE in English 19 Nov 90 p 3

[Unattributed article: "Companies Taking Advantage of Private Satnet Legislation"]

[Text] A number of companies have already taken advantage of relaxations in legislation governing the establishment of private satellite networks made in June this year by the German Ministry for Post und Telecommunications.

The first licence to be awarded went to ANT Nachrichtentechnik, one of the Bosch Telecom subsidiaries. ANT initially intends to provide two-way data transfer services (over 15 Kbit/s), followed later by provision of business television services.

This was followed at the end of October by the award of a licence to Infoware, a company based in Cologne. Infoware's licence covers provision of two-way data, business television, and facsimile services.

Then, at the beginning of this month, British Aerospace Communications (BAeCom) became the first foreign company to be granted a licence. The licence covers the provision of two-way data services and pan-European services, business television, and satellite news gathering—the latter is an electronic reporting service for broadcasting corporations. The network will operate around very small aperture terminal (VSAT) technology.

British Aerospace, of course, already has experience of operating similar, but more restricted, services as part of its licence as Specialised Satellite Service Operator. The news gathering and television services are already provided under the terms of the Department of Trade and Industry (DTI) licence, but data communications is limited to one-way.

BAeCom said the two-way data licence from the German Ministry would allow UK users better communication links to the continent, but, perhaps more importantly for BAeCom, it will provide the company with an entry into the lucrative German market.

The German licence allows the following types of data services for private and third-party use: blst
One-way transmission and reception of data;

- Transmission and reception of two-way data (excluding voice except for engineering purposes) forming part of hub and remote VSAT network, designed to attract users of interactive and/or high-speed digital services;
- Two-way transmission and reception of data at higher rates than above (except voice) for point-to-point, star-and-mesh configured networks; and
- Two-way transmission and reception of data (except voice) as far as mobile locations and position-location fixing.

BAeCom said it is currently negotiating with the Deutsche Bundespost Telekom (DBT) for permission to interconnect its service with the public telephone network to enable it to use existing terrestrial connections.

DBT Fights Back

DBT, however, is not taking this lying down. It has signed a contract with Dornier, a subsidiary of Deutsche Aerospace, for the delivery of 500 VSAT satellite communications stations with which to establish what is described as Europe's "largest ever operational communication network."

The satelite-based network provides business communications between a central station and many small satellite ground stations equipped with antennae of 1.8-m diameter. Dornier said that 70 of these VSAT stations had already been installed at users' sites and the remainder will be installed by the middle of next year.

The two companies have been testing VSAT technology for some considerable time and DBT will now be able to make the service and system available throughout Europe within the scope of the DBT's "David" operational VSAT service, which uses Eutelsat satellites. In the first stage of the development of the service, the central station will be located at DBT's Hameln earth station complex.

Subsequently, Dornier announced that it will enter into a joint venture—to be called EuroDATA—with BB-DATA of Berlin and Hamburg, DETECON of Bonn and part of the DBT to provide value-added services via a terrestrial and a satellite-based communications network. Satellite transmission will be effected by DBT's David service.

The network is accessible via terrestrial or direct satellite links. The service the companies intend to provide will comprise data transmission, supply and maintenance of data terminals, and customer support. Services began this month.

IRELAND

New High-Tech Telephone Link Opened

91WP0093A Dublin IRISH INDEPENDENT in English 28 Mar 91 p 6

[Text] A new mass market link-up between business and consumer was introduced by Minitel yesterday.

Within 12 months, more than 10,000 businesses and homes are expected to be using the new communications medium, which involves connecting of a Minitel set to the telephone, putting the user in touch with a wide range of services in the commerce, agriculture, legal, financial and entertainment sectors.

And the shareholders of Minitel Communications which include Telecom Eireann, France Telecom, AIB Bank and Credit Lyonnais, expect that almost 200,000 sets will be attached to Irish telephones over the coming years.

Said Mr John Fitzpatrick, Chief Executive of Minitel Communications: "Minitel provides the means of transacting business efficiently and effectively. It can open up new markets and can enable interactive links, not just with end customers, but also with retailers, suppliers brokers and other intermediaries."

And Minitel, which will provide 24-hour access, will be charged separate to telephone accounts, with users receiving a bill every two months.

The system, which can be used to check timetables, book theatre tickets, view your bank balance, glance at stock prices or foreign exchange rates and shop from home, can be rented out at £5 per month or a set can be bought from as low as £250.

ITALY

ESA Assigns Project to Italian Consortium

91MI0208A Rome SPAZIO INFORMAZIONI in Italian 23-30 Jan 91 pp 4-5

[Text] The ESA (European Space Agency) has recently awarded Italspazio (an industrial consortium composed of Aeritalia/Alenia and Laben) with a contract for the study of the Iridium-like system. The system is similar to the Iridium digital radiotelephone system based on a "constellation" of 77 small satellites in polar orbit developed by the American company Motorola. The one-year contract—worth about 500 million lire—involves investigating the technical and economic implications of a potential European system for personal cellular communications based on small satellites in low orbit. The company will use the experience acquired from the development of the LEOCOM (Low Earth Orbit Communications) system, also commissioned by ESA, which is based on a constellation of small Leostar satellites. The detailed project for these satellites, which are designed for low circular orbits (at an altitude of approximately 780 km) and could provide a low-cost communications service, is currently under study by Italspazio. Commenting on the announcement of this contract for the Iridium-like system, Italspazio's president, Antonio Teofilatto stated: "It is important to emphasize that as far back as 1982 we were already looking to the future by focusing on the study of applications for small satellites. This sector is, in fact, extremely important in promoting a wider diffusion of space technologies at a national level." Teofilatto continued: "Italy can still acquire a large share in the market of small satellites and related systems, the use of which could be of considerable interest to developing countries and major companies for their respective telecommunications needs."

