JPRS-TTP-86-006

6 March 1986

Worldwide Report

# TELECOMMUNICATIONS POLICY, RESEARCH, AND DEVELOPMENT



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# WORLDWIDE REPORT

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SUB-SAHARAN AFRICA



USSR



WEST EUROPE

HONG KONG

# CHINESE COMPUTER TERMINAL INTRODUCED IN HONG KONG

Hong Kong HONGKONG STANDARD in English 7 Jan 86 p 5

[Text] AS A college student in England in the 1950s, Professor Loh Shiu-Chang was forbidden to even look at the school's computer because he was a foreigner. Computers were considered "top secret."

This experience led Dr Loh to years of study, culminating in the creation of a computer that writes Chinese quicker and easier than those now in existence.

The Chinese Information Terminal (CIT), manufactured by Elec and Eltec Company Limited of Hongkong, was unveiled yesterday at the Excelsior Hotel.

There are many new features to this terminal, Dr Loh said.

It writes Chinese with a Chinese character keyboard, rather than one that is converted from an English-language keyboard.

It has "intelligence," he said, the system will not print an inaccurate character. It can type much faster than systems now used, without making mistakes, and it is very easy to learn.

"Anything you can do in English you can do in Chinese. You can do it cheaper and faster than English," Dr Loh said.

Called officially the CIT 238, the system processes Chinese the way it is written. It is called 238 for the 238 component keys in the keyboard.

In a speech to computer buffs, editors of computer magazines and local media, Dr Loh said his system is "friendlier" to Chinese users than other machines that write Chinese, meaning that it is easier to operate.

He sees its main function as an educational tool.

"Now, children get bored in school learning one Chinese character at a time, they can learn by association, how Chinese characters were derived from," he said.

The machine draws horizontal and vertical lines to create the characters. "Now, you can realise the beauty of Chinese characters when you use the computer," Dr Loh said.

The CIT 238 writes French, Arabic, Russian and Spanish. It can also make graphic print-outs.

The keyboard is larger than the English-language keyboard and is arranged in five different zones.

The word processor is available as an add-on terminal.

Dr Loh, head of the Department of Computer Science at the Chinese University of Hongkong, sold the patent for the system to Elec and Eltek.

Dr Thomas Leung of Elec and Eltek developed the software for the product.

It handles traditional and simplified Chinese as well as English, making the system an excellent tool for Hongkong and Chinese businessmen, said Mr David So, chairman of Elec and Eltek.

"With China's open-door policy towards foreign trade and Hongkong maintaining its position as an international financial and trading centre, English will continue to be an important medium of communication," Mr So said.

He believes the new system will help to facilitate communication between Hongkong and China for education, industry and trade purposes.

Marketing has not yet begun, but marketing manager for Elec and Elektra, Mr C. K. Wong said he will travel to Guangdong and Beijing on a marketing campaign later this month. He has not set a price for the system.

"I expect a huge demand for these," Mr Wong said.

/13104
CSO: 5550/0085

POLAND

U.S., NATO MILITARY COMMUNICATIONS SATELLITES PROFILED

Warsaw ASTRONAUTYKA in Polish No 3, Mar 85 pp 21-23

[Article by (L): "Man-made Military Satellites;" signed to press July 1985]

[Text] Experiments with satellites intended for purposes of military communications have been carried out since about 1960. In the United States, "Score" and "Courier-1.B" satellites were used for these purposes. Subsequently, military communications tests using "Syncom-2" and -3 satellites were undertaken. Both structures, by the way, were put to good use for communications purposes with the invading forces of the United States in Vietnam. Later, special military telecommunications satellites, or, to be more exact, systems of this type of communications, came into being. The IDCSP (Initial Defense Communications Satellite Program) satellite system, later changed into the DSCS (Defense Satellite Communications Program) system, is among the more well known.

Satellite communications in the United States are directed by the U.S. Army Satellite Communications Agency, or Satcom. The satellite system makes it possible to maintain communication between the Pentagon in the United States and American bases scattered in several regions of the globe.

