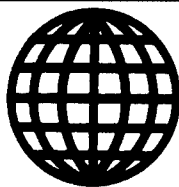


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14 NOVEMBER 1988



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Telecommunications

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Satellite Launching Center Director Interviewed
*OW2510142988 Beijing Domestic Service in
Mandarin1030 GMT 21 Oct 88*

[Text] Several generations of outstanding scientists and technicians at the Jiuquan Satellite Launching Center have made remarkable contributions to China's astronautical industry by sending rockets and satellites into the sky through collective wisdom and hard work.

What is the power that brings together these scientists and technicians in the desolate Gobi Desert? Recently station reporter (Liu Zhi) interviewed General (Zhang Xiaode), director of the Jiuquan Satellite Launching Center. The following is a recording of the interview:

[Begin recording] [Reporter] Director (Zhang), many intellectuals here have contributed their youthful years and wisdom to the motherland's astronautical industry. How did this dedicated relationship develop?

[(Zhang)] In the past 30 years this base has gone through a rough and bumpy road and has been developed through hard struggle, self-reliance, and selfless sacrifice. During this period, scientists and technicians on this front lived up to the great trust placed in them by the party and the people, and successfully conducted major and influential tests, thereby making important contributions to speeding up modernization of our army as well as economic construction.

In the past 30 years this base has trained large numbers of talented experts as well as leading cadres at all levels, who are playing important roles in their respective units. Of course, all comrades on our base, including dependents, staff, and workers, have made important contributions. But the greatest contributions are made by the scientists and technicians working at the forefront. Most of them have come from big cities throughout China which offer more favorable living and working conditions, and have chosen to work in this difficult and remote Gobi Desert and selflessly contribute their most valuable talents to this career. Many of them have died.

The many scientists and technicians have sacrificed themselves as well as their families. Most of them originally worked in big cities, where the living and

working conditions are better. But with great determination, they came to this base to pursue this career without any complaints. We can say that their families have made contributions and sacrifices to this cause.

[Reporter] This selfless sacrifice is also derived from their ardent love for their career and their firm conviction. This way of realizing the values and ideals of life is also worthwhile. Don't you think so?

[(Zhang)] You can say that. Our base has now trained large numbers of experts and leading cadres. For instance, Comrade Li Fengzhou, chief engineer of our base, Comrades (Dong Yong) and (Lin Bingwu) of the testing and technology section, Comrade (Chen Han), chief engineer of the telemetry section, and Comrade (Li Yuanzheng), deputy commander of our base, as well as other leading cadres at and above the regiment level. Most of them came to our base in the late 1950's and early 1960's after graduating from universities. However, the 10-year upheaval during the Cultural Revolution created a temporary shortage of technical cadres. Training a new generation of technicians has become the most important task for us.

In recent years, large numbers of graduates from colleges and technical secondary schools have been recruited to work on the technical front line of our base. They have inherited their predecessors' fine traditions, studied assiduously, boldly applied what they have learned to practice, and become technical backbones on the forefront.

[Reporter] Director (Zhang), what should the leadership do to support the intellectuals' selfless sacrificial spirit and their determination to forge ahead?

[(Zhang)] We realized this problem in practice. In the past, the mistakes of discriminating against and rejecting and distrusting intellectuals committed under the leftist influence dealt great blows to intellectuals. We have corrected these mistakes after the 3d Plenary Session of the 11th CPC Central Committee. As you can see, the most important technical posts on our base are held by intellectuals. Since intellectuals are our own comrades, we should support them in their work, help solve their difficulties, and do our best to create favorable conditions for their study, work, and lives so they can free themselves from the worries of their daily lives and concentrate their efforts on their work, thereby ensuring success in their careers. [end recording]

HONG KONG

New Telecommunications Link With Mainland Opened

HK2210022588 Hong Kong SOUTH CHINA
MORNING POST in English 22 Oct 88 p 5

[Article by Tim Metcalfe]

[Text] Acting Governor Sir David Ford yesterday opened a new \$93.6-million telecommunications link between Hong Kong and Guangdong.

The state-of-the-art optical fibre cable system has been heralded as a major milestone in communications between the territory and China and will carry high-quality telephone, facsimile, computer and TV signals to Guangdong.

The 247-kilometre line was installed by Cable and Wireless (HK) and the Guangdong Post and Telecommunications Administrative Bureau (GPTB).

The system, supplied by GEC and Pirelli, boasts 46,000 voice channels—the largest of its kind in the world and the first into China.

Inauguration ceremonies were conducted simultaneously in Hong Kong and Guangzhou. The two cities created telecommunications history with a live television link-up through the system.

Cable and Wireless (HK) managing director Fung Hak-ming hailed the opening as a "giant step in Hong Kong's communications capabilities."

The system would meet a "tremendous growth in demand" for phone links between Hong Kong and Guangdong.

Telephone calls to China last year increased by 75 percent and represent a quarter of all outgoing calls from Hong Kong.

Two years ago there were only 23.9 million minutes of long-distance phone calls between the two cities. Last year that figure leapt to 142 million minutes—or the equivalent of a conversation lasting 270 years.

Mr Fung said: "Telephone communication with China has become increasingly important, especially as Hong Kong continues to play a major role in China trade."

The deputy director of GPTB, Mr Yang Peilin, said: "The system will no doubt help bolster economic development in the two territories."

"The project further enhances our friendship and opens further avenues for future cooperation."

Sir David Ford, standing in for Governor Sir David Wilson, said: "A key element to our economic prosperity is the growth of Hong Kong's economic relations with China."

The two are now each other's largest trading partners. Much of Hong Kong's investment is now in neighbouring Guangdong, where more than 1-1/2 million workers are directly or indirectly employed.

Through this link, Sir David said, "Hong Kong is set to become a major economic and financial link between China and the rest of the world. This system is one more important step in fostering that link."

Optical fibres—which transmit digitalised light pulses—are smaller and lighter than copper cable, immune to electromagnetic weather interference and easier to install and maintain.

Chinese University Vice-Chancellor, Dr Charles Kao-kuen, played a key role in inventing the technology and is widely regarded as the father of optical fibre communications.

Cable and Wireless (HK) is also engaged in linking Hong Kong with Japan—and Japan with Korea. A 4,571 kilometre submarine optical fibre system is due to open in 1990.

Hong Kong will soon be connected to Southeast Asia, Europe and North America via a "Global Digital Highway" being developed by Cable and Wireless with other partners.

HUNGARY

Purchase of Ericsson Switching System Reported *55002405 Stockholm DAGENS NYHETER in Swedish* *26 Sep 88 p 16*

[Text] Ericsson has received its first order ever for AXE switching gear from the East Bloc, and will deliver a station for international telephone traffic to Budapest. In a press conference, Ericsson disclosed that the order is worth 47 million kronor, and that the station will be completed by the end of this year. According to the company, this is the first time East Europe will have access to digital telecommunications technology. American authorities have given permission for the delivery, which includes components fabricated in the United States.