NORWAY

Norway, Denmark Deregulate Equipment Sector

91AN0220A Newbury SCANDINAVIA ALERT in English 12 Dec 90 p 49

["Abstract" of article published in London COMMUNICATIONS INTERNATIONAL in English November 1990 pp 25, 26: "Norway/Denmark—Telecommunications Liberalization"]

[Text] Both Denmark and Norway have deregulated the terminal equipment sector forcing telecommunications operators (TOs) to establish separate organisations in order to compete. The two countries have also set up independent regulatory bodies to carry out functions formerly handled by TOs. In Norway, Norwegian Telecom has recommended that Ericsson Telecom should be the main supplier of equipment for the public switched telephone network (PSTN) program. Ericsson was awarded a three-year contract to do this, although Alcatel was awarded a contract in 1983 and has carried out digitisation of 40 percent of the network. Norwegian Telecom (NT) has submitted proposals to form a limited company with 51 percent being held by the state. The government will award a second mobile telephony licence. NT already operates two analogue cellular networks, NMT450 and NMT900, with plans for the latter to become available nationwide.

Telecom Denmark handles international traffic and links between four regional companies. These are KTAS, 52.4 percent state-owned; Jydsk Telefon, partly state-owned; Tele Sonder-Jylland, state-owned; and Fyns Telefon, county-owned. The Danish Government announced the Political Agreement to restructure the telecommunications and ownership [structures]. A holding company, TeleDanmark, will be established and will own all five telecommunications companies. The concession will run for five years. The government will retain a 51-percent stake in TeleDanmark with the rest being privately held.

PORTUGAL

First Satellite To Be Launched in 1993

91WT0120A Lisbon O JORNAL in Portuguese 28 Mar 91 p 26

[Text] It will be produced at LNETI [National Industrial Engineering and Technology Laboratory], will weigh 45 kg, and is expected to be launched into space during 1993. It is the first Portuguese satellite.

Introduced at Nortec '91 as the principal star at that First Quality-Design-Technology Fair held at Exponor, in Matosinhos, last weekend, the P-SAT 1 ultimately demonstrated the backwardness of a country still at the tail end of scientific research in the field of information technologies applied to space. A symptom of this predicament: Nearly 30 percent of the overall cost of the project, estimated at 750,000 contos, is allocated for the training of specialists.

Aimed at bridging the gap and implementing a project announced by Minister of Industry and Energy Mira Amaral on 18 February, an entrepreneurial task force was established. It will pay for the entire process and form a group of 13 scientists to work on that project.

Those business firms (LNETI, Marconi, Efacec, Alcatel, Siemens, Telecom Portugal, Eid, Geometral, Edintec, Ist, and Grid) will decide within the next few days on the budget with which each will participate.

According to Machado Rodrigues, director of the LNETI Institute of Information Technologies and coordinator of the project, the P-SAT 1 will have the same dimensions as the prototype introduced at Nortec '91.

The inclination of the orbit for the launching (63 degrees) was selected to allow for better communication among the Portuguese-speaking countries. There are still two years left, but other definite decisions have already

been made: The satellite will be positioned at a distance of 1,300 km from earth, and its orbiting will last 95 minutes.

Meanwhile, the Portuguese Government has established contacts with the European Space Agency, which Portugal is due to join within the next few months.

Space Market

The project director claims: "The Portuguese satellite is an important step for researching information technologies applied to space." In his view, "It is important for business owners to learn about this type of market."

With the P-SAT 1 in space, Portugal will save thousands of contos annually. "For example, we must realize that we are paying large sums of money for a small satellite image transmitted in the televised weather report."

Remarking that "increasing amounts of information are coming from space," the project director stresses that, "The construction of the first Portuguese satellite emerged from the basic idea of giving Portuguese industrialists the opportunity to produce information technologies that can withstand the shock of leaving earth and becoming adapted to space."

SWEDEN

Government Plans To Reorganize Agency

91WT0107A Stockholm DAGENS NYHETER in Swedish 6 Feb 91 p C1

[Article by Mats J. Larsson: "No Tele-Shares on the Stock Exchange"—first paragraph is DAGENS NYHETER introduction]

[Text] The government says no to the Telecommunications Administration's request to be listed on the stock exchange. Instead, the Telecommunications Administration, like the Forestry Service and the State Power Board, will be reorganized into a wholly state-owned corporation.

According to the news bureau Direct, this is what the government is proposing in its economic policy bill, which is to be put before the Riksdag next week.

Minister of Industry Rune Molin and Tony Hagstrom, the Telecommunications Administration's general director, will not comment on the bill before it is presented.

The motive behind stopping the stock exchange listing, accordingto Direct, is the government's desire that Telenet be developed "without exposure to risk."

This appears to indicate that there are limits to the Social Democrats' plans for privatization, which lately have been extended to more and more areas of the public sector.