The satellites launched in the years 1966-1968 (26 space structures) set up systems which included ground stations in their composition. One of the systems was designated "Program 572"; the other, "Program 777." The first satellites weighing about 46 kilograms were launched into equatorial orbits "serially" (8 units) through the use of one load-bearing rocket. In carrying out the second program larger satellites--weighing about 555 kilograms--were used; they were placed in the region of the Pacific and Atlantic Oceans.

Military ground stations are divided into permanent structures with an antenna 18.3 meters in diameter and movable structures for which rail or air transport is used. Stations of this type have antennas 12 meters in diameter. A special station for air transport has an antenna 6 meters in diameter. Military ships also have at their disposal stations equipped with relatively small antennas 1.8 meters in diameter.

Upon looking over the published specifications of structures launched into a geostationary orbit, one can observe that some of them do not have a name or

a given designation at all. Those are truly secret structures. It is not possible, of course, with today's technology, to hide the dates, and even the satellite's place of take-off or its trajectory in space, however it is difficult to discover what such a satellite is doing.

The TAC-COMSAT, satellite intended for aiding military actions in southeast Asia, was launched in 1969. The satellite weighed 713 kilograms, was 2.4 meters in diameter, and had a cylindrical framework of 6.1 meters in height. It revolved around the earth in a geostationary orbit over the Pacific. It was equipped with five helicoid beam antennas capable of transmitting signals to small ground stations, which used antennas less than half a meter in diameter. Thanks to the satellite, communications to the company level were assured. Both the pilot of a combat helicopter as well as each soldier with a knapsack radio station could receive signals. After the end of military actions in Vietnam the satellite was relegated to the NATO nations.

In addition to the American system, the American-British system named "Skynet", intended basically for maintaining communications between the systems of the United States and those of NATO, is also well known. The EAST (Experimental Army Satellite Tactical) communications system, intended for researching the possibility of using satellites in communications at the operational-tactical level, is also experimental. Tests have been conducted with the aid of the LES-5 and LES-6 satellites. An agreement with regard to experiments on this type of satellites was signed with the member nations of NATO in 1967.

The building of ground stations for another military communications system, this time connected with the activity of NATO, was completed in 1972. The stations were equipped with antennas 12.8 meters in diameter. The purpose was to assure communications between NATO and the governments of the member nations. A dozen or so ground stations were built. Two of them--with the American DSCS system--are located in the seat of NATO: in Casteau (Belgium) and in Naples (Italy). These are mobile stations with antennas 4.5 meters in diameter, operating in a frequency range of 7÷9 gigahertz and assuring two-way telephonic communications (on one channel), coded telephonic communications (on four channels), and telegraph communications (on 64 channels).

On 20 March 1970 the first NATO-1 (1970-21A) satellite was put into orbit around the earth at a height of 40,807 meters at the perigee and 42,164 meters at the apogee; it weighed 242.67 kilograms at take-off and 130 kilograms in orbit. The satellite assured telephonic, telegraph and teletype communications.

On 26 April 1976 a structure of the new generation--the NATO-3.A satellite--was launched into orbit around the earth. It was lifted from Cape Canaveral by the American Delta rocket. The next two satellites of the NATO-3 series were launched into geostationary orbits by 1979. They replaced the satellites of the NATO-2 series. They were built in the American plants of Aeronutronic-Ford for NATO needs, or more precisely, for the integrated telecommunications network of that organization. This network will work together with the American DSCS-2 and the English "Skynet" system.

The satellites of the NATO-3 series operate on a band of 7÷9 gigahertz (the so-called band X) and are about three times larger than the earlier NATO structures. At take-off they weigh 673 kilograms; in orbit, 376 kilograms. The engine enables the structure to be localized in orbit; it works on solid rocket propellant. The life span of the new satellites is about 7 years (the operation time of the earlier ones did not exceed 3 years); the payload of these structures is also larger: they transmit telephonic, telegraph, and teletype signals and transmit data very quickly on a band with range of 152 megahertz.

