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TELECOMMUNICATIONS POLICY, RESEARCH, AND DEVELOPMENT

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WORLDWIDE REPORT
TELECOMMUNICATIONS POLICY, RESEARCH AND DEVELOPMENT

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BRIEFS

SATELLITE DEAL WITH NEW ZEALAND--The Australian satellite company -- Ausset -- has announced a deal worth \$20 million [currency not further specified] to provide a satellite service to New Zealand. The New Zealand Post Office has signed a 5-year contract to become Ausset's first overseas customer. Ausset says the contract will provide New Zealand with a domestic satellite capability when the third Ausset satellite is launched next March. It says the deal will enhance New Zealand's current broadcasting services and telecommunications and will provide the opportunity of establishing a third television channel cheaply and quickly. [Text] [Melbourne Overseas Service in English 0830 GMT 25 Nov 86 BK] /12624

CSO: 5500/4309

JAPAN

BRIEFS

GOVERNMENT APPROVES U.S.-NTT PACT EXTENSION--Tokyo, Dec 23 KYODO--The government on Tuesday approved a three-year extension of a Japan-U.S. agreement on fair and open procurements by Nippon Telegraph and Telephone Corp. (NTT), the privatized telecommunications giant. The approval followed a basic agreement between the two countries last month. The agreement was originally signed in December 1980 and renewed once before Tokyo and Washington decided to renew once more the pact to ensure fair and open bidding for procurements by NTT, which became a private entity in April 1985. The latest agreement covers a three-year period ending on December 31, 1989. [Text] [Tokyo KYODO in English 0155 GMT 23 Dec 86] /9365

CSO: 5560/028

CHINESE CITIES TO DEVELOP CELLULAR TELEPHONE NETWORK

OW171454 Beijing XINHUA in English 1253 GMT 17 Nov 86

[Text] Beijing, 17 Nov (XINHUA)--A citywide mobile telephone network will be set up by the end of next year in Beijing, a Chinese official said here today.

Zhao Zhonghui, an engineer from the Ministry of Posts and Telecommunications, told XINHUA that "this will be the first such service in China. A cellular telephone service will also be set up in Guangzhou, Shanghai and other cities to meet growing needs."

Beijing's cellular phone system will have a total capacity of 1,600 telephone lines and will cover the entire city and suburbs including the capital airport and Miyun County. The system will offer vital communication links in the city during the Asian games in 1990.

The Chinese government will invest more than 20 million yuan--some of which will be used to import sophisticated electronic equipment from the United States' Motorola Company.

A cellular telephone is so compact it can be carried in a briefcase and the technology so advanced a call can be made from anywhere in the city.

The system is expected to be widely used by the press, public security, emergency rescue, tourist, transport and other industries.

Mr Zhao predicted that "the number of such telephone sets will reach 30,000 in the country by 1990, including 10,000 in Beijing, Tianjin and Tangshan regions with 12,000 in the Yangtze Delta Region."

/7358

CSO: 5500/4138

PEOPLE'S REPUBLIC OF CHINA

NEW TELEGRAM TRANSMISSION SYSTEM PASSES TEST

HK040201 Hong Kong ZHONGGUO XINWEN SHE in Chinese 1211 GMT 2 Dec 86

[Report: "Mainland China's First Micro-automatic Telegram Transmission System Passes Acceptance Test"]

[Text] Fuzhou, 2 December (ZHONGGUO XINWEN SHE)--A micro-automatic telegram transmission system called BJCO1 to be used in the communications field passed the acceptance test held by the Ministry of Posts and Telecommunications in Fuzhou yesterday.

This micro-automatic telegram transmission system was jointly developed by the 10th research institute of the Ministry of Posts and Telecommunications and Fuzhou City's Telecommunications Bureau. It comprises new-type automatic telegram transmission equipment developed on the basis of the 16-digit high-function micro-automatic transmission system, the latest product of the U.S. INTEL company. After going into operation, the new micro-automatic telegram transmission system will be able to deal with 200,000 telegrams daily, thus increasing efficiency by 400 percent while reducing the personnel involved in the work by a third. According to the preliminary calculations, the human resources and materials to be saved as a result of the use of the new equipment will equal the total investment in the whole project within 3 years.

Experts and technical personnel think that the micro-automatic telegram transmission system is a great leap of mainland China's cable telecommunications technology because some of its major technological indexes and professional functions have reached the advanced international standard.

/9716
CSO: 5500/4140

WUHAN BECOMES TELECOMMUNICATIONS CENTER

HK100955 Hong Kong ZHONGGUO XINWEN SHE in Chinese 1134 GMT 8 Dec 86

[Report by Wang Haixi (3769 3189 2569)]

[Text] Wuhan, 7 Dec (ZHONGGUO XINWEN SHE)--Situated in the Chinese hinterland, Wuhan, the "thoroughfare of nine provinces" as it is called, has become a giant telecommunications center linking the north and the south and developing eastward and westward, as well as a postal command center coordinating the seven provinces of Guangdong, Guangxi, Hubei, Hunan, Sichuan, Yunnan, and Guizhou.

Over the last 2 years, making use of domestically produced and imported optical fiber cables and microcomputers and the new technologies of microwaves and electronics and reforming the telecommunications and postal facilities on a large scale, Wuhan has put through microwave trunk lines in five directions and 1,800 intermediate carrier frequencies of its lines to Beijing and Guangzhou, and completed the installation of 11,000 digital program-controlled exchangers, which were introduced for the first time by China from the American Telephone & Telegraph Company and which will be put into use in a year, after inspection. The long-distance imported optical-fiber cables and other facilities between Wuhan and Nanjing are now being vigorously built and the installation of various telecommunications projects, like the domestically produced 2,000-channel long-distance and automatic exchangers, the 2,000-channel program-controlled telegram equipment introduced from Switzerland, and so on, is also being actively carried out.

At present, Wuhan can dial direct to 26 large and medium-sized cities over the whole country. It is expected that domestic and international users will be able to dial direct from Wuhan to various parts of the world next year. The microcomputers of large and medium-sized users will soon connect with the national network.

To first develop modern telecommunications, Wuhan has newly built two telecommunications pivot buildings, with a total floor space of over 28,000 square meters, which have already started some new businesses, such as public telegrams, private telegrams, public long-distance dial telephones, special long-distance private telephones, newspaper facsimiles, and so on.

At present, Wuhan has set up a high-speed mail processing center with a floor space of 16,000 square meters and a mail-handling capability second only to that of Beijing and Han. [as published] It has also started international express courier services with over 20 countries and regions, such as the United States, Britain, Australia, Japan, and so on, and set up 17 domestic airmail routes to all the major cities in the country. Zhang Wenqing, chief engineer of Wuhan City Telecommunications Bureau, said that the State Planning Commission has officially approved Wuhan's also introducing 50,000 digital program-controlled telephones, in two batches and by the system of bidding and selection, during the "Seventh 5-Year Plan."

/7358

CSO: 5500/4137

PROGRESS MADE IN OPTIC FIBER COMMUNICATIONS

HK030438 Beijing CHINA DAILY in English 3 Dec 86 p 5

[By Li Hualin]

[Text] Before 1982, making local phone calls was a headache for the people in Wuhan, one of China's largest cities, which is divided by the Yangtze and Hanjiang Rivers into three towns.

"People preferred to talk directly to those in other towns than to wait to telephone," said Luo Litang, an engineer of the Wuhan Research Institute of Post and Telecommunications.

The problem was caused both by the comparatively few telephones in the city, and by the poor function of telephone cables between the towns.

"The situation was not alleviated until a 13.5-kilometre-long optic fibre cable with 120 channels was installed four years ago," said Luo, vice director of the Science and Technology Department of the institute.

In 1983-84, another 13.5-kilometre-long optic fibre cable with 480 channels and a 6-kilometre-long cable of the same capacity were added and telecommunications have been greatly improved.

Optic fibre transmission uses modulated light transmitted down cables made of glass thread. It is far faster and more versatile than conventional methods and saves on metals like copper.

Optic fibre communications have been applied in China's several large cities [as published]. In the Sixth Five-Year Plan (1980-85), the State Economic Committee allowed 34 million yuan (\$9 million) for development of fibre cables, optic-electronic devices, terminals and measurement equipment.

More than 10 large and middle-sized cities, including Beijing, Shanghai, Guangzhou, Wuhan, Guilin and Taiyuan, have begun using optic fibre communications with 120 or 480 channels.

Ye Peida, honorary president and professor of Beijing Institute of Post and Telecommunications, said China's research work on optic communications has been conducted for more than two decades.

"In the first decade (from 1964-74), we concentrated on the research of atmospheric free space laser communications," Ye said. "In 1974, we came to realize the importance of optic fibres in modern communications."

Wuhan Research Institute of Post and Telecommunications was among the first to conduct such research. Over one decade, it developed a small workshop to produce optic fibres and a plant to make terminals and digital equipment.

"The fibre cables and the devices we made have reached the standard of Comit Consulatatif International pour Telegraphie et Telephone (CCITT)," Luo said.

"In recent years, along with exchanges of technology on optic fibre communications between China and other countries, we have found that some items in this field approached world level, but many more items used in our experiments, and especially in the application of the process are far behind our counterparts in the West," he said.

The institute began to introduce optic fibre technology from the United States and Japan and it also imported some equipment from Britain, West Germany and Holland.

"That was a great help to our experiments and production," Luo said. In 1985, its fibre workshop's capacity for optic fibre production was about 1,000 kilometres a year, but this year its capacity will increase to 4,000 kilometres.

In Beijing, the installation of a 160-kilometre fibre cable has just been completed. "It is now under test," Ye said. With the help of repeaters imported from France, the cable will put 100,000 new telephone sets into operation in the city next year.

In Fuzhou, Fujian Province, a fibre cable imported from Japan is in use. The 23-kilometre cable has 1,920 channels and it links the city by telegraph and telephone to most areas of the world.

The first inter-city fibre cable has been laid between Guangzhou and Foshan in Guangdong Province.

Last May a Sino-British Joint Meeting on Optic Fibre Communications was held in Beijing. It was sponsored by China's Association for Science and Technology and Britain's Fellowship of Engineering.

"But we lack exchange of information on optic fibre research here at home," Ye said. "Many items of imported technology from abroad and domestic experiments in this field are overlapping."