In contrast, the government intends, according to Direct, to reorganize the Telecommunications Administration, the Forestry Service, and the State Power Board as totally state-owned corporations. The Forestry Service and the State Power Board will be reorganized this year, while the Telecommunications Administratiion will wait until 1992.

Furthermore, investigations will be made to research the possibilities for incorporating the Postal Service and SJ [Swedish Railroads].

In addition to incorporation, the government is proposing to sell forestlands and other property managed by the Forestry Service for 950 million kronor during fiscal year 1991-92.

Televerket Ordered To Improve Profits

91WT0127A Stockholm DAGENS NYHETER in Swedish 13 Apr 91 p C2

[Article by Peter Sandberg: "One Thousand Jobs Endangered; Televerket Cutting Down"]

[Text] Approximately 1,000 jobs will disappear within three years if the state telecommunications agency Televerket goes through with the proposal to merge the Boras, Goteborg, and Uddevalla telecommunications regions.

If the proposal is acted upon and if it works, it is conceivable there will be more mergers and reductions within Televerket than had previously been predicted.

What now lies on executive director Tony Hagstrom's desk is a report about merging the three West Swedish districts.

The background for this is the state's requirement that Televerket improve its profitability and that Televerket repay loans and transfer several billion [kronor] to the state for infrastructure investments in other areas.

Millions To Be Gained

The report about the West Swedish telecommunications areas is an attempt to see whether there is anything to be gained by mergers there. The result of the report is that there are gains of 50-60 million kronor to be achieved through a merger simply by joining the three administrations into a single one.

These gains would be achieved directly from the merger, but analysts estimate that the merger would also provide the basis for cost-saving moves which would translate into an additional 250-300 jobs.

Some of these jobs are not in West Sweden but are the province of the central administration, which will have less to look after.

If mergers occur nationwide, Televerket will get larger and, in relative terms, more efficient local organizations,

which in turn will lower demands on both Televerket's central administration and its staff functions.

Simpler Routines

At present the three West Swedish telecommunications districts have approximately 6,000 employees and Televerket has a total of approximately 47,000.

On top of the cost-cutting associated with the mergers there will be every-day cost-cutting within Televerket owing to new technology, simplified routines, etc. That will mean that Televerket will cut approximately 500 additional staff in the three West Swedish districts by early 1994.

Despite this large decrease, analysts believe firings will not be needed to implement the proposal.

If Televerket's management accepts the proposal, it can be implemented as early as the end of this year.

Private Phone Nets Add Competition

91WT0127B Stockholm DAGENS NYHETER in Swedish 19 Apr 91 p C1

[Article by Jan Nylander: "New Rival Puts Pressure on Telecommunications Prices"]

[Text] Being a telephone subscriber and making local phone calls will cost more within the next few years. At the same time there will be pressure on the prices of domestic and foreign phone calls.

This, according to Stig-Arne Larsson, the telecommunications agency Televerket's finance director, would be the result of Kinnevik's having begun to compete with its new telephone company, Tele 2.

By hooking up to Banverket's fiber network, Kinnevik, together with the British firm of Cable & Wireless, will attempt to compete directly with Televerket.

It is hoped that in 10 years the new private alternative will have profits of just over one billion kronor, a small percentage of the telecommunications concern's current profits.

And the objectives are clearly defined. In the initial stages Tele 2 will be directed solely at businesses.

In the initial phase businesses will be offered access to data services. Beginning next autumn, the program will be expanded to telephony, telefax, and videoconferencing. Then will come households.

"We welcome the competition," said Stig-Arne Larsson.

When Televerket had the monopoly, it attempted to attract as many customers as possible with low fees for subscribing and local phone calls.

What was lost on the one hand will be regained in the form of high prices for domestic and foreign phone calls.

Ericsson in Tougher Mobile Phone Competition

Market Strategy Viewed

91WT0126A Stockholm DAGENS NYHETER in Swedish 31 Mar 91 p 11

[Article by Anders Elgemyr: "Tough Fight for Mobile Phone Dominance"]

[Text] The big mobile telephone party is at its peak just now. Systems are being purchased by one country after another and telephone sales are shooting up in a giddy curve. It is still smooth sailing for the suppliers: Ericsson, Motorola, Nokia and the rest. But in the next few years competition will become considerably tougher. And some suppliers are already beginning to have problems.

Important Distinction

It is important to distinguish between operators and suppliers. The operators consist of the old state telecommunications administrations and a number of private companies that have been authorized in the name of competition. The suppliers are established suppliers of traditional telephonic equipment like Ericsson of Sweden, Nokia of Finland and Northern Telecom of Canada.

The world market for mobile telephone equipment is controlled by a handful of companies that are entering into an increasingly tough fight for dominance. All of them are pinning their hopes on internationalization. Open standards provide more opportunities to submit offers in the open bidding competitions that are increasingly being advertised by operators.

Prestige and Reputation

Prestige and reputation are very important in new branches that have not yet had time to mature and where people do not really know what and who to believe. Thus a sizable part of marketing takes place behind the scenes in first-class hotels, at conferences and in friendly gatherings.

When PLI, Inc., a middleman for mobile phone network equipment in the United States, surveys the American mobile phones market, special attention is paid to the image suppliers present at international telecommunications fairs. Half seriously, half tongue in cheek they calculate how many people have been sent by the various companies, how the firm management is represented and not least what kind of party the respective companies have arranged in the evenings.