POLAND

Fiber Optics For Use in Telephone Network *AU0610121788 Warsaw TRYBUNA LUDU in Polish* *3 Oct 88 p 3*

[Text] Fiber optics instead of traditional copper cables is the latest technology in world telecommunications. It presents enormous possibilities, and results in higher quality connections and reduced costs. We have already made a start in this field. What is more important, experiments have been completed and regular production of cables and essential equipment has begun.

So far, experimental fiberoptic cables with a total length of 20 km have been installed in Lublin, Lodz and Poznan, among other places. Another 90 km of fiberoptic cable are due to be installed this year, and 240 km next year; in the final year of the present 5-year plan, the

total length of fiberoptic cable will increase threefold. During the next 5-year plan, 1000 km of fiberoptic cable are going to be installed each year.

The Center for Fiberoptic Telecommunications Technology in Lublin is already supplying mass-produced fiberoptic cable. At the same time, the "Teletra" Electronics Plant in Poznan has produced the first equipment of the PCM TCC 120-S type, which permits the laying of fiberoptic cable in the interexchange telephone network. It is this network that will dominate in the future. But the so-called subscriber telephone network, whereby telephones are connected to the local exchange, will continue to use copper cables for many more years because of the cost.

Next year, the production of TCC-480-S fiberoptic cables and associated equipment is due to start. This type of cable will have a capacity four times as great as the present type. It will be manufactured by "Teletra" in Poznan and the Warsaw State Telecommunications Plant. Also envisaged is the production of the PCM-1920 S system, with an even greater capacity, intended for the intercity and international network.

A general application of fiber optics in telecommunications calls for suitable specialists, installation equipment, and control and measuring apparatus, all of which the technical services of the Polish Administration of Post Offices, Telegraphs and Telephones will receive. But, apart from increasing efficiency and reducing costs, fiber optics will permit the telecommunications network to go digital, and this means a wide range of services of a world standard.

From 1991-1995, Poland is due to receive 1.5 million new telephone subscribers, twice the number foreseen during the present 5-year plan. Achievement of this objective will narrow the telecommunications gap between us and most other European countries.

INDIA

Space Chairman Discusses INSAT-C, Satellite Plans

55500012 Madras *THE HINDU* in English
1 Sep 88 p 4

[Passages in bold as published]

[Text] Trivandrum, Aug. 31. The next launch of the Augmented Satellite Launch Vehicle could be in one and a half year's time, says the Chairman of the Indian Space Research Organisation, Prof. U. R. Rao.

Prof. Rao told a press conference here yesterday that the Failure Analysis Committee (FAC) and a National Experts Review Panel (ERP) looking into the failure of the second ASLV flight had been asked to submit their reports by October this year. Though the work had already begun on the hardware for the ASLV-D3, the modifications recommended by the committees would decide when the flight would take place.

About the INSAT-C, Prof. Rao said, "As of now it is considered prudent to operate the satellite with full meteorological services and about 50 per cent of telecommunication and TV components rather than risk corrective measures which may or may not succeed. The possible corrective measures can be attempted only in the event of a crisis wherein the loss of any particular system jeopardises the survival of the spacecraft". The INSAT 1-D was scheduled to be launched in April next year and this satellite would then alleviate the capacity shortage.

"In the light of the power system anomaly in INSAT 1-C, whether there is a need for any corrective measures on INSAT 1 is being looked into carefully. Corrective measures, if any, are likely to affect INSAT 1-D launch schedule only marginally, Prof. Rao said.

The ASLV D-2 was launched on July 13 this year only after incorporating improvements necessitated by the failure of the first ASLV launch in March 1987. The second ASLV was carefully prepared and tested before launch. In flight, it performed well till 49.5 seconds after lift-off, one second after the first stage motor ignited (in the first ASLV, the motor had not ignited). Then the yaw and the roll rate of the vehicle started building up rapidly despite the control system of the AS-1 motor which resulted in the severance of the top-portion of the vehicle containing the equipment bay at 50.4 seconds. Because of the severance of the vehicle, the separation of the strap-on motors at 52 seconds could not take place even though the equipment bay sent the appropriate commands as programmed. Notwithstanding this, the first stage motor with the burnt out strap-on motors continued further. The AS-1 performance, till burn-out at 97.8

seconds after the launch, was also nominal. The SROSS-2 satellite which was prematurely detached due to the severance of the vehicle also performed nominally [as published] till it splashed down at 257 seconds," said Prof. Rao.

The voluminous data collected during both developmental flights of ASLV were being examined by the Failure Analysis Committee (FAC) with experts from within and outside ISRO. A national Experts Review Panel (ERP) too was investigating the cause of the failure.

The recommendations of the FAC and ERP would be taken into account in the design and fabrication of the polar Satellite Launch Vehicle (PSLV) and the Geostationary Satellite Launch Vehicle (GSLV) as well, he noted.

"While the inputs from the ASLV flights are feeding into the PSLV project, the ASLV D-2 failure is not likely to affect the PSLV in a significant manner," Prof. Rao said.

Immediately after the ASLV-3 project, the ASLV and PSLV projects were started simultaneously, and "were not connected directly." After the two ASLV launch failures, the PSLV had "caught up" with the ASLV. "We hope even today that the PSLV will be launched next year as scheduled."

No cancellation: Prof. Rao ruled out the possibility of cancelling the ASLV project. The ASLV was a low-cost way of testing new technologies and economically launching small scientific payloads, he pointed out.

Despite the failures of D and D-2 flights of ASLV a large number of technologies relevant for the development of PSLV had been validated. These included strap-on technology, closed-loop guidance and inertial navigation, vertical integration technology, S-Band telemetry, and metallic bulbous heat shield technology. The development of the PSLV was progressing satisfactorily, he said.

Though the emphasis was on keeping the INSAT-2 satellite in safe operating conditions and operating as much of the payload complement as possible, the Space Department and the Ford Aerospace corporation (the American spacecraft contractor) were trying to determine feasibility of fault clearing methods and the risks associated with them.

After the short-circuit of one of the two power-buses, it was found that only some payloads could be operated with just half the total power the satellite needed. Though only half of the 12 C-band transponders and two S-Band transponders could be used with the one remaining power bus, the complete VHRR instrument and transmitter, as also the data relay transponder for meteorological purposes, had been cleared for operational use, said Prof. Rao.

Sub-systems: Procedures for normal operations, thermal management and emergency management of the satellite had been evolved. With one electrical bus put out of operation, the spacecraft had lost the redundancies in some vital sub-systems such as telemetry, telecommand and attitude and orbit control systems.