"There is not a unified set-up to co-ordinate research work and application engineering. More than 10 research institutes under different ministries and departments are conducting their own experiments separately."

"Anyway, all the institutes and enterprises are contending to make progress in this field," he said.

"Development of single-mode fibres, long wavelength semiconductor lasers, coherent fibre communications systems and so on have reached the international level of early 1980s," Ye said. "The development of optic fibre communication in China will be more rapid than in recent years."

/9716

CSO: 5500/4141

SHAANXI RADIO'S NEW TRANSMITTER IN OPERATION

HK101111 Xian Shaanxi Provincial Service in Mandarin 0030 GMT 9 Nov 86

[Text] The Shaanxi Radio station held an opening ceremony for its new transmitter on the morning of 8 November. Vice governor Lin Jizhou; (Chen Wanli), deputy director of the Propaganda Department of the Provincial Party Committee; responsible comrades of the General Office of the provincial government, the provincial Radio and Television Department, the provincial Public Security Department, and the Xianyang City Government; and leaders of the departments concerned attended the ceremony.

Vice Governor Lin Jizhou cut the ribbon for the operation of the new transmitter.

The no. 3 transmitter of the station, the province's major middle and short wave transmitter, was built in 1957. It mainly transmitted the first set of programs of the Shaanxi radio station and relayed the first set of programs of the central radio station. As the transmitter has been used for nearly 30 years, it is necessary to replace old equipment with new and to build a new engineer room. With the approval of the provincial government, the Shaanxi radio station started building a new engineer room of the no. 3 transmitter. Scientific and technological personnel worked hard and, while ensuring normal maintenance and broadcasting, completed the installation and modulation of two new transmitters. The new transmitters conducted a successful trial broadcasting on 1 October this year.

All equipments of the new transmitters are China-made equipments. The main equipments are products of the province. After the replacement, the technological and economic indices have increased. [Words indistinct] As a result of the increase in power of the transmitter, the broadcasting of the radio station can now reach more areas than in the past and more listeners in the province can now receive the programs of the radio station in a better shape.

/7358

CSO: 5500/4137

BRIEFS

XINJIANG TV STATION--Urumqi, 8 Oct (XINHUA)--Since the first TV station built in Xinjiang in 1970, there are now 20 in the autonomous region. Calculated on the basis of population, 60 percent of the autonomous region is covered by TV network. There are some 500,000 sets color and black and white TV sets in the autonomous region. The building of 43 ground receiving stations for the Central Television Station's programs is mostly complete. [Summary] [Beijing XINHUA Domestic Service in Chinese 0058 GMT 8 Oct 86 OW] /7358

QINGHAI TELEVISION GROUND STATION--With the support of the state, a satellite television ground receiving station was recently built in Nangqen County, Qinghai Province. It will soon be put into operation. With the completion of this station, the masses of the country seat and its vicinity can watch programs of the Central Television Station on the same day. [Summary] [Xining Qinghai Provincial Service in Mandarin 2330 GMT 29 Oct 86 HK] /7358

JIANGSU FACSIMILE LINES--With approval from the Ministry of Post and Telecommunications, three high-speed facsimile transmission lines from Nanjing to Beijing, Tianjin, and Shanghai will be put into use on 1 November 1986. With the inauguration of the facsimile transmission lines, documents, contracts, letters, maps, and charts which used to be sent by mail can be sent by facsimile transmission in their original form. [Summary] [Nanjing Jiangsu Provincial Service in Mandarin 1100 GMT 31 Oct 86 OW] /7358

JILIN MICROWAVE CIRCUIT--With the support of relevant state ministries and commissions, the radio and television microwave transmission circuit between Changchun and Jilin cities, Jilin Province, was completed and went into operation on 8 November. [Excerpt] [Changchun Jilin Provincial Service in Mandarin 2200 GMT 10 Nov 86 SK] /7358

NEI MONGGOL COMMUNICATIONS--Through ceaseless efforts made over several decades, the border areas of the Nei Monggol Autonomous Region have scored a faster development in postal and telecommunications construction. So far, a postal and telecommunications network linking the border areas with rural areas and pastoral areas basically has been established. So far, more than 260 sumu and townships in the border banners and cities in our region have access to postal communications; and 245 sumu and townships and 168 gacha have telephone communications. [Summary] [Hohhot Nei Monggol Regional Service in Mandarin 1100 GMT 23 Nov 86 SK] /7358

SATELLITE RECEIVING STATION BUILT--Harbin, 8 Dec (XINHUA)--The 12th ground satellite receiving station was recently completed at Hewan Forest Station--China's northernmost forest station under the Da Hingan Ling Forestry Administration. With 65 already-completed television relay stations, the television network now covers all forest areas under the jurisdiction of the administration, with a total acreage of 84,000 square km. People in many places can now directly watch programs from the Central Television Station. Forestry workers said excitedly: "Our remote forest areas will no longer be uninformed." [By reporter Zhang Changhai] [Text] [Beijing XINHUA Domestic Service in Chinese 0043 GMT 8 Dec 86 OW] /7358

JIANGXI SATELLITE GROUND STATION--The Satellite TV ground station in Fuzhou Prefecture, Jiangxi, became operational 1 September. The 120,000-yuan station was installed by the Jiangxi Industrial University and Xinshijie Communications Company Limited. It conforms with the national technological standards and has excellent reception. [Summary] [Nanchang Jiangxi Provincial Service in Mandarin 1000 GMT 5 Sep 86 OW] /7358

JIANGXI'S IMPROVED COMMUNICATIONS--Jiangxi's postal and telecommunications departments have greatly improved their workstyle and discipline, and strengthened their communications capabilities through persistent efforts to build the two civilizations simultaneously. Since the beginning of this year, Jiangxi's postal and telecommunications departments have launched a general inspection of the quality of communications service and consolidated the province's postal and telecommunications staff and worker ranks, thereby stopping all manner of malpractice on the postal and telecommunications front. They have also stepped up construction of infrastructures, improved postal and telecommunications capabilities, expedited the modernization of postal and telecommunications services, and readjusted and renovated existing communications circuits. [Summary] [Nanchang Jiangxi Provincial Service in Mandarin 1100 GMT 25 Sep 86 OW] /7358

ZHEJIANG'S AM STEREO TRANSMITTER--An AM stereo transmitter, which broadcasts via medium waves stereophonically, has been successfully installed at the Zhejiang People's Radio Station. This is the first step forward by a station in AM stereo transmission in China. [Summary] [Hangzhou Zhejiang Provincial Service in Mandarin 1000 GMT 25 Sep 86 OW] /7358

SHAANXI EXPERIMENTAL TV TRANSMISSION--The provincial radio and television department held a ceremony on 28 September to mark the start of test transmissions on television channel 8 at the newly-built provincial radio and television transmitting tower. The 245 meter high tower is now in use. The ceremony was attended by Zhou Yaguang, deputy secretary of the provincial party committee, and vice governors Zhang Bin and Sun Daren. Zhang Bin made a speech. The transmission tower, one of the province's key construction projects, is located in the southern outskirts of Xian city. The tower started test transmissions on television channel 8 yesterday. It will also carry out test transmissions on channels 10 and 16. It is planned to add two more

channels later. The new transmission power on channel 8 is 12.5 times higher than previously, and the radius of effective cover of the transmission has therefore increased from 10 km to about 80 km. People from Huaxian County in the east to Wugong County in the west will be able to enjoy good reception on channel 8 from now on. The tower was built by the Sichuan provincial No. 13 construction company. [Excerpts] [Xian Shaanxi Provincial Service in Mandarin 0030 GMT 29 Sep 86 HK] /7358

MORE TV GROUND STATIONS IN CHINA--Beijing, 16 Dec (XINHUA)--By the end of this year, China will have 2,050 television-receiving stations servicing all areas of the Chinese mainland, the "PEOPLE'S DAILY" reported today. According to a national exhibition of satellite telecommunications which opened here yesterday, China used satellites to relay television programs in some areas last year. Aside from transmitting television programs, these stations are also used for telecommunications, data-processing and photo transmission, the paper said. [Text] [Beijing XINHUA in English 1431 GMT 17 Dec 86 OW]

IMPROVED TELEPHONE SERVICE REPORTED--Beijing, 24 Dec (XINHUA)--Beijing has added 25,000 telephone channels this year, a senior official of the capital's telephone service said today. Yang Baokun, chief of Beijing's Telecommunications Administration, said Beijing now has a total of 161,000 telephone channels, as compared to the 86,000 in 1980. The capital has set up 17 new telephone exchange stations since 1979, and another 17 are under construction to become operational in 1987 or 1988, said Yang. To upgrade the existing networks, added the chief, the city has imported from France, Belgium, Switzerland and Canada digital and program controlled 140,000-channel exchanges. [Text] [Beijing XINHUA in English 1549 GMT 24 Dec 86 OW]

LONG DISTANCE CABLE OPERATING--Hangzhou, 25 Dec (XINHUA)--A 750 km telecommunications cable line linking Hangzhou, capital of Zhejiang Province, and Fuzhou, capital of Fujian Province, was officially put into operation today. The cable is connected with the Beijing-Shanghai-Hangzhou axial line, the Beijing-Hangzhou microwave telecommunication system, and other major lines in east China. The erection of the cable line will help raise telecommunication capacity in east China's Zhejiang and Fujian provinces as well as for Ningbo, Wenzhou and Fuzhou, three coastal cities open to foreign investment and technology, a local official told XINHUA. [Text] [Beijing XINHUA in English 1429 GMT 25 Dec 86 OW]

OVER 51,000 TELEPHONE LINES ADDED--Shanghai, 27 Dec (XINHUA)--Shanghai has added 51,850 lines to its telephone service this year, an official of the Municipal Telecommunications Administration said today. The new lines, exceeding the planned target by eight percent, make up about half of all lines added to the city's service over previous five years. The municipal government has listed expansion of the city's telephone service as one of this year's 15 priority projects closely linked with Shanghai residents' daily life. The addition of

new lines will to some degree ease the acute telephone shortage in this most densely populated Chinese metropolis, said an administration official. [Text] [Beijing XINHUA in English 0841 GMT 27 Dec 86 OW]