Rock Band or Marilyn

At the 1990 CTIA [expansion unknown] convention the American telephone giant AT&T had two rock bands. Motorola had only one, but on the other hand you could be photographed together with Marilyn Monroe in Motorola's suite.

However this sublime contest appears to have been won by Sweden's Ericsson, which sent barely a quarter as many representatives but provided a considerably more convivial atmosphere. Between the complimentary drinks of Swedish alcohol there was lively and relaxed conversation in front of and inside the "Ericsson" ice sculpture.

Not Just Parties

But it is not just parties that are noted and recorded. Who wins orders for the delivery of new systems is much more important, of course. Or worse, who suffers the ignominy of being swept out and forced to remove all the old equipment, a step required because the system is still incompatible.

The operators review their systems at regular intervals. An order that has been won is not automatically decided once and for all. The operators do not hesitate to quickly replace a supplier who fails.

Fight for Power

The fight for global supremacy is being waged primarily between America's Motorola and Sweden's Ericsson. Of course if one listens to Ericsson sources they are the biggest in the world with almost 40 percent of the market. If one listens to Motorola they lead with around 30 percent of the world market, followed by AT&T with a good 20 percent and then Ericsson with a market share of close to 20 percent.

The difference is due to the fact that Ericsson chooses to estimate how many customers are served by their installed systems, based on the number of exchanges that have been sold. Motorola prefers to use the number of installed cells or the number of contracts won as a basis.

It is hard to judge, but at present Ericsson and Motorola are probably about the same size. Ericsson seems to have more wind in its sails, however. But the general development is so rapid and the market is so big that both companies often reach maximum capacity and have sometimes had trouble with deliveries.

Hard-Pressed

Motorola is currently hard-pressed on the network side, especially on the American domestic market. But they also have problems in Europe. The company has staked a lot on obtaining contracts for test systems for the coming Group Speciale Mobile [GSM] standard. It has won many of these, but at the cost of a lot of engineering labor. According to rumor most of the test systems have been more or less unsuccessful. This will make the firm's position worse when the operators later advertise the actual contracts, of course.

Motorola differs from its competitors in that the company is not an old telecommunications supplier but started out as a car radio manufacturer and is now also one of the world's biggest manufacturers of microprocessors. Motorola is also the world's largest manufacturer of mobile telephone sets. It has a very international orientation for an American company with an appearance that is almost Japanese at times. It is also the only mobile telephone supplier to succeed in getting into the lucrative Japanese market.

Underestimated Advantage

Motorola offers the best financing solution on the market and private operators who are often quite short of cash in the initial phase can obtain favorable long-term credit arranged through Motorola.

This is an often underestimated competitive advantage. An operator who has to buy equipment worth around 1 million kronor per cell is really concerned with how to obtain the cheapest financing.

Ericsson Well on Its Way

Ericsson's strategists were the most optimistic mobile telephone prognosticators at an early stage. In hindsight their expectations have been doubled many times over.

In the United States Ericsson is well on its way to becoming the largest supplier and overtaking Motorola on its own home market. Ericsson has even succeeded in getting an order for a system in Chicago within sight of Motorola headquarters.

Its global success depends largely on Ericsson's philosophy of market presence. The recipe for success, long practiced within the area of public telephony, consists of sending out a few company people to open a small Ericsson office in remote locations. They then spend years working methodically on their own to gain recognition from local operators.

Japan a Low Priority

Ericsson has not succeeded in making any deliveries in Japan. This is largely due to the fact that Japan is a low priority. Ericsson's biggest success in 1990 was the decision of the American operator, McCaw, to throw out AT&T in the spring and Motorola in the fall in order to install Ericsson equipment.

A strong reason for Ericsson's success in the United States is that the company can offer the gentlest transition from analog to digital technology. This argument was effective with all 12 of the contracts that were won from AT&T. The other contracts were taken away from Motorola.

Biggest Supplier

The biggest supply company in the mobile telephone branch is the American giant AT&T. AT&T's research laboratory, Bell Lab, is one of the strongest candidates for the honor of having invented the mobile telephony (there are many claimants).

Typically for Bell Lab the drawings were laid aside after researchers had solved the first technical problems. The

same thing happened, for example, with the transistor which Bell Lab invented and received a Nobel prize for, but which the parent company, AT&T, never put into production.

In spite of the extensive restructuring of its activities AT&T is still saddled with the problem of being a colossus with long decision routes which pays attention to big customers but has a hard time getting involved in the problems of small customers. AT&T has the same problem when it leaves the United States and moves into other parts of the world.

Switch Inevitable

Because a switch to digital technology is considered inevitable in the next few years operators prefer equipment that can handle the change easily. Here AT&T has fallen half a year behind its competitors as the company is unable to deliver the new mobile phone system which offers a platform for digital technology before the beginning of next year.

But just before Christmas an order came in that is viewed as a turning point for AT&T. The firm succeeded in winning the biggest mobile phone contract in the United States to date, worth 3.6 billion kronor. The order was from the operator GTE which is now switching back to AT&T in California, Florida, Hawaii and Oregon, among other locations, after two years with Motorola. The order is for the new digital-compatible equipment.

Should Help AT&T

The switch did not hit Motorola like a bolt from the blue as AT&T and GTE had started work on a joint exchange earlier.