While availability of only half the transponders would affect the utilisation plans for telecommunications and broadcasting to some extent, "the impact may not be too serious as the loading of the satellite is to be done in a phased manner," said Prof. Rao. Efforts to lease additional transponders from INTELSAT were continuing. The INSAT system now included two transponders leased from INTELSAT and authorisation existed for lease of up to four transponders. Additional leases could be obtained because of a general shortage of transponders over the Indian Ocean region.

The INSAT 1-C had been insured through the New India Assurance Company for \$72.6 millions. This fully covered the cost of the satellite, though not of a replacement including launch. The insurance claim will be lodged within 180 days of cover stipulated in the agreement, said Prof. Rao.

Gateway Switch to World Data Networks Planned
55500011 Madras THE HINDU in English
31 Aug 88 p 4

[Passages in bold as published]

[Text] Madras, Aug. 30. An international gateway packet switch that will provide a data communication link for Indian subscribers with data users around the world is to be commissioned by the Videsh Sanchar Nigam (formally Overseas Communication Service) at Bombay in November this year.

The VSN Chairman and Managing Director, Mr. T. H. Chowdary, told a press conference here today that the packet switch would enable subscribers to gain access to about 200 data networks in the world through the gateways in Rome, Singapore and New York. It was expected to be a boon for firms exporting software.

He said that by December a satellite antenna would set up at the Videsh Sanchar Bhavan building in Bombay at a cost of Rs. 7 crores. The antenna which would work with INTELSAT satellites over the Atlantic will have 30 circuits to the U.S. initially. With this, telephone calls to the U.S. will be routed directly instead of the present link-up via satellite to Rome, London or Paris and thence to New York by the trans-Atlantic cable. The payments to intermediate agencies for use of the cable would be eliminated in the process.

Mr. Chowdary said that a Coast Earth Station would be established in Pune and tenders had been invited for this project. When operational, it would enable ships to hook up with the satellite to avail themselves of all telecom

services. At present, about 45 Indian ships were using Japanese and Norwegian gateway exchanges for communication. The Pune station was expected to induce another 100 ships to use this facility. On land, trucks and railway wagons could also have telecom facilities even while on the move.

The earth station formed part of the new Global Maritime Distress and Safety System offered by the International Maritime Satellite Organisation (INMARSAT) in which ships would carry radio beacons that would transmit distress signals through satellite to facilitate rescue. An estimated 800 out of the 80,000 ships in the world sank every year, and an effective satellite communication could save many lives, he said.

Making profit: Mr. Chowdary said the VSN planned to invest something like Rs. 65 crores in 1988-89 and another Rs. 35 crores in the coming year on on-going projects. It had projected an investment of Rs. 350 crores for the eighth Plan.

In the normal course, the VSN would be in a position to fund all its projects from internal resources as it was generating a profit every year. It had a surplus of Rs. 120 crores in 1986-1987 and an estimated surplus of Rs. 170 crores in 1987-88.

As per the 1984 system accord on revenue sharing with the Department of Telecommunications (DoT), Mr. Chowdary explained that funds would never have been a problem for the VSN. But now the DoT had announced a new formula of revenue sharing, reducing VSN's share from 67 per cent to 33 per cent. "We have appealed to the DoT to reconsider this decision and are hoping it will be done. But whatever the arrangement between us, the resources to fund the Rs. 450 crore plans till the 8th Plan period will be found. If need be we can also raise resources through Bonds issued to the public."

Electronic mail box: He noted that another major development that would take place in the next four months was the installation of an electronic telex mail box facility. Subscribers could take a mail box that would store any message for them and print it to their office when they were available. Ultimately, an electronic voice mail box would come into vogue.

The commemoration of the Jawaharlal Nehru centenary, the VSN, Mr. Chowdary said, had planned to institute an annual lecture by an international expert and also a fellowship for an Indian to study a problem or subject for four weeks.

Microwave TV Link Inaugurated in Kerala 23 Oct
BK2410033688 Delhi Doordarshan Television Network
in English 1600 GMT 23 Oct 88

[Text] Television programs in Malayalam, originating from Trivandrum Doordarshan Kendra [center], are available to the people in northern parts of Kerala. This

became possible following the inauguration of a microwave link connecting Trivandrum and Calicut. The link was inaugurated by the union minister for health and family welfare, Mr Motilal Vora on Friday [21 October].

The present relay from Calicut would cover a radius of 30 km. This will be extended to 80 kms in about a year. The union minister of state of information and broadcasting, Mr S. Krishna Kumar, who participated in the function, said over 150 more TV relay stations will be set up in the country in the next 12 months. This will provide one relay station in every district headquarters. He also said that the telecast time of Doordarshan will be increased to 18 hours per day and the duration of regional TV news bulletins will be increased to 15 minutes.

Hopes for Improved Satellite Program Pinned on INSAT 1-D

55500013 Madras *THE HINDU* in English
22 Sep 88 p 7

[Text] New Delhi, Sept 21—India's bid to get additional transponders on lease from INTELSAT over the Indian Ocean Region (IOR) has failed and all hopes are, therefore, now pinned on INSAT 1-D scheduled to be launched in April, 1989.

Though INSAT-1C is expected to deliver only 50 per cent of the original payload, official sources here explained that this should not be a cause for concern. In any case, this satellite was to be loaded only in a phased manner and with the launching of INSAT 1-D, the capacity shortage could be alleviated substantially. The INSAT system at present includes two transponders leased from INTELSAT and India also has authorisation for the lease of up to four. At a meeting of the board of governors of INTELSAT in Washington last week, India made a request for leasing additional transponders. Despite its high rating, linked to the realistic projections of requirements it submitted, INTELSAT could not entertain the request because the satellites it has over the Indian Ocean region are jam-packed. This position could continue till 1990.

INTELSAT has nine satellites in space, three over the Indian Ocean region covering a range of 120 degrees. The other six cover the remaining 240 degrees segment of the globe.

May not affect communication: According to officials in the Department of Telecommunications, the 50 per cent failure of INSAT 1-C is not likely to affect the communications system to any great extent. This cautious optimism is based on a number of factors. For instance, INSAT 1-B will remain functional till 1989, after which its fuel will be exhausted. In that event, attempts would be made to extend the life of the satellite by using an inclined orbit without any manoeuvres. However, this will be possible only if matching tracking type antennae

are available. These antennae are installed in Delhi, Bombay, Calcutta, Madras and Shillong. This way, official hope INSAT-1-B's life can be extended by a year or two.

By this time, if all goes well, INSAT 1-D would also be launched and with the 50 per cent availability from INSAT 1-C, the requirements of both communication and television broadcasting could be met substantially.

In fact, INTELSAT had also offered the same inclined orbit facility by 1990 when its own satellites would be running out of life. This proposal was not acceptable as India could do the same thing with its own satellite.

Analysts still at it: Meanwhile, the total fault analysis of INSAT 1-C is still in progress. The initial assessment indicated that one of the two power buses on board the satellite suffered a massive short circuit and was not delivering any power. But Department of Space officials have decided against any manoeuvres for fear of losing the satellite altogether.