TERMINAL LINKED TO U.S. DATA BANK--Fuzhou, 29 Dec (XINHUA)--An international computer index network is playing an important role in providing China with access to scientific documents, research papers and market conditions. Fujian's first computer terminal was connected with the U.S. public data bank two years ago. Connected with some 50,000 terminals, this international computer network covers 200 data banks in 70 countries. Within ten minutes, one can find any of the 100 million documents stored from the terminal. Spending only 20 yuan (about six U.S. dollars) and 10 minutes, scientists at the Fujian Academy of Agriculture found 11 research papers through the terminal. [Text] [Beijing XINHUA in English 1237 GMT 29 Dec 86 OW]

XIZANG SATELLITE GROUND STATIONS--Lhasa, 18 Nov (XINHUA)--About one third of the 1.89 million people in the Tibet autonomous region are able to watch television via satellite, the PEOPLE'S DAILY reported today. Governments at the regional, prefectural and county levels have raised more than eight million yuan to build 54 satellite ground stations to relay television this year, bringing the number of ground stations to a total of 61. Now people in 59 of the region's 72 counties are able to watch TV programs beamed by the China central television station on the same day. [Text] [Beijing XINHUA in English 0833 GMT 18 Nov 86 OW] /7358

SATELLITE COMMUNICATIONS DISPLAY--Beijing, 15 Dec (XINHUA)--A national display of satellite telecommunications, featuring small telecommunications, data-processing stations and television-receiving stations, opened here this morning. Most of the equipment on display is domestically manufactured, except for small data-processing stations, which are made by the Telecom General Corporation of the U.S. There are altogether 18 small telecommunications stations of 13 varieties on display, including mobile ones. Five telecommunications satellites, of which two were developed and launched by China, provide beamed-in programs. "The display is aimed at enhancing the development of our country's [China] satellite telecommunications," said Li Xianglin, an official from the electronics promotion office under the State Council. The display, which will last for a month, is co-sponsored by the electronics promotion office and its sub-office in charge of satellite communications. [Text] [Beijing XINHUA in English 1236 GMT 15 Dec 86 OW] /7358

CSO: 5500/4138

MANILA CONSIDERS TAX ON TELECOMMUNICATIONS FIRMS

Quezon City BUSINESS DAY in English 17 Dec 86 p 1

[Text]

The Cabinet assistance system, an inter-agency recommendatory group, will propose a uniform franchise tax of 6% of gross revenues of telecommunications companies except domestic telex and telegraph firms, sources disclosed yesterday. Expected to be discussed by the Cabinet today, the recommendation is to modify Executive Order No. 72 which has removed the exemption of telecommunications companies from the 35% corporate income tax and imposes a 3% franchise tax on telephone or telegraph systems and radio stations. The recommendation is for a flat 6% franchise tax on all international record carriers, carriers' carriers such as the Philippine Communications Satellite Corp. and the Philippine Long Distance Telephone Co. It also calls for maintaining 1.5% franchise tax paid by depressed domestic telegraph and telex companies or domestic record carriers.

CSO: 5500/4308
/9317

FUNDING FOR TELECOMMUNICATIONS CENTER IN BRANTFORD REPORTED

Ottawa THE OTTAWA CITIZEN in English 5 Dec 86 p A17

[Text]

BRANTFORD (CP) — The federal and provincial governments have announced they will provide \$1 million in initial funding for a telecommunications centre here.

Federal Communications Minister Flora MacDonald and provincial Citizenship and Culture Minister Lily Munro told a reception Wednesday night that each government will contribute \$500,000 for the first phase of the International Telecommunications Discovery telecommunications centre. The centre was expected to cost \$14.6 million.

Local officials are hoping for commitments of \$5.5 million from each government, but MacDonald and Munro would not say how much money would be available for the project in the future.

"We can't give a definitive amount at this time," MacDonald said after making the announcement, adding she and Munro would not be "involved if the governments were not committed to the project."

Mayor Dave Neumann, who has been promoting the project since taking his seat in 1980, said he "feels challenged, not edgy" by the \$1-million announcement.

"Alexander Graham Bell launched a new era in modern communications in Brantford," Munro said earlier in a news release.

The 6,200 square metre facility, to open in 1989, will exhibit historical telecommunications equipment and display telecommunications technology of the future.

CSO: 5520/9
/9317

INTERCSAT: CHANNELIZING EQUIPMENT FOR INTERSPUTNIK

Budapest HIRADASTECHNIKA in Hungarian No 7, 1986 pp 289-294

[Article by L. Ya. Kantor, V. M. Dorofeyev, V. I. Dyachkov and V. V. Loginov, of the NIIR, Soviet Union, and Andras Baranyi, Laszlo Uherezky, Tamas Henk and Ferenc Rakosi, of the TKI, Hungary: "INTERCSAT: Channel Generating Equipment for the Intersputnik International Telecommunications System"]

[Text] Summary

The development of the Intersputnik artificial satellite telecommunications system made necessary the development of the SCPC type Intercsat channel generating equipment working on the PCM/ADM-PSK principle. In the present article we summarize the chief operating principles of the Intercsat equipment developed through Hungarian (TKI [Telecommunications Research Institute])-Soviet (NIIR [Radio Industry Research Institute]) cooperation.

1. Introduction

The basic task of the Intersputnik international artificial satellite telecommunications system is to supply socialist and other interested countries with telephone and teletype channels.

Operation of the Intersputnik system began in 1973 with the placing into operation of the first artificial satellite link established between Moscow and Havana. At present more than 12 earth stations operate in the Intersputnik international telecommunications system.

In the course of the past decade the development of the Intersputnik system has been indicated by the expansion in the number of earth stations working in the system and by the increase in the number of retranslators and satellite channels used. By 1984 there were regional systems operating in the Atlantic and Indian Ocean regions in which two rebroadcasting channels of "Horizon" type artificial satellites located in geostationary orbits were used for transmissions. The international designations of the geostationary satellites operating in the Atlantic Ocean and Indian Ocean regions are "Stationary 4" and "Stationary 5" respectively.

At present "Gradient N" type channel generating equipment is used at the earth stations of the Intersputnik system to transmit the telephone channels; these provide a possibility for multichannel access working on the FDM principle and

the transmission of telephone signals takes place with frequency modulation (Single Carrier Per Channel, SCPC). This organizational mode for multistation operation has numerous advantages when building up a network with a large number of stations and small channel demand:

--organizational possibilities for an optional number of channel links from one to ten;

--the possibility of using carrier suppression in speech pauses in the interest of increasing the capacity of the retranslator channel; and

--the possibility of using low power transmitters at the earth station.

Use of the FDM-SCPC principle made possible the gradual and flexible development of the Intersputnik international satellite communications network, using relatively cheap earth stations (antenna diameter 12 m $GT=29$ dB/K⁰).

In 1984 they began using time-sharing, multistation access equipment in one of the channels of the Intersputnik system, using TDMA-40 equipment (3). This system serves to link stations with relatively heavy traffic (from 12 to 60 channels).

It is useful to use FDM type equipment at stations with light traffic. Since problems arose at the heavier traffic stations in connection with the Gradient-N equipment (not enough transmission capacity, parameter instability, strong intermodulation interference) we are planning, for the long-range development of the Intersputnik telecommunications system, to use the new, more modern Intercsat channel generating equipment developed jointly by the TKI (Hungary) and the NIIR (Soviet Union) within the framework of the Intercosmos program.

The Intercsat equipment differs from the Gradient channel generating equipment in that the processing and passing on of the speech signals is digital. Two types of analog-digital transformation were prescribed—pulse code modulation (PCM) and adaptive delta modulation (ADM).

The PCM channels need a larger signal/noise relationship than the ADM channels, and their quality indexes are suitable for transmission of secondary multiplex teletype signals and for data transmission up to 4,800 bits per second.

The 32 K bit/s transmission speed adaptive delta modulation channels require a smaller signal/noise relationship, by about 5 dB, for transmission of the same quality, so the channel capacity of system using the ADM channels is substantially greater than that of systems using strictly PCM channels. Data transmission at 2,400 K bits per second and transmission of 12-18 channel secondary multiplex signals is possible on the ADM channels.

The demands made on the maximum throughput capacity of the system, the simplicity of their realization and the reliability of the equipment provide arguments for the selection of a modulation procedure using digital signals in

the Intercsat equipment. At present phase modulation procedures meet these requirements to a high degree; these have great interference protection, they are located in a band near to the theoretically necessary frequency band and they have relatively simpler signal formation methods on the receiver side.

The following digital transmission and reception methods were adopted in the Intercsat equipment:

—Four state phase modulation (PCM-4PSK) with coherent demodulation for the PCM channels; and

—Two level phase difference modulation with coherent demodulation (ADM-2/4 DPSK) in the case of the ADM channel.

Calculations pertaining to the channel capacity of telecommunications systems using the Intercsat channel generating equipment have shown that if the quality factor of the earth station is 31 dB/K⁰ and if utilization of the PCM channels is 30 percent and that of the ADM channels is 70 percent then one can transmit 600-650 telephone channels in the radio channel of the Horizon satellite retranslator instead of the 200 channels possible with use of the "Gradient-N" equipment.

The chief technical data of the "Intercsat" equipment are:

Frequency range	52-88 MHz
Frequency raster	45 or 80 kHz
Setting of frequency of transmitter and receiver	With the aid of a switch, or with a frequency synthesizer, with signals coming from the free channel search equipment in free access operation
Input and output levels of the channel carrier	-25 V -40 dBm
Lock and hold band of pilot signal	Plus or minus 60 kHz
Maximum deviation of reception carrier frequency	Plus or minus 3 kHz relative to pilot frequency
Carrier suppression in speech signal pauses	35 dB
Transmission average error probability for digital information	
—in 4PSK signal modulation operation	
S/N=61.3 dBHz	10 ⁻⁶
S/N=59.3 dBHz	10 ⁻⁴
—in 2/4 DPSK signal modulation operation	
S/N=58.3 dBHz	10 ⁻⁶
S/N=56.3 dBHz	10 ⁻⁴

The chief parameters of the voice frequency channel are:

Nominal signal levels of test signal:

--at input	- 13 dB m
--at output	+ 4 dB m
--overdrive	+ 2 dBO m

Protection from psophometrically weighted noise at output:

--in free channel	60 dB
--in the case of transmitting an 800 Hz frequency test signal in the -13 -43 dBm level range	
--at 64 Kbit/s (PCM and ADM)	32 dB
--at 32 Kbit/s (ADM)	27 dB

2. Structure of the Intercsat Channel Generating Equipment

The "Intercsat" equipment consists of channel and common units (see Figure 1).