The GTE contract should help AT&T overcome the head start of other competitors in the United States.

The Canadian/American manufacturer Northern Telecom is still looked down on in the field of mobile telephony. The company has focused entirely on the traditional public telephone field, with an emphasis on digital exchanges and transmission.

Changing Its Skin

Now that mobile telephony is about to change its skin from analog to digital technology Northern sees its chance to jump on the bandwagon as the company knows a lot about digital technology. But a big drawback remains, namely that a large part of the radio equipment is still being purchased from its competitor, Novatel.

The biggest success for Northern in 1989-90 was the contract from the American operator CCI to replace Ericsson's equipment in Ohio, a setback that came as quite a shock to Ericsson.

But it should be some consolation to Ericsson that Northern had problems with the installations, at least initially.

Big Loser

On the American market Motorola, Northern Telecom and Ericsson have done almost equally well at winning new ground, followed by AT&T. There is one big loser in the United States and that is Astronet, a small manufacturer that was adversely affected by almost a third of the system changes in the United States in the past year. The company is small and has concentrated on small systems that are well suited for use in small areas. But they are quickly becoming too small now that the American development has started to take off.

Telephone density requires increasingly powerful systems that can handle the widespread traffic congestion. The first communications congestion can occur as early as between 4 and 5 o'clock in the morning in New York and Chicago when making phone calls is often the only business activity.

Patience and Money

It is to Astronet's advantage that it is backed up by the gigantic Japanese commercial enterprise, Mitsubishi (80 percent), and the American telephone manufacturer, Stromberg-Carlson (20 percent). Mitsubishi has both patience and money and will probably not let go of its small toehold in the United States.

Aside from Mitsubishi only Japan's NEC has succeeded in getting in there. But in 1990 NEC was thrown out again when Pac-Tel in California, among other operators, showed a preference for Motorola's technology. NEC has also been unable to develop effective systems with more than 20,000 subscribers, which has made the competitive situation difficult.

Poorer Showing

All in all NEC has done much worse than its competitors internationally. Many had considered outer Asia an exclusive area for the Japanese. Instead Ericsson, Motorola, AT&T and Nokia have all been able to win important contracts in Japan's own back yard.

Of the European companies only Ericsson has been really successful so far. In many ways Finland's Nokia is Ericsson's opposite in the field of mobile telephony. The company is very big on mobile phones but small on systems. Nokia has had some successes in recent years. In addition to digital technology contracts in Germany and France, an order from the telecommunications administration in Thailand is the most interesting, especially from a Swedish perspective, as it was Ericsson that took a beating, like every other former supplier. Nokia concentrates on open standard systems, which means the Nordic Mobile Telephone [NMT] analog system and the future European GSM system. On other markets they sell only mobile phones.

Hard To Survive

In recent years Siemens of Germany and Alcatel of France have won quite a few contracts in Europe for the GSM system. But the question is whether they really have any chance of overcoming their competitors' head start. As small suppliers of complete network systems it will be very hard for them to survive.

Global Mobile Phone Market in 1990

The list below shows market share percentages in the most important telecommunications countries. Installed systems calculated per number of subscribers.

Canada: Ericsson—50; Northern—50

United States: AT&T—31; Ericsson—22; Motorola—35; NEC—0.5; Northern—7.5; Others—4

Mexico: Ericsson—56; Northern—44

Norway: Ericsson—100

Denmark: Ericsson—100

Great Britain: Ericsson—56; Motorola—44

Holland: Ericsson—100

Belgium: Others—100

Spain: Ericsson—99; Motorola—1

Sweden: Ericsson—96; Others—4

Finland: Ericsson—63; Nokia—37

West Germany: Siemens—100

Austria: Motorola—100

Italy: Ericsson—100

Switzerland: Ericsson—100

France: Nokia—100

China: Ericsson—82; Motorola—13; NEC—5

Taiwan: Ericsson—100

Hong Kong: Ericsson—16; Motorola—55; NEC—29

Thailand: Ericsson—50; Motorola—50

Singapore: NEC—100

Japan: Motorola—17; NEC—83

South Korea: AT&T—40; Motorola—60

Malaysia: Ericsson—100

Australia: Ericsson—100

New Zealand: Ericsson—100

Criticism of Ericsson

Ericsson has made far too many fine promises it has failed to live up to in the United States. The operators are now beginning to pull in their horns in the opinion of Jim Caile, vice marketing chief of the mobile telephone division of Ericsson's major competitor, Motorola. Ericsson dismisses the criticism and claims that it stems from the big success the company has had on the American market.

Standardization efforts and the switch from analog to digital technology have proceeded very slowly in the United States. Two years ago after a great deal of [word illegible] they were able to agree on a common standard which also involved a step toward digital technology. The choice fell on Ericsson's and Northern Telecom's technology: TDMA [expansion unknown]. Ericsson had then promised at a nonpublic meeting with American operators in December 1988 that the digital units would be better, cheaper, lighter, more efficient and use less energy.

Jim Caile thinks the operators were misled because Ericsson talked about digital technology as if its advantages and superiority to analog technology were already a fact today.

"But the prices for analog units are falling dramatically. The analog units will be the smallest, lightest, most efficient and cheapest in the next 10 years," said Jim Caile.

"Subscribers care only about what exists today, not 10 years from now."