After a first-cut analysis, to save fuel, the satellite was placed in the three-axis mode with one momentum wheel and the reaction wheel. Subsequently, six out of the 12 C-Band transponders, one of the two S-Band transponders and the Data Relay Transponder were switched on. In early August, the first VHRR imagery in the visible band was also taken. The infra-red imagery was taken subsequently. The characterisation of other payloads has since been completed. The results showed that these are functioning normally.

Attempts at safe operating conditions: Efforts are now primarily directed towards establishing safe operating conditions. The maintenance of thermal balance calls for considerable effort. There is a worry that this problem could get worse during the satellite eclipse seasons which occur for a maximum of 72 minutes at midnight for a few days around September 21 and March 21. However, a near-simulation of eclipse conditions last month showed thermal management during the period was feasible. It is, therefore, felt that only one C-Band transponder, needed for telemetry purposes, can be operated. Officials explained that during such short periods of eclipse even on INSAT 1-B only minimal payloads are operated.

An important point to be noted is that with the loss of one electrical bus, the spacecraft has lost the redundancies in some vital sub-systems such as telemetry, telecommand, attitude and orbit control systems. Therefore the officials feel it would be prudent to operate INSAT 1-C with full meteorological services and about 50 per cent of telecommunications and TV component, rather than risk corrective measures which may or may not succeed. The possible corrective measures can be attempted only in the event of a crisis where the loss of any particular system jeopardises the survival of the satellite.

Work on INSAT-2 on: In the light of the power system anomaly in INSAT 1-C, the question of corrective measures on INSAT 1-D is being looked into carefully. In succession to the INSAT-1 series, fabrication work on INSAT-2 is going on in the country. It may be launched some time in 1990-91.

As far as the sharing of INSAT 1-C is concerned, a final decision is likely to be taken after the eclipse period in the beginning of October. The regional and other programmes of national priority like health, family planning and education shown on the television network may not be affected.

Plan To Improve Overburdened Telephone Lines Reported

55500015 Madras *THE HINDU* in English
19 Sep 88 p 16

[Text] New Delhi, Sept 18—A recent study of the traffic pattern of telephones in Delhi has shown that only 12 per cent of the subscribers accounted for 64 per cent of the traffic and brought in 75 per cent of the revenue as against 88 per cent of the subscribers accounting for 36 per cent of the traffick and 25 per cent of the revenue.

This startling finding is revealed in an official study and is reportedly true to other metros and major cities in the country.

According to the study if 12 per cent of the high calling subscribers are put on another load-bearing network, the existing network can be loaded substantially and the new applicants can get a telephone connection on demand in a month.

Four categories: The study divided the callers into four categories. The first category included subscribers who had a calling rate slab of up to 100 calls a month, the second category described as 'medium' covered calls between 100 and 1000, the third category of high callers made between 100 and 500 and the fourth category included very high calling rates of over 5000 calls a month.

The first category included 21 per cent of the subscribers who accounted for two per cent of the total calls handled in the system. Since the call numbers were below the free call rate, there was nil revenue.

The second category accounted for 67 per cent of the subscribers and accounted for 34 per cent of the total calls handled in the system with a revenue contribution of 25 per cent.

The third category covering high callers accounted for 10 per cent of total subscribers with a 32 per cent share in the traffic and 35 per cent of the revenue.

The fourth or the very high calling slab category accounted for only two per cent of the subscribers, 32 per cent of the total calls handled in the system and 40 per cent of the revenue.

Effective use of equipment: According to the study, the present engineering network is such that the telephone exchange areas are limited by geographical boundaries without regard to traffic and the proposed new network dimensioning could provide equal access for all types of callers. At present, the telephone equipment is put to its peak use only for about two to three hours in a day and the external cable plant is not at its optimum usage level in the case of low calling rate subscribers. In fact it is in use for hardly 15 minutes a day on an average and could therefore be used more effectively.

New exchanges are now being planned either for new demands or for replacing old or worn out equipment. This has resulted in haphazard growth of systems. According to the study, with the current planning methods and engineering practices, the overall improvement will be visible only when the entire network is digitalised and old electro-mechanical exchanges are replaced. Otherwise, there will continue to be pockets of heavy calling subscriber groups clamouring for better services. This approach will take over 10 years to provide a telephone on demand and even after this, the network will have a similar utilisation and traffic distribution as at present.

Plan to clear waiting list: The study has suggested that to give new connections as quickly as possible and clear all waiting lists in two to three years a system similar to provision of highways for fast vehicle traffic and keep roadways network for slow moving traffic can be evolved. In this connect, it has been suggested that for 12 per cent of high calling rate (HCR) subscribers individual Remote Line Units (RLUs) or PABX's of 500 lines can be provided at each place. These HCR PABX's can be inter-connected by an optimal ring using fibre optic cables and systems. Within the ring, two or three digital electronic exchanges can be provided to serve as parent exchanges and these can be connected to the optical ring.

As a result, all existing telephone exchanges will get relieved of 65 per cent of traffic load and they can be loaded further to this extent, without any extra cost. This network will also be connected to the HCR network. On the other hand, for low calling rate (LCR) subscribers, party line service or PABX service or concentrators can be provided so that the traffic load from these groups of subscribers build up. Thus, in Delhi, 100 PABX of 500 lines may be provided for HCR subscribers and 500 units of 100 lines for LCR subscribers.

Digital links: Later the HCR networks in different cities could be inter-connected by digital links and constitute a nation-wide digital network. The HCR network will be

fully digital and will pave the way for computer Communication and Integrated Service Data Network (ISDN), once the transmission in subscribers loop is made digital.

The new proposal will have the merit of clearing waiting lists in two to three years and then phones can be given on demand from perhaps 1991. If the proposal is accepted, the indigenous manufacturers will get a tremendous boost. About 4000 PABX's, 15 lakh telephone instruments, allied cables and accessories will be required in two to three years. On the other hand investment cost per telephone will come down and the average cost per new subscriber will be Rs. 11,070 as against the present average cost (1987-88) of Rs. 20,000.

Better service: Consequently the financial position of Department of Telecommunications will improve considerably and subscribers will get a far better service. The HRC subscribers will get a fully digital system. Moreover, introduction of new telematic services will be much easier. According to well placed sources, the proposed system is likely to be tried out in Bangalore or Hyderabad or Pune.

Wireless Phone System for Rural Areas Developed

55500010 Madras THE HINDU in English
31 Aug 88 p 16

[Text] Visakhapatnam, Aug. 30. A wireless telephone system to provide cheaper communication facilities to the rural areas has been developed by the Marine and Communication Electronics (India) Limited (MACE), an A.P. Government undertaking here.