Channel unit pairs serve to organize each duplex voice frequency channel. Transformation of the signals of the voice frequency channel into digital signal streams, generation of the PSK signals, discrete setting of the frequency of the transmitters and receivers within the limits of the channel band, coherent demodulation of the signals received and restoration of the digital signals into analog voice frequency signals take place in the channel unit. We also plan to introduce channel units to organize the 48 Kbit/s data transmission channels for digital signal transmission purposes. The common subsystem consists of the IF, pilot, local and service units. Summation and amplification of the PSK signals of the channel units take place in the transmitter part of the IF unit. The receiver part of the IF unit does the amplification, filtering and distribution of the IF signal received for the channel units of the equipment. In addition the automatic gain control (AGC) is done in the receiver part of the IF unit.

The AGC control signal is generated in the receiver part of the pilot unit; this also produces for the receiver of each channel unit the common local signal needed for automatic frequency control (AFC). The AFC serves to reduce the frequency of the operational signals from nominal value. The transmitter part of the pilot unit ensures the broadcasting of the pilot signal at the control stations of the communications network.

The local unit produces the local signals needed for the operation of the IF and channel units. The service unit makes possible the organization of a service channel network serving telephone, teletype and data transmission. To ensure great reliability the common subsystem operates with 100 percent warm reserves.

3. PCM-4PSK Transmission Procedure

In the case of the PCM-4PSK transmission method we transform the analog signals of the voice frequency channel into 7 bit digital signal sequences which consist of code words with a speed of 56 Kbit/s. In the interest of solving phase unreliability and in the interest of creating frame synchrony in the receiver of the channel unit we add synch words to the digital signal stream. The speed of the digital signal sequence thus produced increases from

56 to 64 K bits per second. In addition, in the burst mode, a precode at the beginning of signal transmission provides synchronization of the carrier and clock frequency of the receiver demodulator. In the Intercsat equipment we modeled the parameters of the precode and the synch code on the widely used INTELSAT SCPC equipment (4).

An adaptive speech detector serves to ensure the burst transmission mode; this switches on the transmitter signal if it senses a speech signal in the voice frequency channel. In order to increase the efficiency of speech signal detection the threshold level of the speech signal detector changes adaptively as a function of the noise level of the channel. In order to check channel status we process 1,200 code words following continuously one after another.

The PCM codec of the channel unit is a highly integrated IC unit and the unit providing burst mode operation is a multiprocessor unit.

4. ADM-2/4 DPSK Transmission Procedure

In the case of ADM-2/4 DPSK a continuous digital signal stream is produced from the analog signal of the voice frequency channel with the aid of the ADM codec (see Figure 2). The transmission speed of the digital information can be 32 or 64 K bits per second, as the phase modulator operates in either the 2 DPSK or 4 DPSK mode. A digital difference coder and phase modulator produce the DPSK signal.

In burst mode we use a precode similar to the transmission of PCM-4PSK signals.

The ADM codec contains double integration and digital inertial companding. The quantization step changes if a sequence of four uniform direction pulses appears in the output signal of the codec. The breakpoint frequency of the integrators in the prediction circuit is 100 and 180 Hz. The signal in the speech detector which turns on the carrier comes into being because of three threshold sensors watching the absolute exceeding of the threshold level, overflow of the signal level and an exceeding of the threshold level in the high frequency part of the spectrum.

5. The Operating Principle of the Equipment

The "Intercsat" equipment is connected to the microwave transmitter and receiver of the earth station in the 70 plus or minus 18 MHz frequency band. There is no frequency transformation in the common subsystem, so the channel unit transmits and receives signals in this same 70 plus or minus 18 MHz frequency band.

We use a transposition in the transmitter part of the channel unit (see Figure 3); the transmitter mixer transforms the approximately 46 MHz output signal of the PSK modulator and the signal of the transmission frequency synthesizer into the 70 plus or minus 18 MHz band. Accordingly the synthesizer can be tuned in the 116 plus or minus 18 MHz band in steps of 45 or 80 kHz. We use three mixers in the receiver part of the channel unit (see Figure 4). First we mix the signal in the 70 plus or minus 18 MHz band and the signal of the receiving frequency synthesizer falling in the 111 plus or minus 18 MHz band to a frequency of about 41 MHz. The second mixer, which gets the local signal

from the local unit, changes the signal to a frequency of about 5 MHz. We produce the 512 kHz signal with the third mixing. The channel filtering and demodulation of the PSK signal take place at this frequency. We use the 5.5 MHz signal produced by the receiver of the pilot unit as the reference signal for the third mixing. This mixing ensures the precision of the desired signal frequency within plus or minus 3 kHz. In the event of such a frequency deviation we can attain good quality PSK demodulation by virtue of the fact that carrier resetting takes place in the base band. The carrier and clock signal used in the demodulator provide swift synchronization and good interference protection for the resetting circuits.

We plan to use two pilot signals with two different frequencies, a main and an auxiliary, in a space telecommunications system using the Intercsat equipment; these will be transmitted by two control stations. The auxiliary pilot signal will make possible unambiguous detection of operational failures at the main pilot station. In this case the two pilot transmitters automatically change roles.

We selected two pairs of carrier frequencies for the service link so it is possible to organize two service channels simultaneously. The service terminal at every earth station executes service channel organization. A maximum of three service terminals at any earth station can be connected to the Intercsat channel generating equipment. Two of these can be located at a distance from the earth station so they can be connected to the channel generating equipment via land communications lines (see Figure 5). At most 90 service terminals can operate in the service communications net.

The service unit of the Intercsat channel generating equipment makes possible organization of a duplex communications channel with the subscriber of an optionally selected service terminal, and in case of need it makes possible the organization of a conference link with a chosen subscriber group. It is possible to pass on telephone and teletype links in each service channel, simultaneously or separately.

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Biographic Notes

L. J. Kantor obtained his diploma in 1954 at the Moscow Telecommunications College. He obtained a candidate's scientific degree in 1959 and defended his doctoral dissertation in 1972. His speciality is artificial satellite communications systems. At present he deals with research on various aspects of satellite communications systems. He has written many scientific articles and books about the results of his work.

V. M. Dorofeyev obtained his diploma in 1961 at the Moscow Telecommunications College and another in 1966 in the mathematics section of the college. He won the title of candidate in technical sciences in 1969. At present he works in the Radio Industry Research Institute (NIIR), which is under the authority of the Ministry of Postal Affairs of the Soviet Union. He deals with research on digital satellite communications systems, including development of modems and coders and interference questions.

V. I. Dyachkov obtained his diploma at the Moscow Telecommunications College. In 1961 he was assigned to the NIIR in Moscow. He defended his candidate's dissertation in 1974. His present specialities are digital satellite communications systems and television broadcast development of FDMA communications equipment.

V. V. Loginov obtained his diploma in 1964 at the electronics college in Moscow. Since 1965 he has been working at the Radio Industry Research Institute in Moscow where he deals with development of equipment for various purposes for the earth stations of satellite communications systems and does research in the area of phase synchronization systems. He obtained a candidate's scientific degree in 1974. At present he is a chief scientific worker for the NIIR.

Dr Andras Baranyi obtained his degree in 1960 at the Budapest Technical University. He has worked at the Telecommunications Research Institute since 1960. At first he dealt with design of electronic circuits for microwave radio equipment and with distortion problems of FM systems. Between 1973 and 1976 he directed development of data transmission modems. Since 1982 he has dealt with development of artificial satellite telephone links. Since 1965 he has been giving lectures within the framework of special engineering training at the Budapest Technical University. He worked as a guest researcher at the University of Maryland in 1970 and at Berkeley University in 1981. His research area is the theory of nonlinear networks. He won a candidate's degree in 1976 on this theme.

Laszlo Uherezky obtained his diploma in communications engineering at the Budapest Technical University in 1966. Between 1966 and 1977 he worked at the Telephone Factory on development and from 1973 as chief of the Computer Technology Development Main Department. He has been chief of a scientific department at the TKI since 1977. He continued his studies in 1970 on a scholarship in Japan at Fujitsu Ltd. and at Tokyo University. In 1978-79 he dealt with a study of the characteristics of data transmission protocols as a guest researcher in England at the National Physical Laboratory. His professional interests are computerized communication and microprocessor systems.

Dr Tamas Henk graduated from the Electrical Engineering School of the Budapest Technical University in 1973. Since then he has participated in the computer aided design of a data transmission modem family and in the development of the Intersat equipment at the TKI. His research areas are linear nonlinear network theory, data transmission and digital signal processing. From 1977 to 1979 he had a scholarship at Dublin University in the area of filter design. He received his university doctorate in data transmission in 1980 and in 1985 he won a candidate's degree in technical sciences in the area of filter design.

Dr Ferenc Rakosi obtained a technician's degree in 1955 at the Tivadar Puskas Telecommunications Technikum, an electrical engineering diploma in communications engineering at the Electrical Engineering School of the Budapest Technical University in 1967, a microwave special engineer's diploma in 1970, and a university doctorate in 1976. He worked for the Postal Long Distance Telephone Directorate until 1957, at the Orion Radio and Electric Enterprise until 1960 and since 1960 has worked at the Telecommunications Research Institute. Until 1973 he performed research and development tasks on passive and active microwave circuits as a chief scientific worker. Until 1978 he was scientific chief for the Microwave Active Circuits Department. Since

1978 he has been scientific chief engineer for Microwave Equipment and Systems. He has been a member of the HTE [Communications Engineering Scientific Association] since 1960. In 1980 he won the State Prize for his work in the area of research and development on microwave systems and equipment.