In addition to claiming that digital mobile telephones are now turning out to be more expensive, heavier and less efficient than many operators believed when they voted for Ericsson's and Northern Telecom's TDMA technology, Caile cited several instances of Ericsson misleading U.S. customers, in his opinion. Among other things Ericsson ran ads in which it claimed to support work on the IS 41 standard which makes the different manufacturers' systems compatible. Caile, who is on the committee of the mobile telephone section of TIA, the Telecommunications Industry Association, claims that Ericsson has given the project no support.

People at Ericsson concede that they were "a little sluggish" in the special standardization effort. But they emphatically deny that they misled operators.

"It is strange that Caile blames us for problems that Motorola itself created," said Joran Hoff, Ericsson Radio strategist.

He said many of the advantages of Ericsson's system disappeared when suppliers had to cooperate on a common standard.

"The problem is that in selecting number codes the standardization committee chose Motorola's patent! This made the entire mobile phone terminal less efficient."

Thus there is total confusion on the U.S. market. There is a risk that this will spread to other markets. In Europe the future standard for mobile telephones, GSM, is based on the same technology as TDMA. Instead of choosing the TDMA technology in Great Britain, which would facilitate compatibility with the European mobile telephone network, the British have started to show an interest in CDMA [expansion unknown] instead.

Nordic Agencies Showed Vision

Mobile telephony is changing over from analog to digital technology just now. At the same time work is continuing on new standards that could change the entire competitive situation for suppliers.

The mobile phone is not, as one might easily believe, a modern invention. Tests were conducted as early as the 1920's. But the technology was still so primitive in the 1950's that the equipment filled the entire trunk of the car. To the surprise and anger of the driver the car often failed to start after a phone conversation because he had talked up all the power in the car battery.

Nordic Telecommunications Agencies

What was needed to put a mobile phone in everyone's car was demand and subsequent production volume leading to improved technology and lower prices. It required people who believed in the technology and were willing to risk the investment.

The Nordic countries had such people. At an early stage the Nordic telecommunications administrations, with Sweden in the lead, decided on a common standard that would be open to everyone, the so-called NMT system. Many employees of the Ericsson and Nokia supply firms, were opposed to this because they saw a lucrative monopoly market going up in smoke if the standard was adopted. But the opposite camp, which argued that it is better to have a small piece of a vital market than a dead monopoly, was larger and prevailed.

Lead Development

Thanks to the successful cooperation between the Nordic telecommunications agencies and the suppliers, the Nordic countries still lead development in the mobile telephone field. Sweden has the world's highest mobile phone density with 5 percent, followed by Norway and Finland. The top country outside the Nordic region is Hong Kong with a telephone density of 2 percent. The figures also say something about the enormous potential.

Not everyone is served by a mobile phone, but developments are proceeding rapidly. The telephone network is becoming smaller and cheaper every year and soon we will not be talking about mobile phones but about personal phones, telephones so small that the owners can carry them around at all times. Then radio-linked telephony could spread to 50-60 percent of the population.

Price Pressure

One of the most important prerequisites already exists: price pressure. So far the price of equipment has been cut approximately in half each time volume doubles.

"Mobile telephony, beepers and communication radios are showing very high margins at present. We are seeing a very steep acquisition curve in this business area. Both costs and prices will drop dramatically in the next few years. In the short term we expect a rate of growth of 40 to 45 percent a year," said John Mitchell, vice president of Motorola.

But if mobile telephony is to continue to develop in the future operators must agree on common standards so that subscribers can move freely over large areas.

In Europe 17 of the European countries have decided on a common standard—the GSM standard. The work has been speeded up by EC. GSM has developed into one of the leading symbols that pan-European cooperation can really function.

So far all the systems in operation have been based on analog technology. But GSM involves a transition to digital technology, a technology that utilizes the often overloaded radio channels more efficiently and will also be cheaper in the long run than current analog systems.

The hope is that the GSM network will be fully developed by around 1995, but extensive testing and purchasing are already under way. By then Japan will also have developed a national digital standard.

Standardization also opens possibilities for much greater competition among suppliers, who are currently decreasing in number and increasing in size.

"As a result of standardization, base radio stations and other equipment will increasingly become basic products," said John Roth, product chief at Northern Telecom. In this way operator companies could increasingly turn out their own tailor-made systems and select the different parts from whatever source makes the best and cheapest products.

Domestic Market Cools

91WT0126B Stockholm DAGENS NYHETER in Swedish 13 Mar 91 p 21

[Article by Mats J. Larsson and Jan Nylander: "Mobile Telephone Sales Falling Off"]

[Text] The rapid sales growth of portable telephones in Sweden has come to a standstill. This year the branch is anticipating a rate of growth of between zero and 20 percent.

That is a sharp reduction compared with the 1980's when sales of mobile telephones climbed at least 50-60 percent a year.

Already in the first half of 1990 slower growth was noted when sales increases in Sweden dropped to 30 percent.

"And during the second half of last year mobile phone sales fell victim to the 'Saddam effect.' Sales remained at around the same level as the previous year," said Bengt-Ake Gyllenberg, chairman of the Swedish Society of Mobile Radio Communication Equipment Suppliers.

Upsurge in 1993

Lars Norberg, vice president of the Swedish division of Motorola, the world's biggest manufacturer of mobile telephones, points out that big companies are cutting back on personnel. This means that telephones are "laid off" and the need for new equipment is reduced.