Named Rural Radio Communication Sharing System (RRCSS), it can provide a telephone to each village at a cost of Rs. 34,000 against Rs. 1 lakh for a conventional apparatus linked by overhead wires.

The Department of Telecommunications (DOT) of the Government of India had entrusted this task to the MACE with technical expertise from the Telecom Research Centre, New Delhi.

The MACE will complete a pilot project of this type in Ballabgarh taluk near Delhi connecting 175 villages by this year end, Mr. U. V. Warlu, Chairman of the MACE, told a news conference on the occasion of its 11th anniversary here.

Mr. B. S. Murty, Managing Director of the Telecom Research Centre, who was also present at the press conference, said: "The RRCSS is the appropriate means to fulfil the DOT target to provide telephone link to all the remaining villages by 2000 AD."

According to Mr. Warlu, the cost of wireless telephones for all villages by the end of this century will work out to Rs. 1,000 crores. "The MACE and the Rajasthan Electronics will execute this gigantic job. We are hopeful of completing the task within the stipulated time," he said. Under the RRCSS project the village telephones will be controlled by a mini-exchange at the taluk, block or mandal headquarters.

First Integrated Telecom Network Operational

55500014 Calcutta THE TELEGRAPH in English
21 Sep 88 p 6

[Text] New Delhi, Sept 20 (PTI): The State Bank of India's (SBI) integrated telecommunication network, the country's first and the largest private system, has been inaugurated here today.

Commissioning the network, the Union minister of state for finance, Mr Eduardo Faleiro, spoke to the Maharashtra chief minister, Mr Sharad Pawar, in Bombay and to Mr Pratap Singh Rane, chief minister of Goa, in Panaji. Facilitations were exchanged through voice, fax and bilingual text transmission.

The Rs 2.6-crore network, planned, designed and executed by the public sector Telecommunications Consultants (India) Limited (TCIL), would in the first phase link up SBI's 134 officers in 64 cities through 14 digital electronic exchanges and six messages switches, according to Mr D. N. Ghosh, chairman of the bank.

He said with the help of the network, 70 per cent of SBI's nearly Rs 3,000-core daily transactions in remittances among various branches would be quickened from the present 10 days to 24 hours.

Mr Ghosh said in the second phase, which would take about three years, all the 7,500 branches of the bank and its 51 region offices would be covered by the network.

IRAN

Three Television Stations Established in Esfahan

NC2810075188 Tehran Domestic Service in Persian
0430 GMT 28 Oct 88

[Text] On the auspicious occasion of the birth anniversary of the holy prophet, God's peace be upon him, and the birth anniversary of Imam Ja'far Sadeq, peace be upon him, three television stations were installed in Esfahan and became operational.

According to the Central News Unit, these stations, which were set up by the maintenance and repair unit for television transmitters in Esfahan and the network expansion unit, have a total strength of 65 watts and can be viewed on Channel 8 in Abadeh, Channel 50 UHF in District 1 of Yazd, and on Channel 3 in Deheq and Alavijeh.

OMAN

**Installation of New PDO
Telecommunication Link Begun**
44000054 Muscat *TIMES OF OMAN* in English
29 Sep 88 p 8

[Text] Work has started on installing a new digital telecoms link between Petroleum Development Oman's Interior locations at Fahud and Qarn Alam.

The project which involves two local companies is part of a major 10-year plan to introduce the latest digital technology to PDO's entire telecommunication network, and the Qarn Alam-Fahud link will complete the transformation in North Oman which already has digital links installed between Fahud, Yibal and Lekhwair.

The Qarn Alam project started in August with the refurbishment of the camp's telecoms building and the installation of new digital transmitting equipment which will be ready for use by July next year.

In February next year two new repeater towers will go up, one at Raba, which will be 95 metres high, and one at Ceri, 75 metres high.

The existing guyed towers used for the old link will be removed once the new digital equipment has been tested. The existing tower at Qarn Alam will continue to be used.

Project engineer James Sharp said: "We have to modernise the Qarn Alam-Fahud link because the present equipment is 15 years old and obsolete and cannot be maintained.

"We can no longer get spare parts for the equipment and there is no scope for expansion."

The tower replacement and refurbishment of the Qarn Alam facilities is being done by Zubayr Kilpatrick at a cost of RO 19,000, and the microwave replacement is being tackled by Saud and Suhayl Bahwan. That contract is worth RO 460,916.

Also being installed next year are new digital electronic exchanges at Marmul and Rima in the south, replacing existing electro-mechanical exchanges.

This means staff at these two camps will be able to dial international calls direct without going through the operator at Mina' al-Fahl. The other camps in the south—Nimr and Bahjah—already have such facilities.

But more importantly, it means telecommunication costs can be closely monitored and reduced.

**Study, Implementation of
Telecommunication Projects**
44040032 Muscat *UMAN* in Arabic 9 Sep 88 p 2

[Article by Hilal ibn Salim al-Hana'i]

[Excerpt] [Passage omitted] The General Telecommunications Organization has widened the scope of public telephone service by installing 350 coin-operated public telephones in various parts of the country. It will shortly introduce 100 card-operated public telephones, distributing them in various areas according to need.

The organization has implemented the first stage of a project to expand and develop telephone services in various cities of al-Batinah and Qurayat, covering the following districts and villages: Qurayat, al-Mazari', Daghamar, Barka, Nakhl, al-Suwayq, al-Khaburah, al-Bidayah, Sahm, al-Rustaq, al-'Awabi, and al-Huqayn.

An international company has imported and installed automatic digital telephone exchanges. Modern buildings have been constructed to house the main exchanges, while the small exchanges have been installed in special containers. These exchanges have been connected by microwave networks and coaxial cables.

The zone of mobile telephone coverage has expanded greatly from what it was in 1985, when this service was introduced. The following areas are now within the zone of coverage: the al-Sharqiyah road, the Qurayat road, the al-Rustaq road, the al-Batinah (al-Buraymi-'Ibri-Nazwa) road to Muscat. The Nazwa-Salalah road has also been covered, except for a small part of it.

There are many projects under study for implementation during the third 5-year plan. We mention the following: an automatic dialing system project; introduction of more public telephones, both coin-operated and card-operated; a project to expand and improve the artificial satellite center at al-'Amirat; and a project for a new fiber-optics transmission line between the communications centers in Greater Matrah and the exchanges of Ghala' and al-Sib.

The organization is making a comprehensive study in preparation for the introduction of a data transmission system into the telecommunications system. This would be used by companies and commercial establishments. Another study concerns the construction of a ground station as an alternative to working with the artificial satellite over the Atlantic Ocean.

In the context of telephone service expansion, the organization has contracted with a company to increase the extent of the external network in al-Sib (including the area of Hayl al-'Awamir), al-Masna'ah, Fanja', and Masirah Island. These expansions will be completed this year, God willing.