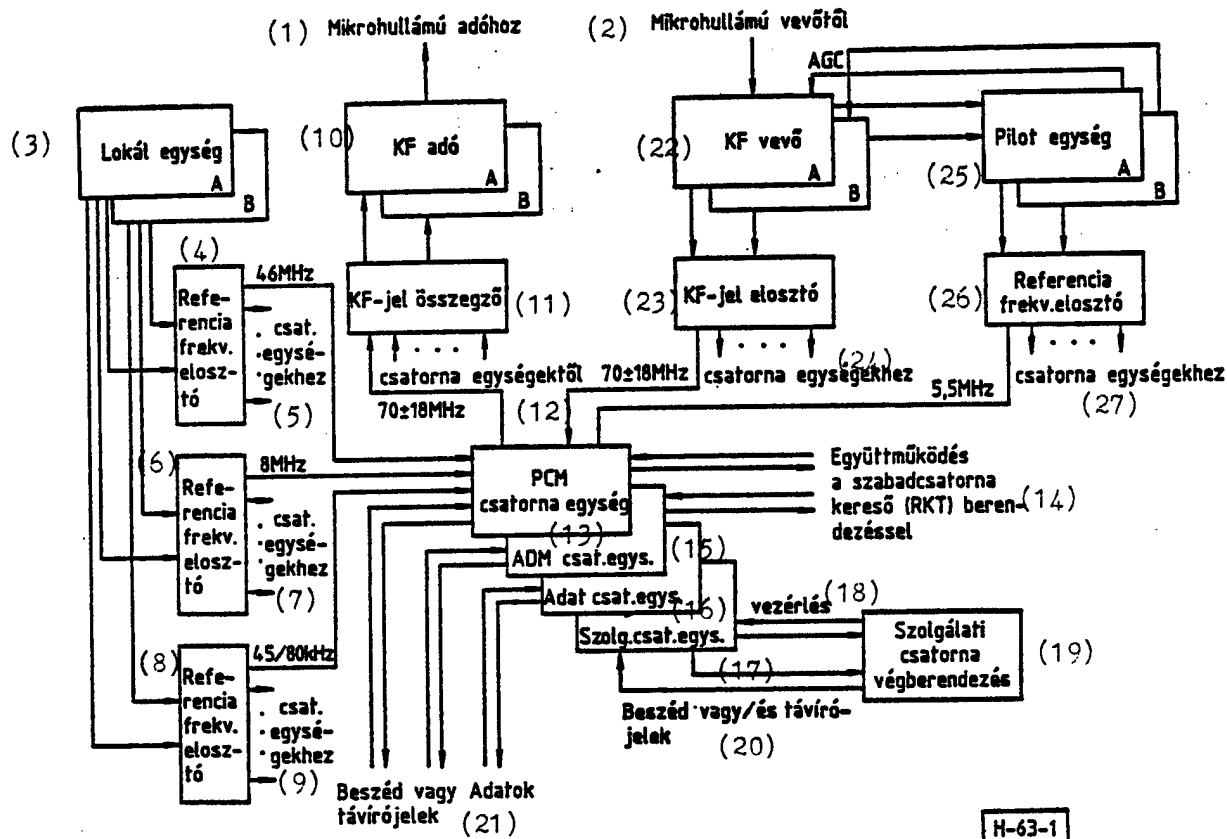
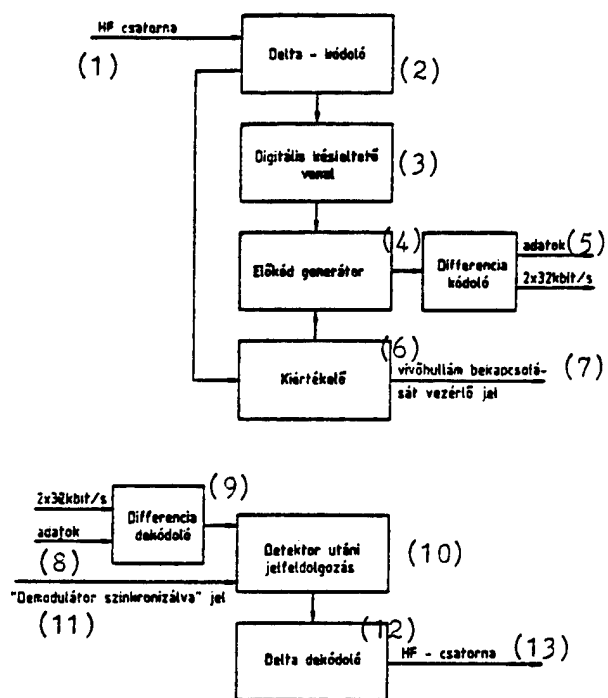


Figure 1. Block Diagram of the Intercsat Equipment
Key:

- | | |
|---|-------------------------------------|
| 1. To microwave transmitter | 15. ADM channel unit |
| 2. From microwave receiver | 16. Data channel unit |
| 3. Local unit | 17. Service channel unit |
| 4. Reference frequency distributor | 18. Control |
| 5. To channel units | 19. Service channel terminal |
| 6. Reference frequency distributor | 20. Speech and/or teletype signal |
| 7. To channel units | 21. Speech or data teletype sig. |
| 8. Reference frequency distributor | 22. IF receiver |
| 9. To channel units | 23. IF signal distributor |
| 10. IF transmitter | 24. To channel units |
| 11. IF signal sumator | 25. Pilot unit |
| 12. To channel units | 26. Reference frequency distributor |
| 13. PCM channel unit | 27. To channel units |
| 14. Cooperation with the free channel seeking equipment (RKT) | |

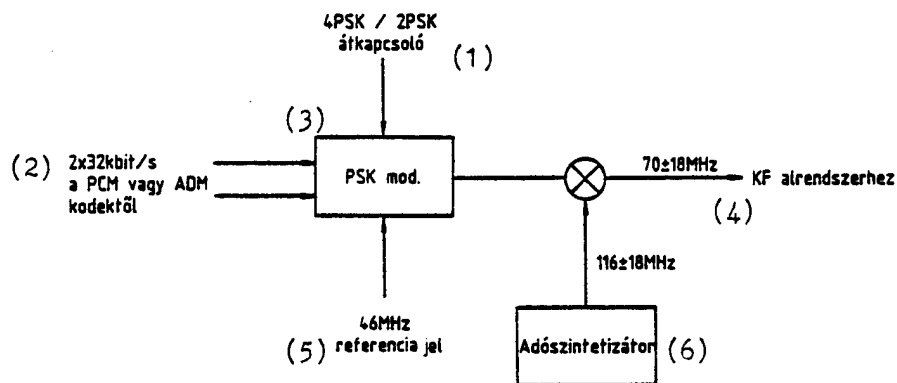


H-63-2

Figure 2. Block Diagram of the ADM Codec

Key:

- | | |
|---|---------------------------------------|
| 1. HF channel | 8. Data |
| 2. Delta coder | 9. Difference decoder |
| 3. Digital delay line | 10. Post-detector signal processing |
| 4. Precoder generator | 11. "Demodulator synchronized" signal |
| 5. Difference coder (data) | 12. Delta decoder |
| 6. Evaluator | 13. HF channel |
| 7. Signal controlling carrier wave switch | |

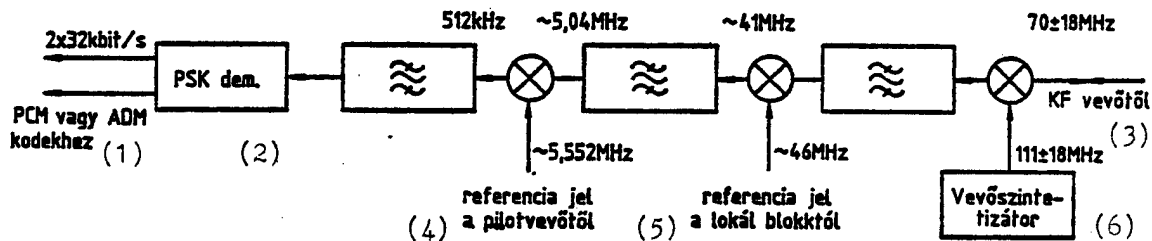


H-63-3

Figure 3. Structure of Channel Transmitter

Key:

- | | |
|--------------------------|----------------------------|
| 1. 4PSK / 2PSK switch | 4. To IF subsystem |
| 2. From PCM or ADM codec | 5. Reference signal |
| 3. PSK mod. | 6. Transmitter synthesizer |



H-63-4

Figure 4. Structure of Channel Receiver

Key:

- | | |
|---|--------------------------------------|
| 1. To PCM or ADM codec | 5. Reference signal from local block |
| 2. PSK dem. | 6. Receiver synthesizer |
| 3. From IF receiver | |
| 4. Reference signal from pilot receiver | |

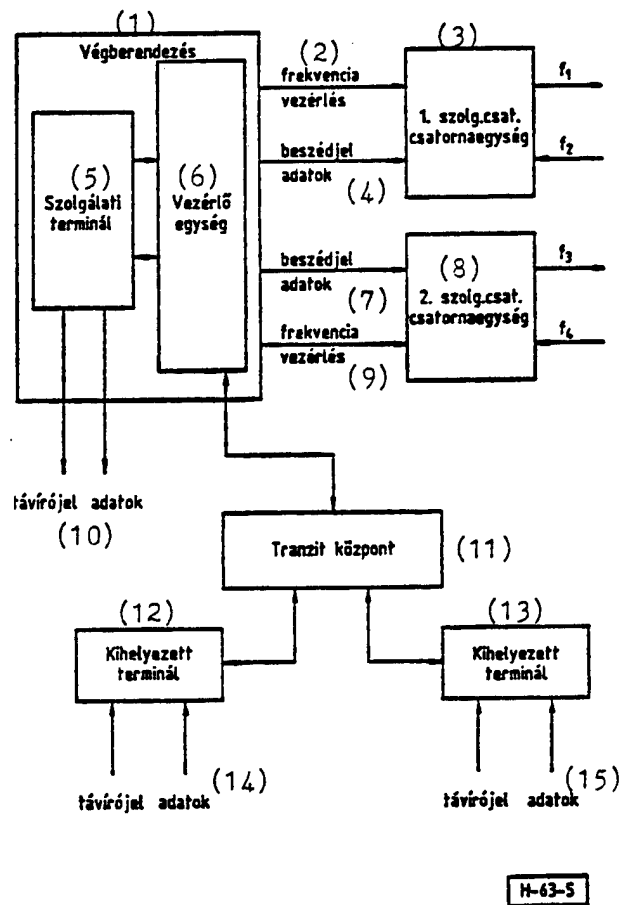


Figure 5. Block Diagram of Service Traffic Organization

Key:

- | | |
|--|--------------------------|
| 1. End equipment | 9. Frequency control |
| 2. Frequency control | 10. Teletype signal data |
| 3. First service-channel channel-unit | 11. Transit center |
| 4. Speech signal data | 12. Remote terminal |
| 5. Service terminal | 13. Remote terminal |
| 6. Control unit | 14. Teletype signal data |
| 7. Speech signal data | 15. Teletype signal data |
| 8. Second service-channel channel-unit | |