Each NATO-3 satellite has three channels: two of emission (7.25÷7.75), of which one ranges over Central Europe and the Mediterranean basin, and the second, over all the NATO countries with North America, Africa and the Middle East; and one receiving channel (7 8.4 gigahertz) which makes it possible for signals to be received from various parts of the world.

Stationary and mobile ground stations are used to work with the satellites. The permanent stations have antennas 12.5 meters in diameter, and the mobile stations have antennas 6 meters in diameter (on ships) and 1.8 meters in diameter on ground vehicles functioning as tactical communications stations. Stationary stations with paraboloidal antennas of the Cassegrain type are shielded from atmospheric waves, and also from unwanted observation, in circular domes of man-made material (the diameter of the domes is 20.7 meters).

Among the most well known NATO-2 stations one can include those in: Norfolk Virginia, United States), Ottawa (Canada), Casteau (Belgium), London (Great Britain), the Hague (Holland), Naples (Italy), as well as the Federal Republic of Germany, Denmark, Norway, Greece, Turkey and Portugal. Iceland and Luxemburg, in spite of the fact that they are members of the NATO pact, did not have ground stations of the NATO-2 system; and France, which does not participate in the formation of the so-called integrated net, does not have NATO ground stations either (it withdrew from the NATO pace in 1966-1967).

Satellites of the NATO-3 series have the classical cylindrical shape of 2.18 meters in diameter and are 3.09 meters in height. Solar battery cells (20,000 units) are set on the walls of the cylindric dome. In the first phase of operation of the deck installations they yield a combined power of 538 watts, but in the last period (after 7 years), 421 watts. A stabilized satellite is rotative (90 rotations per minute). Four horizon sensing devices which operate in infra-red radiation, two solar sensing devices, and correctional rocket microengines with a pull of 23 newtons, operating on hydrazine, attend to proper position in orbit. The fuel reserve is 27.7 kilograms, which should suffice for 7 years, considering that the consumption of fuel is minimal.

The above mentioned experimental satellites of the LES (Lincoln Experimental Satellite--the Lincoln Laboratory in the Massachusetts Institute of Technology) series had on board (LES-8 and 9) nuclear generators (with plutonium--238) instead of the solar batteries commonly used up to that time. The nuclear generator, enclosed in a container 400 mm in diameter and 580 mm in

height, had an initial power of 150 watts, and after 5 years of operation, of 130 watts. These satellites weighed 450 kilograms and their entire length was about 3 meters.

In the opinion of American specialists, satellites of the LES series are resistant to any kind of disturbance, can transmit signals from satellite to satellite, and are capable of receiving signals from each ground station, whether military or civilian, in each nation. Communications between satellites are conducted on 225÷400 megahertz frequencies. Communications with the mobile stations, which use antennas of relatively small dimensions, are conducted on these same frequencies.

The "Lasercom" system, enabling a transmission of one million beats per second, existed in the United States in 1978. It served for satellite--ground--airplane communications. Developed in the Mc Donnel-Douglas plants (through a contract made with the U.S. Air Force in 1973) and tested at the White Sands military base, the "Lasercom" system is supposed to be resistant to nuclear arms action and can be used for detecting and overpowering military satellites and for conducting research on the earth's atmosphere. Satellites with the "Lasercom" system are in extremely elongated orbits.

Information about a man-made ground--submarine satellite, a system of en route communication projected by the U.S. Navy, appeared that same year. In the opinion of military experts, a laser will be employed in this system. The project designated Seafarer ELF was used after a series of laboratory tests and prolonged practical experiments. The interest is in communications with a submerged vessel, which is not at all an easy task, and in sending information at great speed. In the initial tests, done between a satellite and a vessel moving on the surface of the sea, they were able to send information at a speed of about 100 beats per second, an achievement which could not satisfy specialists used to the markedly greater speeds of transmitting information accomplished through traditional systems.