New Surveys

The organization has recently made a complete survey of all cities and villages on the coast of al-Batinah where services and communications are not available. This is in preparation for the introduction of service there so there will be complete telephone coverage of the al-Batinah coast.

Regarding the telecommunications tariff, the organization has recently made a complete study of possibly lowering the tariff for some communications services along the lines of what it did last year in lowering the tariff for telex calls and mobile telephone rentals. The directorate of the General Telecommunications Organization has authorized lowering the tariff for some communications services. This will be implemented in mid-July 1988 [as published], as follows:

Mobile telephones: It was decided to lower the yearly rental fee for a mobile telephone from 500 riyals to 250 riyals—i.e., by 50 percent.

Charges for Rented Local Circuits: This is a special service used by companies, banks, and commercial establishments. Appropriate reductions have been approved for the terms of this service. Details will be announced shortly in the local media.

Local Calls: The study of the tariff on local calls dealt with unifying and regulating the distances that separate the various exchanges in the country now that telephone service has spread to most areas of the sultanate. This has necessitated the establishment of constant bases for computing the tariff on local calls and the adjustment and unification of distances between exchanges. The citizen will benefit from this, and the price of a call unit will be reduced. The price of a local call within a zone of 20 km will become 25 baysahs for 6 minutes or fraction thereof. We hope these foundations will be a nucleus for any future adjustments.

On this basis, the majority of subscribers will benefit from the new tariff. By way of example: The price of a call between al-Sib and 'Udhaybah, which now is 150 baysahs for 3 minutes, will be reduced to just 25 baysahs. The price of a call between Muscat and Sur will be reduced from the current 450 baysahs for 3 minutes, to about 280 baysahs. A call between Muscat and Masirah Island will be reduced from 900 baysahs to 375 baysahs. A call between Muscat and Khasab in Musandam Governorate will be reduced from 900 baysahs to 375 baysahs. A 3-minute call between Muscat and the Southern Region will be reduced from 900 to 750 baysahs. Citizens in various areas of the sultanate will thus benefit from these changes.

EUROPEAN AFFAIRS

Europeans Standardize Conformance Testing for OSI Protocols

3698A327z Luxembourg IES NEWS in English
Aug 88 pp 21-23

[Article: "CTS-WAN" (Conformance Testing Services in a Wide-Area Network)]

[Text]

1. Introduction

The development and usage of a communications infrastructure (both global and local) is accelerating rapidly. As this trend continues, increasing reliance is being placed on the availability and capability of a stable communications platform.

Europe has long been a participant in the development of these communication facilities—one significant factor being the presence of national telecommunications monopolies. This development, both in Europe and worldwide, has unfortunately led to a proliferation of standards and national variations of these standards.

These problems have been recognised, and there are now two significant activities taking place that are attempting to provide solutions:

- the emergence of Open Systems Interconnection (OSI) and its related standards;
- the development of conformance testing services for OSI products that will provide reciprocal recognition of testing services produced in other countries.

The EC Commission is sponsoring a number of complementary initiatives in support of these objectives, the overall aim being to enhance the portability and interoperability of IT systems. Currently three initiatives stand out within Europe:

- a) Promotion of Functional Standards;
- b) Concept of European IT Certificate;
- c) Support for the Provision of Harmonised Testing Services.

It must be remembered that implementations are derived from (and should conform to) complex, evolving, paper documents, making little use of any formal definition techniques. Existing standards largely rely on English descriptions of protocol and service behaviour, requiring implementors to translate these definitions into software and hardware. This translation process is formidable and subject to human error—simple mistakes and also misinterpretations of the intent of the standard. Indeed, the standards are often imprecise and self-contradictory.

It is clear that OSI can only succeed if all implementations are reliable, effective, consistent, and conform to the standards. Hence, conformance testing is essential to the realisation of Open Systems Interconnection.

2. CTS-WAN

The CTS-WAN program is part of a major European initiative launched by the Commission to provide harmonised conformance testing services in a wide-area network (WAN) environment.

This program has utilised Europe's major centres of technical excellence on communications testing.

The organisations involved in this program are recognised authorities in communications systems and testing, namely:

- British Telecom plc (BT), UK
- Centre National d'Etudes des Telecommunications (CNET), France
- Centro Studi e Laboratori Telecomunicazioni S.p.A. (CSELT), Italy
- Compania Telefonica Nacional de Espana S.A. (Telefonica), Spain
- Deutsche Bundespost, Fernmeldetechnisches Zentralamt (FTZ), Germany
- The National Computing Centre Limited (NCC), UK
- Statens Teletjeneste Telelaboratoriet (PTT-DK), Denmark.

The goal is early, consistent, cost-effective testing in Europe, and this achievement is only possible through the full and extensive collaboration of all contractors. CTS-WAN takes into account the fact that reliable techniques, knowledge, and experience of testing varies across the range of standards that comprise OSI. It has, therefore, defined six distinct but integrated technical areas to investigate testing in relation to:

- Network layer implementations
- Transport and session layer implementations
- Message handling systems
- File transfer access and management systems
- Teletex systems
- General methodology.

The methodology area exists to promote and encourage the following philosophies throughout all technical areas:

- use of a common testing methodology based on those defined by ISO in DP9646;
- use of common test specifications, so that the same abstract test specifications will be implemented on different test tools to enable technical harmonisation;
- use of common procedures governing test centre-user relationships amongst all European countries. This includes documentation for interfacing and policies for contractual arrangements and re-testing strategies;

—the best choice of architecture which permits the efficient testing of the relevant OSI products.

The Testing Services

In the very near future the following ten CTS-WAN harmonised testing services will be available within the EEC:

MHS Layers 4-7
MHS Layers 6-7
FTAM Layers 6-7
Teletex Layers 4-7
Teletex X-75 Layer 2
Transport
Session
Network X-21 DTE
Network X-21 bis Layer 1
Network X-25

These testing services are the result of work achieved in five carefully defined technical areas all of which incorporate a common methodology. The CTS-WAN contractors insistence on instigating and supporting a common methodology is an example of their determination to apply the highest standards of professionalism to this program.

In order to test a complete OSI product, several testing services may be used—depending on the products architecture. For example, to test a monolithic complete MHS product connected to an X-25 network would require the X-21bis, X-25/2-3, and MHS/4-7 test services. All of these can be arranged through a single point of contact.

The Testing Technology

Within CTS-WAN there is a choice of testing tools for use in most technical areas. This ensures that clients are not “locked in” to any one specific technology. However, the same abstract test specifications are implemented in all tools used for a particular testing service. All testing technology is demonstrated to be equivalent via the use of reference implementation.