8984

CSO: 5500/3006

BRIEFS

RADAR INSTALLATION--Buenos Aires, 15 Dec (NA)--Air Force Chief of Staff Brigadier Major Ernesto Crespo today reported that 10 or 11 long-range radars, with guaranteed maintenance, will be installed in 1987 at Ezeiza International Airport. The investment required for this project will be financed through special agreements with foreign enterprises on the exchange of technology and services. Making a speech at Ezeiza airport, Crespo said that the airport "reflects the country's image" and that efforts are being made to equip it with advanced infrastructure and technologies so that it can be considered as category 1 to 2, which will provide greater capacity and better security for air operations. He said that these installations will guarantee the communications network, improve radio-electronic communications services, and facilitate circuits for oral links locally and with neighboring countries, thus saving time and fuel for the airplanes. He added that 10 or 11 long-range radars, with guaranteed maintenance, will be installed to begin operations in 1987. He concluded by announcing that the construction of the new airport in Mendoza will begin next year, and that it will replace the airport now in use, called "El Plumerillo," which is considered obsolete. [Text] [Buenos Aires NOTICIAS ARGENTINAS in Spanish 2040 GMT 15 Dec 86 PY] /12624

NEW RADIO STATION--A new radio station of the National Radio Broadcasting Service will be dedicated tomorrow in Rio Negro. It is LRA-2, Radio Nacional Viedma. Present at the dedication ceremony will be Public Works and Services Minister Pedro Trucco. This new official radio station will have an initial power of 10 KW. [Summary] [Buenos Aires Domestic Service in Spanish 1600 GMT 18 Dec 86 PY] /12624

CSO: 5500/2019

CABLE-LESS TV SYSTEM TO BE TESTED; THREATENS CABLE PLAN

Hamilton THE ROYAL GAZETTE in English 15 Dec 86 p 3

[Text]

Bermuda could be the world testing ground for a revolutionary hi-tech television broadcasting system being developed in the United States.

DeFontes Broadcasting is currently negotiating with the manufacturer of the system, which, if commercially viable, would be a serious threat to the cable network Mr. Gavin Wilson's Cablevision company is hoping to establish.

Details of the system are so secret company boss Mr. Kenny DeFontes has even been sworn not to name the US company behind the project.

"I had to sign an agreement not to say anything about the system before they would even allow me to look at the laboratory experiments," he said last night.

The project involves transmitting 24 television channels using a cable-less system.

The scrambled signal is distributed by line-of-sight transmissions and interference from buildings or natural geography is avoided by any number of small transmitters.

"We're talking about a really hi-tech system. But it is still in the test stage at the moment. I really can't say

much more because it is so secret," he said.

Mr. DeFontes said he had no idea what it would cost to install the system in Bermuda.

The Island is being considered because its small size makes it ideal as a testing ground.

"They approached us and we suggested they might be interested in doing a joint venture in Bermuda for testing. One of their guys had been on holiday in Bermuda and had got my name from somewhere.

"I decided to go and look at it right away because of the potential it offers," he said.

DeFontes Broadcasting, in addition to VSB Radio, already transmits the CNN news, ESPN sport and WTBS general television channels.

Mr. DeFontes was accompanied on his trip by Cable and Wireless executive Mr. John Fugs — Cable and Wireless's Devonshire satellite dish would be used to collect the signals from the United States.

A commercially viable system would do away with the capital costs involved in a cable television network. It would probably also reduce demand for privately-owned satellite dishes, which have

proved a growing planning problem in recent years.

"If it's technically sound and works in real life as it does in the laboratory, it means you can set up a television system anywhere in virtually no time at all," Mr. DeFontes said.

Mr. DeFontes will learn today how soon the system will be ready for full-scale testing, although it will probably be a year or more.

"I will know more today about whether the technical side is going to work and whether we're looking at a full-scale test," he said.

Even then, the old problem of copyright would appear, involving long negotiations before new television channels could be cleared for viewing in Bermuda.

"That will be the big problem. I've spent hours and hours in the past three years negotiating simply on copyright matters," Mr. DeFontes said.

Mr. Wilson last month published a new share prospectus for Cablevision, which has been battling for years with the same copyright problems as Mr. DeFontes, as well as the difficulties of setting up a cable television system in Bermuda.

/9274

CSO: 5540/045

BRIEFS

CABLE TV FUNDING SHORTFALL--Bermuda Cablevision fell well short of its bid to raise nearly \$3 million in capital to launch the Island's first cable TV system, possibly following bad publicity and a rival share offering. A brief statement from the company said \$1.1 million in capital was raised through public and private share offerings--\$1.85 million less than the company needed to secure a \$5 million loan from a US bank to start the system. Cablevision president Mr Gavin Wilson was off the Island and could not be reached for comment. The statement said the company is looking at other alternatives to raising the capital and the board of directors will put forward its recommendations at a special general meeting on December 29. "If the decision taken at the meeting involves the termination of the offer in favour of alternative capitalisation proposals, the subscription funds paid pursuant to the offer will be returned immediately, with interest, to those who subscribed," the statement said. The failure of the share offering may have been caused by bad publicity--notably a writ taken out by former consultant Mr Robert Mai for alleged non-payment of consultancy fees. In addition the Bank of Bermuda announced the launching of a \$20-million share offering to start in February. Company director Mr Alex Scott last night refused to comment on the share launch. [Text] [Hamilton THE ROYAL GAZETTE in English 19 Dec 86 p 9] /9274

CSO: 5540/045

PNP GOVERNMENT WOULD SANCTION NEW TV, RADIO OUTLETS

Kingston THE DAILY GLEANER in English 3 Dec 86 p 28

[Excerpt]

PRESIDENT of the People's National Party, Mr. Michael Manley, has said that a future PNP Government will accept proposals for a second television station and a new national radio station.

There was a need for greater competition and diversity within the local media; this was very important professionally, he said.

Mr. Manley was delivering the keynote address at the Press Association of Jamaica's 1986 National Journalism Awards Presentation ceremony at the Little Theatre, Tom Redcam Drive, Kingston, Sunday night.

"If the profession is to grow, then frankly the more competition there is in the media, generally, the healthier it is for the profession," the PNP President added.

Against this background, Mr. Manley said a PNP Government would stimulate and do what could be done to help the development of community radio. I think that community radio could have a real future with its more modest aspiration, a national distribution centre for news...but become a focus for the expression of community experience

and news.

"Secondly, we would be more than willing to accept a proposal for a new national radio station if the proposals were put forward. Thirdly, and most importantly, and this is in many ways the most important decision that we have taken, a PNP Government will accept proposals for a second television station... though we would have naturally to examine the many proposals that presumably will come forward." Mr. Manley said, pledging that this "is a concrete statement of official policy."

Mr. Manley said there were many elements in the society who would want to make a bid for such a thing, and added: "I have my own very deep reservations...It is a major decision for a society of our size."

He said: "When I look at the question of diversity, the question of competition, the question of press freedom, the question of how I think our society can best go forward, then it is my humble view that Jamaica's best national interest would be served with a second television station."

The Party, he said would "formally

abandon the project of trying to be involved in the definition of professional standards in journalism. I think that no politicians should attempt this...so I formally renounce the activity."

He said that despite efforts in recent years to improve the quality of journalism training, in Jamaica and other Caribbean countries, much more needs to be done to improve "the sheer quality and quantity of training that is available."

Mr. Manley said: "I think there are a few things that we complain about in journalism, that are perhaps the consequence of lack of professional training, lack of development which comes from training and the opportunity for study.

"Therefore, my colleagues and I have agreed that one of the things that would be perhaps useful to do is to work out with bodies like the Press Association of Jamaica and the major media houses, what could be done to increase the amount and quality of training generally...and certainly what could be done to facilitate on the job training."

/9274

CSO: 5540/046

BRIEFS

TELECOMMUNICATIONS LOAN--Kingston, 18 Dec (CANA)--The Jamaica Telephone Company (JTC) is receiving a 2.2 million U.S. dollar loan from Canada's Export Development Corporation (EDC) for the purchase of Canadian telecommunications equipment. Parliament has just approved a government guarantee of the loan to the state-owned company. The money will finance up to 85 percent of the cost of switching and transmission equipment and associated services from Northern Telecom of Canada. [Text] [Bridgetown CANA in English 1857 GMT 18 Dec 86 FL] /9274

CSO: 5540/046

BRIEFS

INDIA-YAR TELECOM ACCORD--New Delhi, Dec 2--India and Yemen have agreed jointly to develop technologies and products in telecommunications for use in rural areas in the two countries in view of the similarity of needs of both the countries in this regard. In a memorandum of understanding signed here last night by Mr Arjun Singh, Union Minister of Communications, and the Minister of Communications and Transport of the Yemen Arab Republic, Mr Ahmed Mohammed Al Anesi, the two countries agreed to set up progress of cooperation in telecommunications and postal fields and to identify new areas of cooperation. The Secretary (Telecom) in the Indian Ministry of Communications and the Deputy Minister of Communications in the Yemen Ministry of Communications will be the co-chairmen of the group. Yemen, which has also adopted the E-10-B digital electronic exchange system, also agreed to explore the possibility of further cooperation in this field, taking into account the fact that India has already started the manufacture of such equipment. The two sides also decided to exchange information on ways to speed up and modernize postal services. [Text] [Calcutta THE STATESMAN in English 3 Dec 86 p 11] /9317

SATELLITE DATA TRANSFER--Bangalore, Nov 27--The possible reception of data in India from the European Space Agency's (ESA) Microwave Remote Sensing satellite ERS-1 and reception in Europe from the Indian Remote Sensing satellite (IRS) were discussed between representatives of ESA and ISRO at a two-day meeting which concluded here today. The meeting, to review ongoing activities and to identify new directions for future cooperation under an agreement, covered topics such as earth observations, satellite communications, including navigation, mutual telemetry tracking and telecommand (TTG) support, space science and use of information retrieval system of ESA by Indian scientists. An ISRO press release said the ESA team led by Prof R. Lust, Director General and the ISRO team led by Prof U.R. Rao, Chairman, Space Commission, and Secretary, Department of Space, were satisfied with the outcome of the meeting, specially on the directions laid for future efforts. [Text] [Madras THE HINDU in English 28 Nov 86 p 13] /9317

CSO: 5550/0046

TELEPHONE NUMBERS TO BE DISTRIBUTED BY YEAR'S END

Tehran KEYHAN in Persian 1 Oct 86 p 3

[Text] Ramsar--KEYHAN correspondent: During the current and the coming year 350,000 telephone numbers will be distributed throughout the country.