"We are expecting a sharp new upsurge in 1993 when the price of pocket telephones will have dropped so sharply that they will also be attractive to private individuals," he said.

According to the radio division of the Swedish Telecommunications Administration the number of subscribers in Sweden increased by around 10,000 a month during January and February. That equals the number in the same period last year.

Firms in the United States and Great Britain are cutting down on calls from portable telephones. The biggest mobile phone service company in the United States, McCaw Cellular, will have a lower increase in new customers this year than in 1990.

In Great Britain the number of new subscriber listings for CellNet, the biggest mobile telephone network, dropped to 9,500 in December compared with 11,500 in January 1990. The second network, Racial-Vodafone, had only 5,500 new subscribers in December compared with 24,00 in January of the previous year.

Expensive Private Calls

Several companies in the United States and Great Britain justified cutting down on the number of mobile telephones by noting that they are used more for expensive private calls than for productive business calls.

Today one in 20 people in Sweden has access to a portable telephone.

There are about half a million subscribers at this time. The radio division of the Telecommunications Administration has around 520,000 subscribers and the private upstart, Comvik, has around 18,000.

UNITED KINGDOM

DTI/Oftel Duopoly Policy Assessed

91AN0127A Chichester INTERNATIONAL TELECOMMUNICATIONS INTELLIGENCE in English 19 Nov 90 pp 6-8

[Unattributed article: "Duopoly Proposal From the DTI/Oftel"]

[Excerpt] The British telecommunications industry finally got an official insight into its future last week when the Department of Trade and Industry (DTI) and the Office of Telecommunications (Oftel) jointly presented their thoughts on new national regulatory policies. These were published in the form of a 90-page document entitled "Competition and Choice: Telecommunications Policy for the 1990s." The first three words of the title more than adequately summarise the objectives.

In presenting the document, Peter Lilley, trade and industry minister, said: "The government proposes to end the present telecommunications duopoly and to consider applications for licences from companies which want to provide telecommunications services."

Effectively, the new policy for the 1990s hinges around the proposition that the onus should rest with the regulators to prove that an applicant is unfit to be granted an operators' licence rather than the reverse. "The main proposal in the document is that the duopoly policy should be ended," reads the opening paragraph. "It follows from this that government would consider applications for licences to run new telecommunications systems against a general presumption that they should be allowed unless there were specific reasons to the contrary."

Proposals in the document are at present just that, and comments and suggestions about its contents are solicited from all interested parties. However, the chances of changing it are slim. During the several months that have been devoted to its preparation, Professor Sir Bryan Carsberg, director general of telecommunications and head of Oftel, has been subject to intense lobbying from powerful companies and interest groups. He was responsible for weighing up this "evidence" and making recommendations to the minister. These appear to have been adopted intact: "The proposals in the document are fully in accord with my advice and give my own preliminary views," he commented.

Those who have not yet presented their views to Sir Bryan have until 14 January 1991 to make their voices heard.

In total there are 36 main proposals. In part, these relate to topics that will require new legislation, while others may be implemented by modifying existing licences. The former are the responsibility of the government, the

latter of Oftel. In the quaint English of British bureaucrats, the two classes may be distinguished by phrases such as: "The government is inclined to consider sympathetically..." or "The director general is inclined to seek amendment...."

In the main, most vested interests are likely to be discussed if not fully satisfied. Cable TV companies are likely to be able to run their own telephony networks, possibly bypassing existing British Telecom (BT) and Mercury networks; mobile communications operators who wish to run their own fixed links will be listened to "with sympathy"; and views are sought on whether the government "should be prepared to grant licences to the CT2 telepoint operators to extend their services "to the home"—they may even get to use higher-power base stations to make this practical. Already it seems they have been allowed to introduce "logging on" facilities to provide an incoming call facility for users.

So far as wireless communications links are concerned, it seems likely that British Telecom and other "fixed service operators" will not be allowed to provide either true mobile or telepoint services, but they may be allowed to use "radio tails" to avoid having to hard-wire the last hundred metres from distribution point to customers' premises. The PCN operators on the other hand will receive a sympathetic ear for their requests to be allowed to operate fixed services.

While cable TV operators should get greater freedom under the new rules when they are finally set, British Telecom and Mercury will still not be able to carry "entertainment services" over their fixed networks—at least until such time as the government deigns to allow them not only to carry—the official word is "convey"—but also to provide such services. However, all is not lost, since the government "is inclined to make a commitment" that this situation will be changed "ten years from the date of the present review"—or maybe after seven years "in the event the director general advises that allowing BT or other national public telecommunications operators to provide entertainment services over their main networks as from a date earlier than ten years would be likely to promote more effective competition in the provision of telecommunications as well as entertainment services."

So far as trunk "long-line" carriers are concerned, it is acknowledged that allowing new operators would pose more of a competitive threat to Mercury than BT, but "Mercury has had seven years to establish itself." As a result, the inclination of the government is to consider applications favourably. Utilities such as the recently formed British Rail Telecommunications are in with a chance, but will have to operate on the same terms as private companies and should not benefit from cross-subsidisation from the utility's main business—such as running a railway. Given that there will be raft of new service providers, there will be a need to give customers "equal access" rights to "the long-distance carrier of their choice." However, provision of this facility is dependent on the rate at which BT continues to install digital exchanges—it is then a question of who will bear the cost of implementing the facility. "Assuming that BT's programme of installing digital exchanges in the local network remained unaltered by a decision on equal access," the director general says, "the costs of the necessary software changes would not be likely to be significant." Full UK coverage would not be possible until 1995.