As far as communications with submarines (the most difficult, and still unresolved, telecommunications problem), it is worth noting that in the Naval Research Laboratory (Washington) studies are being conducted on the use of the neutrino for communications precisely with submerged submarines.

The neutrino is a stable elementary particle with no electrical charge and with a static mass most likely equal to zero. It easily penetrates through our entire planet, and in a vacuum it reaches a speed close to the speed of light. If a pencil beam of neutrinos can be produced on an accelerator, it will reach each point of the globe, as well as a submarine submerged even at a significant depth. Thanks to the neutrino, which penetrates everywhere, an appropriate, completely reliable and fast system could thus be built. This is a matter for the future, however, since up to now they have not advanced beyond theoretical considerations.

In addition to communications satellites in earth orbits, they are launching structures intended for navigation needs and serving all the military services, especially the navy, which has at its disposal submarines equipped

with rocket missiles. In general, it would not be possible for these types of vessels to engage in military action without very exact navigational information and without the time service of a satellite aided by atomic models.

The military man-made geodesic satellites also have important functions. The first experiments with structures of this type resulted in the ANNA (1962), "Starflash" (1964) and SECOR satellites, achieved in the United States.

Also known are systems of military satellites intended for reconnaissance purposes, including meteorological and teledetection satellites.

12929/9451
CSO: 5500/3001

ARGENTINA

DISPUTE GROWS OVER RADIO STATION OWNERSHIP

PY102147 Buenos Aires BUENOS AIRES HERALD in English 10 Feb 86 p 5

[Text] (NA-DYN)--Neuquen culture director Reinaldo Labrin called "virulent" the attitude of Federal Broadcasting Committee (COMFER) trustee Pedro Sanchez with respect to the province's law declaring all radio stations property of the provincial government.

Sanchez called the law "an attempt at invasion" of the committee's authority, adding that "these clear uprisings against federal authority may demand extreme remedies". The Supreme Court issued a restraining order on the Neuquen law last month.

Meanwhile, public information officials from nine Peronist-governed provinces plus Neuquen met in Rio Gallegos, Santa Cruz, on Friday and issued a statement insisting on the provinces' right to "organize, gurantee, and exercise radio and television broadcasting in their respective territories".

COMFER was also involved in another issue last week when it criticized a court for asking COMFER to consider banning tobacco advertising on television. A government source on Friday describ d COMFER's decision as "unconsulted".

COMFER had argued on Thursday that apart from the fact such a ban would be unconstitutional, it is not up to the committee to decide on the issue.

Judge Mauricio Obarrio on Wednesday asked COMFER to ban cigarette advertising regulations clearly prohibit "advertising procedures that endanger the health, psychic stability or moral integrity" of the population. The judge cited "truly decisive" studies that prove cigarette smoking contributes to heart trouble as well as cancer.

But COMFER warned it would "immediately" appeal a final decision banning cigarette advertising, which it believes would violate the national broadcasting law.

/9738
CSO: 5500/2026

BAHAMAS

## BRIEFS

INTELSAT PLANS--Nassau, 12 Feb (CANA)--The Bahamas Telecommunications Corporation (Batelco) has commissioned construction of a U.S. 9 million dollar Intelsat Earth station that will provide direct satellite communication between the Bahamas and other countries, including the United States, Canada, the Caribbean and Bermuda. The station, scheduled for completion by spring of 1987, will be built by Massachusetts-based GTE International Systems Corporation, a world leader in the design and implementation of turnkey satellite communication systems. Robert Bartlett, general manager of Batelco, said the satellite link would greatly benefit companies doing international business from the Bahamas, as well as increase the number of television channels available. This project is in keeping with Batelco's mission to provide a complete telecommunications service consistent with the needs of the country, he added. [Excerpt] [Bridgetown CANA in English 1715 GMT 12 Feb 86 FL] /8309