Testing Technology

Technical Area	Test Tools
Network	MOSES (FTZ)
	TLX-21 (PTT-DK)
	OSITEST/X-25 (FITZ/Telefonica)
	NCT1 (CSELT)
Transport & Session	NCC T&S tester (NCC) RTLE-OSI (CNET/TITN/CAP)
Teletex	OSITEST/TTX (FTZ/DANET) RTLE-TTX (CNET/TITN/CAP) IDACOM (PTT-DK)

MHS

OSITEST/400 (FTZ/DANET)
GENEPX 400 (CNET/SEMA-
/Marben)

FTAM

NCC FTAM tester (NCC)

The Reference Implementation

To ensure that different tools in geographically separated test labs consistently produce the same results, the CTS-WAN program has developed Reference Implementation (RIs) for each of the protocols covered. These RIs are configurable to be non-conforming in various ways and are used as the yardstick in assessing the correct performance of test tool technology and testing procedures.

Reference Implementation

Technical Area	Reference Implementation
Network	MOSES (FTZ)
	MPT (FTZ)
Transport & Session	OSIAM-C (Marben)
Teletex	PETRUS (FTZ)
MHS	CEMPS 400 (CSELT)
FTAM	FTAM RI (Bull)

Information and Public Domain Documentation

A catalogue has been prepared with information on the technical documentation available now from CTS-WAN. The catalogue is free but a charge (relating to the size of the document) will be made to cover duplication and distribution of all technical documents:

Below 50 pages	35 ECU
51-200 pages	50 ECU
201-500 pages	100 ECU
Over 501 pages	300 ECU

Technical documents will cover the areas Methodology, FTAM, MHS, Network, Teletex, Transport, and Session.

European Functional Standards, CCITT Recommendations, and ISO Standards Relevant to the CTS-WAN Program

Technical Area	Functional Profiles	ENV	CCITT Recommendations & ISO Standards
Network	T/31 T/41 T/421 T/422	41107	CCITT X-25 CCITT X-21, X-21bis
Transport & Session	T/31	41104	ISO 8073, 8327
Teletex	A/221	41203	CCITT F-20 T-60, T-61, T-62, T-70, T-64, X-75/2, X-21, X-25
MHS	A/311 A/3211	41202 41201	CCITT X-400 X-401 X-408 X-409 X-410 X-411 X-420 X-400 Series Implementors Guide (Version 5) X-224 X-225
FTAM	A/111 A/112 A/13	41204	ISO IS 8326 and 8327 ISO IS 8224 and 8225 ISO IS 8822 and 8823 ISO IS 8649 and 8650 ISO IS 8571

**EUREKA Project for Scientific Communication
Network Extended**

Significance of COSINE

5500A055 Luxembourg IES NEWS in English
Aug 88 p 11

[Article: "EUREKA Ministerial Conference: Top Priority for Supportive Measures for EUREKA"]

[Text] At the EUREKA Ministerial Conference held in Copenhagen on 15-16 June 1988, Ministers and the Vice-President of the Commission of the European Communities stressed the special and important role of supportive measures in achieving EUREKA's objectives in general. They instructed the EUREKA High Level Group to give high priority to a continuation of the work on supportive programs such as COSINE [Cooperation for OSI Networking in Europe]. All steps should be taken towards the successful completion of the COSINE project, in accordance with participants' needs.

The Conference recognised the significance of COSINE for improving the data networking of all collaborative R&D activities in Europe and for creating market opportunities for the information technology industry. Participants underlined the need for harmonised national and

Community actions by all departments and organisations concerned with R&D and expressed support for steps to make the implementation of the COSINE programme effective. It was argued that infrastructural projects such as COSINE create working and communication environments which are crucial for the success of collaborative R&D work. In addition, the Conference agreed that private firms should make more use of the potential of Europe's centres of excellence in research.

Ministers and the Commission agreed to express their support for the objective of COSINE and its implementation both at the national and at the international level. This support paves the way for funding required for integrating national networks into a harmonised communication system. It is now up to the authorities which fund R&D in the European countries to supply resources needed for the development of national and local networks.

Designed to meet the obvious needs of industry and research communities, COSINE started out as one of the earlier EUREKA projects (EU 8). It is an important example of a project aiming both at European standardisation and at immediate practical benefits from standards. Ministers and the Vice-President of the Commission concluded at their meeting in Copenhagen that in

order to achieve effective use of standardised computer communication services throughout Europe, the COSINE project requires coordinated action from responsible ministries and research networking bodies in each participating country.

RARE Projects

5500A055 Luxembourg IES NEWS in English
Aug 88 pp 11-12

[Article: "RARE Presents Project Structure for COSINE's Implementation Phase"]

[Text] The bulk of resources in COSINE's Implementation Phase will be available for the execution of the national network plans. However, the Implementation Phase has to be given structure and cohesion through a small number of international projects approved and supported by the COSINE Policy Group. In its report "The COSINE Implementation Phase" submitted to the COSINE Policy Group at its meeting in Egham (UK) on June 20-21, RARE gives a brief description of 18 projects. These have to be monitored directly by the COSINE Program Management Unit and will in general be carried out under contract with COSINE by suitable consortia offering necessary skills for each project.

The objective of the first project is the provision of a managed data network service to the scientific community. A Managed Data Network Service pilot project is already in progress (see below). This network service should provide for international communication between the various national infrastructures. RARE considers it essential that this provision should be open to the full range of researches, in all sectors, and open for access via the national public X-25 networks. Another project will provide gateways to the USA. This covers an estimated three subprojects for gateway operation, the first and second of which will support X-400 and FTAM respectively. The objective is to install and operate gateways and links, and provide management facilities interfaced to the national network organisations. Furthermore, a central directory service has to be provided as a clearinghouse for exchanging directory information between national organisations.

Demonstration to All Kinds of Scientific Users

The provision of information on networking services and products or material suitable for user support is also listed as a project. This type of information is likely to be available on a distributed basis. An International User Group Support project envisages actions targeted at the promotion of networking in various user communities. One project provides resources to help the existing international research networks adopt the standards and management structure proposed by the COSINE Specification Phase, by contracting international network providers to implement the necessary changes within a defined timescale. A related project deals with the development of additional tools to support remote operation

or migration needed by a number of organisations. These tools should be developed under contract and placed in the public domain for distribution among national support units. There is also the Promotional Activities project which will provide demonstrations, support and advice in order to increase public awareness within the user community, especially those scientific users who are not concerned primarily with information technology.

A second category of projects comes under the heading of Implementation Phase Activities. The first project in this category, Operation of the COSINE Program Management Unit (CPMU), has a general monitoring function. The CPMU will also provide technical support to the COSINE Policy Group. The second project in this category deals with the further evolution of standards, since early operational experience requires clarification or amendment of the specifications. This should be done, as far as possible, by the original authors. Areas not included in the first set of operational specifications, such as additional security features, X-500 directories and window-oriented terminal working, need to be covered in a project called Creation of New Specifications.