International services will also open the potential for new operators, while private network operators will be allowed to resell spare capacity—provided that the authorities in the destination country have no objections. Satellite services are easier to accommodate, and it seems likely that "any person in the UK" may be given a licence to operate "the full range of two-way satellite services, both domestic and international," provided the terminals do not cause radio interference and that they are not connected to the public switched network(s). That will allow VSAT services to become viable in the UK.

So far as tariffs are concerned, only BT's merit detailed investigation it seems. And here the director general "is inclined to the conclusion" that there is not justification for changing the current price control arrangements applied to BT "before the current price cap ends in 1993." However, he is prepared to think about BT proposals that it should be able to offer discounts to "certain customers" so long as they would not "lead to discrimination."

Other sectors where comments are sought include maritime services—should they be opened to competition; self provision of private links over distances greater than 200 metres; emergency services; disclosures of financial information by licenced operators; and "who owns a customer's telephone number."

Areas where no changes are considered necessary are maintenance and payphones. [passage omitted]

British Rail Planning Telephone Services

91WT0117A London THE DAILY TELEGRAPH in English 11 Mar 91 p 30

[Article by Christine McGourty, technology correspondent, on how British Rail is lining up to enter Britain's telecommunications market before launching operations on the Continent]

[Text] A company better known for trains than telephones is likely to be at the forefront of the telecommunications boom which should follow the breakup of the BT/Mercury duopoly announced last week.

British Rail has plans to provide national and international telephone and data communications services, exploiting new technology to offer "intelligent network" services not currently available in Britain.

The company has made detailed preparations to enter the market through the newly established subsidiary, BR Telecommunications. When assets are transferred from BR to BRT next month, it will become an £80 million business with an extensive private communications network already in place.

BR has 17,000 km of cable, including 2,500 km of optical fibre, 65,000 telephone extensions, 275 exchanges, 15,000 radios and 11,000 data terminals. For now, 95 per cent of BRT's business comes from BR. But within five years the company could be ready to offer a national service, according to Peter Borer, BRT's managing director.

His ambitions do not end there. In Borer's "grand vision" BRT would play a role in "Eurotel"—a pan-European telephone service which cuts out the frustrating and slow bureaucratic process companies face if they want to instal a network across national borders in Europe.

"At the moment the process of setting up private links across Europe is formidable," he says. "But as there are more pan-European companies, demand will increase for pan-European services. What we're doing here could be done using the railways in mainland Europe. There's an enormous amount of interest in this, particularly from central European countries.

"I'll believe fully in Europe only when there is a national tariff for my calls to Paris. That will come. But it may have to wait a decade."

BRT's plans to provide services abroad may move more slowly than it hoped, however, because the duopoly review did not go so far as to allow licensing of new operators of international services.

Even to offer a national service, BRT, as part of a state-owned company, must first find partners in the private sector. It is currently talking with 20 or 30 potential partners and hopes to make an announcement in the next few months.

The partners are unlikely to be British. "We'd like to be seen to be British—and good Europeans," Borer said, "but a number of the skills we're looking for are more likely to come from America."

They must have the sales and marketing skills to complement BR's engineering expertise and, more important, money—BRT is looking for a capital investment of up to £300 million.

The next step, obtaining a licence, is likely to take to the end of the year. But assuming all goes well, BR could begin providing services as early as next year.

"Over the next three years we'll roll out over the rest of the country and in five years we hope to get a full service running," Borer said. "We've already got exchange buildings in every city in the country, links with BT and all the things which took Mercury years to build up."

Instead of "a straight price war" with BT and Mercury, Borer plans to provide a range of new services made possible with the development of so-called "intelligent networks."

He said: "We don't want to offer just a 'me too' service but five per cent cheaper. We'll try to be more innovative, use new technology and offer services others don't."

In intelligent networks, computer and database facilities are added to conventional public telephone networks so they can provide, at cheaper prices, services currently available only on a private network.

One of these "intelligent" services is the "virtual private network." This offers features such as desk-to-desk short code dialling and allows the use, from payphones, of special telephone credit cards which bill a company for calls made. Personal identification numbers also allow staff to have calls diverted to any telephone that can be automatically re-routed.

VPNs can be cheaper than private networks where the user pays the price of having the services available 24 hours a day seven days a week, even though 10 per cent or less of the total capacity is typically used.

With a VPN, the transmission capacity is provided as required and can be shared between customers. Fewer staff are usually required to operate the network and less capital investment is required.

"Our studies show there's a great deal of interest in VPN, particularly among medium-sized companies, which find it very difficult to justify the overheads of having their own private network," Borer said.

"They are extensively developed in America but the reason they haven't come into Britain at all is because the operators already have a strong interest in private circuits and don't want to offer anything else."

With the main regulatory cosntraint to BRT's plans now behind it, Borer admits the company may face a psychological barrier to its success.

"There are advantages and disadvantages to being linked to British Rail. It's very good for our staff, our corporate customers and for telecommunications professionals."

There are certain areas where BR "does not have such a good image," he admits. "The British love their trains. They just don't like the people who run them."

An alternative logo is being considered for sales to the domestic customer.