CSO: 5540/40

BRAZIL

## INFORMATICS SECTOR RECORDS OVER 30 PERCENT GROWTH IN 1985

Sao Paulo O ESTADO DE SAO PAULO in Portuguese 22 Dec 86 p 46

[Text] The informatics sector will close the year with a growth of at least 30 percent over 1984 and the forecast for next year is an expansion of a minimum of 35 percent. According to the president of the Brazilian Association of the Computer and Peripherals Industry (ABICOMP), Antonio Luis Mesquita, sales by the 85 companies belonging to that organization, as of September, were equivalent to 170 million National Treasury Bonds (ORTN's), which represents 30 percent more than the same period in 1984. Total sales predictions for the year vary from 195 to 210 million ORTN's.

With this growth, the informatics industry employed an additional 2,000 employees, 3,000 of them high-level personnel. The sector generates a total of 25,000 jobs today, including 10,115 university graduates.

According to Mesquita, the reheating of the economy is an indicator of the greater growth rates in 1986, at the same time that the capitalization of the informatics companies via the stock market "is a trend that is tending to broaden greatly and represents the beginning of the maturing of the industries in the sector." The modernization of the Brazilian industrial park opens up an excellent market for the informatics companies and Mesquita sees the possibility of an "integrated development among the informatics industries and the other sectors."

ABICOMP data indicate that the nationalization percentage of the equipment exceeded 85 percent during the year. In Mesquita's opinion, 1985 was characterized by the growing supply of 16-bit equipment at competitive prices and the emergence of the superminicomputer, although only a small number of these were installed. In the area of peripherals, he gave special prominence to the Winchester disk.

12929/8711
CSO: 5500/2016

## BRIEFS

LATIN REQUESTS FOR SATELLITE USE--The Brazilian Telecommunications Company (EMBRATEL) has already received requests from Peru and other South American countries for the use of Brasilsat, the Brazilian satellite in use since April of this year, which cost about $300 million. According to Pedro Jorge Castelo Branco, president of EMBRATEL, Brasilsat is comprised of 24 service bands ("transponders") nine of which are in operation. Last week, two more were assigned to the Armed Forces by agreement. Castelo Branco said also that he is negotiating two other bands with the Ministry of Education and Culture, leaving only two available for television transmitters. "The directive setting the new rates for the TV's will be released by the end of this month," declared Castelo Branco. Yesterday morning, the president of EMBRATEL participated in the telecommunications panel promoted by the national Telematics Magazine (RNT) in Macksoud Plaza, 150 Campinas Grove, in the center of Sao Paulo. On that occasion he revealed that the leasing of circuits showed a 12 percent increase this year, while the volume of data communications showed an increase of 80 percent, mainly in the area of texts. The increase of television traffic was 12.6 percent, while telex service exceeded 63,000 terminals in the last 7 months. [Text] [Sao Paulo FOLHA DE SAO PAULO in Portuguese 10 Dec 85 p 29]

12929/8711
CSO: 5500/2016

JAMAICA

INDEPENDENT BROADCAST UNIT WINS GOVERNMENT APPROVAL

House Action

Kingston THE DAILY GLEANER in English 23 Jan 86 pp 1, 3

[Text]

**THE BILL AMENDING the Broadcasting and Radio Re-Diffusion Act to provide for an independent Broadcasting Commissionwas passed without division by the House of Representatives yesterday.**

Two amendments were made as the Bill passed through committee stage.The first amendment allows that in cases where a licensee broadcasts inaccurate information, the Commission may direct that licenceeto broadcast: (i) an apology; or (ii) if the Commission thinks fit, a correction of the inaccuracy, in such form as the Commission may think fit.

It also allows the Commission to direct the licenseeto afford to any person prejudiced by the broadcast the opportunity of broadcasting a reply for the purposeof rebutting any information alleged to be inaccurate; or, direct the licensee to bothboth apologise and carrya correction of the inaccuracy.