Produce Procurement Model Texts

RARE considers it a necessity to produce procurement model texts, created from the technical specifications. Technical guides and handbooks should be produced in support of the specifications. The project Transition Planning foresees the need for support for interworking tests and advice on products to support migration. According to RARE, an attempt should be made to establish a centre of excellence for transition planning; the planning process needs to be continued on a firm basis, both for the Implementation Phase and for the period after this phase. This will involve significant studies to create the necessary planning framework.

The RARE MHS Project has already demonstrated the benefits of establishing a coordination and support project in advance of wide-scale national deployment. Such projects aid the exchange of information and avoid potential mistakes in the deployment of services by creating a reservoir of expertise. It is expected that there will be a need for further projects of this kind, based on the work of the various RARE Working Groups, namely WG2—FTAM, piloting FTAM implementations, particularly in areas where the protocol offers new features such as file access; WG-5 full screen terminal working, piloting early ISO implementations, including work on Terminal Management and the Ripple Mode addendum, and finally WG6—high speed transmission services. The total Implementation Phase Budget per annum is estimated to be 16.220 million ECU.

FRANCE

Training Program With PRC Posts, Telecommunications Ministry Renewed
35190014a Paris FRANCE TELECOM in French Aug 88 p 20

[Text] In the period from 18 May to 1 June FRANCE TELECOM received a delegation from the training services division of the Chinese Ministry of Posts and Telecommunications. This visit was for the purpose of extending the 3-year cooperation program—which was due to expire this year—between the Directorate of Advanced Technical Training (DEST) of FRANCE TELECOM and the Institutes of the Ministry of Posts and Telecommunications of China. The new agreement was signed by Francois Schoeller, director of DEST, and Xiong Bing-quin, director of education at the Chinese Ministry of Posts and Telecommunications.

PORTUGAL

Alcatel's System 12 Digital Equipment Line Inaugurated
55002403 Lisbon DIARIO DE NOTICIAS in Portuguese 26 Sep 88 p 3

[Text] Last week at Standard Electric, a subsidiary of Alcatel, the ministers of industry and energy and of public works, transportation, and communications inaugurated the new production line for System 12 digital exchanges, which will supply about 50 percent of the market for telephone switching equipment.

A management source at Alcatel said that the first 3 exchanges should be installed in Portugal by the end of the year and that 22 more units should be installed during 1989.

In his speech, the chairman of Alcatel's board of directors, P. Gluntz, emphasized the importance of cooperation among the firms in the Alcatel group so that "the European telecommunications industry can remain in a position of leadership." The member of that multinational firm also said that the strategy of Alcatel Portugal—which is Standard Electric's new name—will also depend on the firm's penetration of the markets in countries whose official language is Portuguese and that the company has "the opportunity to export to those countries not only its own products but also those developed and manufactured by its related firms."

Concerning the reorganization of the Portuguese subsidiary's activities, Gluntz said that new products would be developed in the areas of automatic transportation systems, civil and military aviation, specialized software, external network facilities, and defense.

Alcatel, which is the world's leading supplier of public systems with more than 41 million digital lines installed or ordered, has subsidiaries in 75 countries, and its

annual billing exceeds 2 million contos. The Portuguese subsidiary, which expects to bill about 10 million contos this year, is the country's largest industrial unit in the field of researching, developing, manufacturing, and marketing communications equipment and systems. Its integration with the Alcatel group occurred in January 1987 as part of the merger between the CGE (National Electricity Company) and ITT. The purpose of that merger was to make it possible to face up to international competition, specifically that from Japan and the United States.

SPAIN

Catalan TV To Get Second Autonomous Channel
LD0810151888 Madrid Domestic Service in Spanish 1200 GMT 8 Oct 88

[Text] TV-3, Catalan Television, will cease to be received in Valencia and the Balearics, to allow for a second channel in Catalan. Details about this from Emilio Casals at our studios in Barcelona:

[Casals] The central government has demanded that TV-3, the autonomous Catalan television service, cease to be received in Valencia and the Balearics as a precondition for the unblocking of the subject of Channel-33, the second autonomous Catalan channel, and an end to the jamming war. At present TV-3 can be seen in Valencia and the Balearics via the Cultural Action of Valencia and (Volor Sociedad Anonima), a company, financed by the Cultural Works of the Balearics [La Obra Cultural de Baleares]. The Generalitat [autonomous government] of Catalonia says that it does not have any powers over these companies and territories. The Madrid government has reiterated the point that a return to normality concerning Channel-33 must include respect for the law by everyone. However, it does not seem that either of the administrations involved in the conflict—the autonomous and the central administrations—wants to pay the high political price of depriving Valencia and the Balearic Islands of their Catalan television signal.

TURKEY

Nokia Finland Contracted To Expand Mobile Phone System
55002409 Helsinki HELSINGIN SANOMAT in Finnish 12 Oct 88 p 36

[Text] Nokia Cellular Systems, a subsidiary company of Telenokia, has contracted with the Turkish Postal and Telecommunications Administration to expand the

country's NMT 450 mobile telephone network. The just-concluded agreement is estimated to be worth around 80 million markkas. According to the contract, the mobile phone nets of Istanbul and Ankara will be given increased capacities, and the audioability area along the road between Ankara and Samsun—among other places—will be improved. This expansion will raise the network's capacity by some 30,000 subscribers.

Equipment studies were begun this fall and will be continued again next year. Suomen Vientiluotto Oy [Finnish Export Credits, Inc.] has financed the deal by granting credits to the Turkish Postal and Telecommunications Administration.

Nokia began work on the Turkish mobile phone network in 1986. The network was completed in seven months. The first stage of the installations was done in the big city areas, Ankara and Istanbul. The network was later extended along the main highways between the cities, as well as in the country's southern and southwestern coastal cities.

Turkey's NMT 450 mobile phone network has now some 8, 500 subscribers.

UNITED KINGDOM

Lightweight Satellite Communications System Developed

5500A062 London INTERNATIONAL
TELECOMMUNICATIONS INTELLIGENCE in
English 9 Sep 88 p 9

[Article: "SATPAX System From Marconi"]

[Text] A lightweight INMARSAT satellite communications system from Britain is packaged in two easily transportable cases and can be set up for operation in less than 15 minutes.

The SATPAX system from Marconi International Marine allows communication via the INMARSAT satellite system to the international telephone and telex network. It consists of a communication unit and an antenna unit, each housed in a rugged case.

The system provides full duplex, telephony, and telex and can carry data up to 9.6 kbit/s. When the unit's terminal is addressed, it will respond automatically to telexed messages or ring the telephone as appropriate. There is automatic and manual routing of both telephone and telex calls and there is an automatic call-logging facility.

A 16,000 character store is provided for confidential messages, which can only be accessed with a password. Other features are abbreviated dialling, a self-test system, authorised user key, a remote telephone facility, IBM PC compatibility, and ports for optional extras. These include second-identity facilities, encryption, facsimile, PABX/Fax/Data interface, VHF interface, Laptop PC with integrated software, and stout airdrop cases.

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