The above statement was made by Engineer Gharazi, minister of post, telegraph and telephone during his recent trip to Mazandaran, at Ramsar. While he was inaugurating Martyr Beheshti's Katalom 5000-number automatic telephone center in Ramsar, he also said: During each of the last few years [after the advent of the revolution] we distributed 100,000 new telephone numbers while during the current year this figure reached 150,000 and next year we plan to distribute 200,000 telephone numbers.

Furthermore he announced: Before the victory of the revolution there only existed about 900,000 telephone numbers throughout the nation and out of this total 450,000 belonged to Tehran alone; however, at present that total figure has doubled, namely we have 1.8 million telephone numbers and all the additional telephone numbers have been distributed to subscribers out of the Tehran city limit.

In conclusion, Engineer Gharazi told our correspondent that after utilizing the services of two communication satellites we won't have any problems as far as communication links with other countries are concerned. For the time being, the 5000-number communication center of Katalom, which has become operational with 2000 telephone subscribers, is located on a site with an area of 1,400 square meters while the building itself occupies only 480 square meters of space. The construction cost of this project, which was procured from the credit allocations of Iran Communications Company, amounted to 80 million tomans. This facility will shortly expand to accommodate 3000 telephone subscribers and all our dear countrymen can directly contact any of the resident subscribers of the two communities of Sadat Mahaleh or Katalom by first dialing 02332 before dialing the intended party's number.

12719
CSO: 4640/41

NEPALGUNJ DIGITAL EXCHANGE SERVICE BEGINS OPERATION

Kathmandu THE RISING NEPAL in English 30 Dec 86 p 4

[Text]

Kathmandu, Dec. 29 (RSS):

A digital telephone exchange service has come into operation in Nepalgunj Sunday midnight on the occasion of His Majesty the King's 42nd Auspicious Birthday.

According to Nepal Telecommunication Communication Corporation, the 1000-line digital exchange is the sixth telephone exchange in the country.

Prior to this, two five-thousand line digital exchanges have been operating in Kathmandu, two-thousand line exchange in Birgunj and one thousand line exchange each in Bhairahawa and Pokhara, under the digital exchange system Nepalgunj has subscriber trunk dialing service linking it with Kathmandu, Birgunj, Biratnagar, Bhairahawa, Pokhara.

Telephone service is now available at twenty-five places in the kingdom and the number of telephone lines has reached 29,230.

There is a target of increasing telephone lines in the country to 75000 and all the telephone networks are to be turned into automatic exchanges in the seventh plan.

According to the corporation, 88.8 percent (26 thousand lines) of the existing telephones are automatic lines and 11.8 percent (3280 lines) are manual lines.

The number of digital lines in the country has reached fifteen thousand, which constitute half the existing lines.

Meanwhile, work is going on to install 1000-line Janakpur exchange and 5000-line Patan exchange by the end of this fiscal year.

/9274

CSO, 5500/4707

PANA DIRECTOR GENERAL DISCUSSES MODERNIZATION OF SERVICES

AB181905 Dakar PANA in English 1651 GMT 18 Dec 86

[Text] DAKAR 18 Dec (PANA)--The PAN-AFRICAN NEWS AGENCY [PANA] will modernize its services so that it can be well received by its users, the agency's director general, Mr Auguste Mpassi-Muba said today in Dakar.

"My main preoccupation today is ensuring coverage of the continent, making it possible for all national news agencies to receive PANA", he said.

In his report to the fifth extraordinary session of the Intergovernmental Council, [IGC], Mpassi-Muba said countries in Central and East Africa receive PANA poorly and many countries in West and Central Africa do not receive PANA at all.

He said TANJUG, the Yugoslav news agency, last month offered PANA two 20 kilowatt transmitters which should make it possible for PANA to solve the problem of coverage of the African Continent.

The director general said the computerization of PANA is expected to begin early next year and the transmission of PANA news on an experimental basis will begin next month if technical standards of countries participating in the experiment are harmonized.

Mpassi-Muba said increasingly a number of African media were using PANA's new services in countries where they were properly distributed. Media institutions and universities in industrialized countries were also becoming interested in PANA's news services. "These are indications that PANA is beginning to decisively assert its position in the flow of news", he said.

The number of national news agencies participating in PANA's services had also significantly increased, he added. "With the exception of Morocco which stopped participation because of its pull-out from the OAU and Cote d'Ivoire which is yet to be a member of PANA, all member states of the OAU are showing a great interest in PANA's news network".

Mpassi-Muba told the IGC meeting that progress was being made on the problems which had beset PANA. He said that for the budget of 3,607,369 U.S. dollars voted for 1986 only 1,446,443.80 dollars has been recovered, representing a 40 percent recovery rate. The amount recovered came from 17 out of a total of 44 member countries of PANA.

The director general commended Zimbabwe, Rwanda, Angola, Lesotho and Congo for fully paying their contributions to PANA. "These five countries have paid on a regular basis their contributions to the agency since it launched its operations", he said.

He added that some member countries which have never paid their contributions have now made an effort to do so and appealed to member states to become regular contributors.

He said PANA will try to get a plot for building its headquarters as soon as possible.

Mpassi-Muba said UNESCO's financial assistance had been instrumental in enabling PANA to attain its present level of operation. He praised UNESCO's director general, Mr Mahtar M'Bow, for his commitment to PANA's objectives and hoped that the impending change of UNESCO's leadership will not hamper efforts to establish a new world information order, ardently supported by M'Bow.

The director general said news of the liberation movement continue to be given prominence in the PANA network. PANA is the most comprehensive in the coverage of news on southern Africa according to African newspapers. This compliment is given in spite of PANA not being in the battlefield in South Africa or Namibia, he said.

He attributed the increased coverage of the liberation movement to the significant contribution made by the national news agencies of the Frontline States.

/12624
CSO: 5500/32

KENYA

BRIEFS

COMPUTERIZED TECHNOLOGY FOR SATELLITES--Nairobi, 16 Dec--A contract for the supply, installation and commissioning of time division multiplex access (TDMA) traffic terminal equipment has been signed. The signing took place at the General Post Office between the Kenya Posts and Telecommunications and the Digital Communications Corporation (DCC). Signing for K P and T C, the managing director, Mr Kipngeno Arap Ngeny, said Kenya will be the first African country that will operate the TDMA terminal. The contract will also provide for training of the technical staff in the operations and maintenance of the terminal. The 45 million shillings equipment will be used in the Longonot earth station. The transmission is computerised digital technology newly developed for use on satellite systems. The TDMA/DSI equipment will be ready for service in June 1988. It will initially work to the United States, United Kingdom, and most European destinations. [Excerpts] [Nairobi KNA in English 1205 GMT 16 Dec 86 EA] /7358

CSO: 5500/30

MAURITIUS

BRIEFS

INDIA TO BUILD SATELLITE STATION--India has announced that it will build a satellite tracking station on Mauritius in the Indian Ocean. Under an agreement signed at Port Louis, the Mauritian capital, India will also train Mauritian technicians to work at the station. [Text] [Maputo Domestic Service in Portuguese 1400 GMT 27 Dec 86 MB] /9274

CSO: 5500/31

PARTNERS' HOLDINGS IN CGE, ITT VENTURE FINALIZED

Frankfurt/Main FINANCIAL TIMES 31 Dec 86 p 1

[Article by Terry Dodsworth in London and David White in Madrid]

[Text]

STC, the UK electronics group, is to be excluded from the dominant new European telecommunications company which will be formed by the merger of the telephone interests of ITT of the US and Compagnie Générale d'Electricité (CGE) of France.

The surprise decision to leave STC out of the new telecommunications group, whose activities currently account for about 45 per cent of the European market in public telephone exchanges, was revealed yesterday when ITT and CGE signed the final legal documents in the transaction.

The final flurry of activity in the marathon negotiations also failed to find a formula to bring Telefonica, Spain's semi-state telephone monopoly, into the joint venture. Telefonica had originally agreed in the summer to take 10 per cent in the new group with an investment of \$300m, but divergences soon emerged over the future of ITT's Spanish subsidiaries, in which Telefonica holds a stake of just over 20 per cent.

Telefonica said yesterday that it still wanted to join the joint venture and would continue to press CGE, the majority partner, to agree to its conditions for participating. These involved, above all, a larger workload for ITT's former manufacturing subsidiaries in Spain, Standard Electrica and Marconi Espanola.

The change in the position of STC appears to have emerged within the last month. Under the original

heads of agreement between CGE and ITT, the US company was to have transferred 20 per cent of its 24 per cent stake in STC in the new combine, and only a few weeks ago CGE was talking confidently of what it intended to do with this shareholding.

The UK company refused last night to make any comment on the situation in the proposed transaction, and the US group gave no reason for changing its mind over the future of the STC holding, which is currently worth about \$300m. But it is thought that STC has recently objected to the prospect of having CGE directors on its board. CGE and STC have some overlapping business interests, particularly in the field of fibre optic cables, where the companies are fierce competitors in world markets.

As a result of the last-minute alterations in the deal, ITT will emerge with a slightly larger shareholding of 37 per cent in the combined telecommunications group. Of the other 63 per cent CGE will hold 55.6 per cent while a small minority stake of 3.7 per cent is to be acquired by Société Générale de Belgique, the Belgian telephone group, and a further 1.7 per cent by Crédit Lyonnais, the French banking concern.

CGE, a state-owned group whose Alcatel subsidiary is the dominant supplier in the French telecommunications market, will have managerial control of the new enterprise.

/12379
CSO: 5500/2441

FRENCH ARIANE 4 TO LAUNCH ITALSAT SATELLITE

AU061920 Rome ANSA in English 0841 GMT 6 Jan 87

[Text](ANSA) Paris, January 5 — The Italian telecommunication satellite, Italsat, will be launched in 1990 by an Ariane 4 rocket from the Kourou Space Center in French Guyana.

The relevant accord was signed here Monday by Luigi Rossi Bernardi, president of Italy's National Research Council, and Charles Bigot, head of the Arianespace consortium.