The second amendment stated as follows: "Where an offence against the regulations is committed by a body corporate then, notwithstanding and without prejudice to the liability of that body, any person who at the time of such commission was a director, general manager, secretary or other similar officer of that body, or was purportingto act in any such capacity, shall be liable to be prosecuted as if he had personally committed that offence, and shall be liable to the like conviction and punishment as if he had personally been guilty of that offence unless the Court finds on a balance of probability that

(a) the contravention was committed without his consent or connivance and,

(b) he exercised all such diligence to prevent the commission of the offence as he ought to have exercised, having regard to the nature of his functions in that capacity and to all the circumstances."

Mr. E.K. Powell (North-East St.Catherine) who had opposed the Bill last week did not vote against it. This was brought to the attention of the House by the Hon. WinstonSpaulding, Attorney General and Minister of National Security and Justice.

**Mr. Powell:** "I did not vote for it: Idid not vote against it."

**The Speaker, Hon. Alva Ross:** "The matter was put before the House and you did not oppose it."

The Prime Minister, the Rt. Hon. Edward Seaga, who piloted the Bill, said thatby bringing it to Parliament, the Government was not trying to take unto itself power it

did not already have, but was voluntarily yielding power and subjecting Government abuse of the public media to the authority of an impartial Commission which would be appointed by the Governor General.

**Mr. Seaga:** "We are yielding power that we already have. We are voluntarily giving up this to discharge a commitment which we gave to the nation, that we would want to establish for generations to come an impartial system so that no other generation would ever undergo the partiality which we were faced with when we were in opposition."

He said that a novel feature had been added to ensure that the Government did not misuse its own power: that those who had the "vast and awesome" power of being able to broadcast on the media such material as they considered fit, should do so in a manner to ensure accuracy.

"This is not a qualitative judgment, it is not a quantitative judgment, it is not a personal or subjective judgment; accuracy is a matter of fact and therefore can be established.

"We have not said that the Broadcasting Commission should determine whether the media has used its power to slant or whether, by commission or omission, to show bias, because that is a qualitative judgment which will often depend upon the point of view which those who sit in judgment will take. What we have said is that where facts are used, or where statements are made, they should be accurate. And, there isn't anybody in this whole nation who could stand up and defend a position that we should not seek accuracy, or that we should leave the media free to be inaccurate if they wish."

In response to a question raised last week by Mr. Powell that there had been no report from the Broadcasting Authority, Mr. Seaga pointed out that the Authority had become defunct under the previous Government in 1977, and the present Government had not sought to resurrect it, because it had the intention of changing its structure so that when it was revived it would not be a technical commission, but a commission which had technical responsibilities and obligations and powers as well as one which would deal with matters such as accuracy.

In his contribution, Mr. Spaulding said he was appealing to people not to seek to elevate private arguments to the level of public principles, because the public were not fools.

He said that he endorsed and supported the Bill and regarded it as an important piece of legislation and a further development of the Government's pursuance of the concept of equal rights and justice and fairplay.

"I regard it not as a Bill standing in isolation, but one measure which is part of a whole series of important measures which have been undertaken by Government, on the basis that irrespective of its faults this administration will leave behind it a blazing trail of outstanding record in the area of human rights and democracy.

"This particular measure may evolve over a period of time, it may be modified, but I cannot see what area there is that one should have any particular contentions about."

He urged Mr. Powell to support the Bill because whatever arguments he might have about broader things, he was strong enough to follow the dictate of his conscience and within the Bill there was no principle with which any Member should quarrel.

He said that a system was being set up to ensure that as long as constitutional government reigned in Jamaica, that what had happened in the past could not happen again.

The debate on the Bill commenced on December 17 but was deferred to this year as the House took its Christmas break.

## Public Opinion on Seaga Policy

Kingston THE DAILY GLEANER in English 18 Jan 86 p 3

[Text] Opinion Poll 6:

**The December 1985 Stone Poll was carried out by Professor Carl Stone under the sponsorship of the Daily Gleaner's management over the period December 18-21, 1985.**

The sample includes 1,000 persons selected from 44 areas and communities islandwide.