At takeoff Italsat will have a mass of 1.65 tons. Built under the guidance of the Selenia space company (part of the Italian state Iri-stet group), the satellite is geared to test advanced telecommunications. Its specific task will be to check on numeric telephone links within the new frequency band of 20-30 GHz.

In Italy it will have nine relay stations, six of which will make possible the use of 11,000 telephone circuits. The remaining three will be used to transmit data.

The cost of the operation was not made public but semi-official sources at Arianespace said it could fluctuate between 35 and 50 million dollars.

Ariane 4, which will launch the satellite is the most recent and powerful version of the European rocket. It will become operative in the middle of this year with six different configurations, corresponding to propulsion boosters capable of achieving a double or a triple launch. One of the propellents, a combustible liquid, is made by SNIA [National Industrial Aerospace Company]-BPD. [expansion unknown]

Arianespace is a consortium made up of key aerospace ventures and a group of European banks.

Italy participates with Aeritalia, Selenia, SNIA Vicosia and the Banco S. Paolo of Turin.

Originally Italsat was to be taken up into the stratosphere by the U.S. Space Shuttle.

/9274

CSO: 5500/2450

TELEFONICA TO INCREASE INVESTMENTS, EXPAND TELEPHONE NETWORK

Madrid YA in Spanish 27 Nov 86 p 15

[Article by Susana Blazquez]

[Text] By 1990, 65 percent of Spain's households will have a telephone, and villages with more than 50 inhabitants will have the same service 4 years later, if the 1987-1990 plan being reviewed yesterday by Telefonica's board of directors is put into effect. The board's proposal, which calls for investing 1.26 billion pesetas in this plan, will have to be studied by the ministries of transportation, industry, and finance, before receiving final approval from the government. In essence, it is designed to adapt the telephone company's actions to the guidelines of the National Telecommunications Plan, now being developed by the ministry of transportation.

Telefonica's 4-year plan is fundamentally an attempt to expand and modernize the telephone system until it reaches levels compatible with those of the EEC nations. It plans to invest 70 percent of its total budget for this purpose. According to the new guidelines, Spain's telephone system will continue to expand during these 4 years, rising from 9.5 million lines to 13 million.

3,700 Public Telephones for Small Towns

Telefonica's scheduled expansion up to 1990 includes the installation of 3,700 public telephones, most of which will be placed in small towns now lacking telephone service. By 1990 villages with more than 50 inhabitants will have a telephone line, although this time could be shortened by 4 years if the Spanish and Community authorities were to allocate 6 billion pesetas in aid to the telephone company. Moreover, the increase from 52 percent of households with telephone service to 65 percent means there will be 30 telephone lines for each 100 people, which will bring us up to the European average.

Telefonica's scheduled modernization is based on digitalization of the network (digital systems can transmit voice, images, and computer data), installing digital telephone exchanges, and 11,000 kilometers of optic fiber cable. This will cover 35 percent of the links, and 20 percent of urban

telephone lines will be digital. With this modernization plan, the Spanish digital network will conform with the EEC Council's recommendation that the Community members should establish the European Digital Integrated Services Network by 1993.

Boost for Automatic Mobile Service

In addition, the modernization plan includes the elimination of small manual telephone exchanges by 1988, the installation of automatic covered copper in 1987, and the automation of 90 percent of Spain's international and inter-continental service by 1990. Mobile automatic service is to be expanded, with plans to reach 32,000 users by the end of this plan.

Telefonica intends to establish careful forecasts of demand for all types of services in order to decrease its response time to customers' requests, and to offer the services which people actually prefer. In order to determine real demand, statistical studies of the population will be conducted, and to accelerate response time, the sales market will be decentralized geographically, and the market will be divided into sectors.

7679

CSO: 5500/2435

SWEDEN'S ERICSSON REVERSES LOSING TREND

EIS Improves, Launches New System

Stockholm SVENSKA DAGBLADET in Swedish 13 Nov 86 Pt 3, p 1

[Article by Lennart Moberg: "EIS Reverses Losing Trend"]

[Text] Ericsson Information system, EIS, is now seriously reversing its economical development. Its losses were 806 million kronor last year. This year the trend seems to be towards an improvement of almost half-a-billion. Furthermore, an entirely new communications system was completed this fall and will be launched in January.

Ericsson published its nine-month report last Wednesday. The head of the company, Bjorn Svedberg, was considerably better pleased this time than he was three months ago when the six-month report came out.

It showed a loss of 30 percent and it was reported at the same time that 4,800 job openings would be removed.

The loss was due to the company's problem child, EIS, which has had severe losses since its start in 1983. However, everything now indicates that EIS will reduce its losses from 806 million to somewhat over 200 million. (Net return on invested capital.)

The nine-month report states that EIS has shown a "marked improvement" during the third quarter.

"Next year the return will be plus minus zero," says Stig Larsson, president of EIS. "And in 1988, at the latest, our returns will be equal to the rest of the industry."

The improvement is due to reduced costs for personnel and a higher rate of return on the capital. The inventory has been drastically reduced.

From the beginning it was the heavy concentration on personal computers in the United States that created the huge losses. Competition was too great and the quality of the EIS products was too poor.

Today personal computers account for only seven to eight percent of EIS sales. Instead significant products are office switching systems, computer terminals, and typewriters.

The focus on the United States has been cut back drastically. Sweden now accounts for 25 percent of the market, the rest of Europe for 50 percent and the rest of the world, about 100 countries, accounts for the rest.

A totally new office communications system, which will be launched next year, was completed in the last couple of weeks.

The idea behind the system is that all computer terminals, typewriters and telephones in an office are connected to a special switching center, which enables them to communicate with each other. The center in its turn can communicate with other office centers all over the world. And this is done by plugging it into an ordinary telephone jack.

"This means that you can discuss the information displayed on a CRT, that you have just written, with someone else in another part of the world over an ordinary telephone," says Claes Thorsson, head of information.

The success of EIS has all but eliminated the 30-percent loss that was mentioned in the six-month report. The net return for the entire company for the same period last year was 322 million kronor, this year it will be 315.

EIS also reported, last Wednesday, that it has received a 50 million kronor order for the delivery of a communications system to two state-owned organizations in China.

Bjorn Svedberg commented on the nine-month report in this manner: "In existing circumstances I'm pleased, We are on our way out of a situation that was difficult for the company. I will not be completely pleased until we make even better returns."

Will there be any more personnel reductions?

"I don't see any more drastic steps in that direction," says Bjorn Svedberg.

Million kronor	Jul-Sep 1986	Jul-Sep 1985	Jan-Sep 1986	Jan-Sep 1985
Sales	6,547	6,626	21,733	21,533
Net after deprec.	184	-58	1,031	1,004
Net return	-133	-223	315	322

New Orders, Part in JAS

Stockholm SVENSKA DAGBLADET in Swedish 20 Nov Pt 3, p 2

[Article by Erik Liden: "New Orders for Ericsson"]

[Text] Ericsson has met with success in two diverse markets: Six digital AXE-stations are going to be delivered to the United States, and an order has been signed by the Defense Department of India for delivery of radio relay equipment.

It was reported recently that Ericsson's subsidiary in the United States, Ericsson, Inc., is going to deliver digital AXE-stations to the telephone company U.S. West for use by its service companies Mountain Bell, Northwestern Bell and Pacific Northwest Bell. The order is for six digital AXE-stations, and the agreement between Ericsson and U.S. West is the third one this year.

It was announced at the same time that the Ericsson Radio Systems had received an order from the Defense Department of India for radio relay equipment valued at over 150 million kronor, with options for 600-700 million worth of additional equipment.

Employment Security

The order gives employment security to the 300 employees at the company plants in Linköping. A previous radio relay order from the American Army may also grow into a billion kronor order. Radio relay systems are classified as civilian equipment and exports are not examined by the war materiel inspector. Radio relay is a common communications method for the Swedish National Telecommunications Administration. 60 percent of the telephone traffic today is via radio relay, the rest is via traditional telephone wires. Even internal communications systems in large ports and in international airports are also served by radio relay systems. Ericsson has delivered a radio relay system to one of the largest ports in the world, Rotterdam, and another one to Sydney in Australia.

Ericsson Radio Systems has done as well as Ericsson Information Systems has done poorly during the past year. Its best product is the mobile phone systems, equipment has just been delivered to the millionth customer, making Ericsson the world leader in that line of business.

Large Share in JAS

The defense sector has a large share in the JAS-project and in the flying radar that is going to be installed in 10-12 aircraft on behalf of the Air force. Radar equipment amounting to billions for the Bofors Robot 70 and the anti-aircraft gun Trinity have been or will shortly be sold to Pakistan, Norway, Denmark, Spain and India. Despite the Army's liquidity problems, Ericsson is expecting an order amounting to a billion kronor for a unique tropo radio system with jumping frequencies, System 8000. Jumping frequencies are used to avoid monitoring.

12339

CSO:5500/2434

BRIEFS

PERMIT REQUIRED TO IMPORT TV EQUIPMENT--Ankara (DUNYA)--Simultaneously with the inauguration of the Second Channel of TV yesterday, an announcement has been made to settle the still unclarified problem of ensuring that antennas and cables conform to existing standards. An announcement by the Supreme Council of Radio and Television [SCRT] says that the activities of persons and establishments manufacturing or importing unlicensed radio and television equipment and antennas, boosters, and cables used in such equipment will be stopped. According to the communique of the SCRT published in OFFICIAL GAZETTE yesterday, whether radio and TV equipment--and antennas, boosters, cables and frequency tuners used with such equipment--conform to standards will be subject to the approval of the SCRT [sentence as published]. Manufacturers, importing firms and establishments will fill special SCRT forms for the equipment in question and submit these together with service manuals to the Council. If the Council is satisfied with the forms and the service manuals in question, it will pass them on to the Turkish Standards Institute to determine whether they conform to standards. [Text] [Istanbul DUNYA in Turkish 7 Oct 96 pp 1, 9] 13184/9190

TRANSMITTER AGREEMENT WITH JAPAN--An agreement was signed between Turkish Radio and Television and two Japanese firms on the construction of 29 high-powered transmitting stations to allow broader viewing of the second channel television programs. The agreement was signed in Ankara. With the construction of the transmitters, 75 percent of the population will be able to view these programs. [Summary] [Ankara Domestic Service in Turkish 1700 GMT 24 Dec 86 TA] /7358

CSO: 5500/2440

END