The estimated total sample error (including field and sampling error) is ± or —3%.

The survey was carried out by 22 interviewers.

The December 1985 Stone Poll found that most Jamaicans were of the view that the country needed some competition in the area of television media and that the government's media policy did not go far enough in providing for such an outcome.

The Poll found that these were the main reasons advanced by the public in its rejection of Prime Minister Seaga's statement that over his dead body would the Daily Gleaner receive a licence to run a television station.

24% agreed with Mr. Seaga's statement while a large 71% majority disagreed.

Many expressed the view that both the Gleaner Company and RJR deserved favourable consideration with respect to the operation of a T.V. licence, but the predominant view was that any company with the required resources should be able to set up competing television broadcasting here to provide the people with an alternative to JBC T.V.

## QUESTION:

**At a recent JLP conference Prime Minister Seaga repeated his government's media policy and said that over his dead body would the Gleaner get a T.V. licence. Do you support the government's media policy? Why?**

## ANSWERS:

**Agree with Mr. Seaga's position.....(24%)**
**Disagree with Mr. Seaga's position.....(71%)**
**Don't know.....(5%)**

/9274
CSO: 3298/300

TRINIDAD AND TOBAGO

## POLICY SETTING TIME LIMITS FOR POLITICAL TELECASTS RENEWED

Port-of-Spain TRINIDAD GUARDIAN in English 25 Jan 86 p 1

[Text] TRINIDAD and Tobago Television (TTT) has decided to re-introduce, with immediate effect, its policy on political broadcasting in which the ruling People's National Movement (PNM) will have more allotted time than the Opposition parties.

This undertaking was given yesterday by TTT's lawyer Martin Daly, S.C., before the start of an appeal by TTT and the Attorney General against the judgment of Mr. Justice Deyalsingh who ruled in favour of Surujrattan Rambachan, Chairman of the St. Patrick County Council.

Mr Daly told the Court of Appeal, which comprised Chief Justice Clinton Bernard, Mr. Justice Persaud and Mr. Justice Narine, that TTT will re-introduce with immediate effect the entire policy which the station made in 1982.

Counsel said the television station would continue with the policy pending the determination of the appeal or until further order. The appeal is listed for hearing in June.

Appearing for TTT were Mr. Daly and Lynette Seebaran; Michael de la Bastide S.C., Deputy Solicitor General Clive Beckles and State Counsel Jacqueline Quamina-Cherrie appeared for the Attorney General; while Karl Hudson-Phillips, S.C., and Olric Dougan represented Rambachan.

Mr. Daly said TTT would re-introduce its broadcast policy in which the PNM would have seven periods of ten minutes each; the Organisation for National Reconstruction three periods of ten minutes each and the United Labour Front (ULF) two periods of ten minutes each.

The Board of TTT and the National Broadcasting Service decided in February 1980 to allocate free broadcasting time to the political parties on the basis of the 1981 General Elections in which the PNM won 26 of the 36 contested seats.

Although the ULF won eight of the 10 remaining seats, the ONR collected more votes at the polls.

Mr Rambachan had filed a motion on December 23, 1982 seeking a declaration that the refusal on December 21, 1982 by TTT to show a pre-recorded speech constituted a contravention in relation to his right to equality of treatment from a public authority.

/9274
CSO: 3298/303

INDIA

ITI PLANS FOR HIGH TECH PRODUCTION DESCRIBED

Calcutta THE TELEGRAPH in English 10 Jan 86 p 9

[Text] The department of telecommunications is poised to enter the arena of fibre optics technology in two years time, Mr K.P.P. Nambiar, chairman and managing director of Indian Telephone Industries Ltd (ITI) said here today.

Addressing newsmen in connection with the public issue of ITI bonds, Mr Nambiar said that Hindustan Cables and the Madhya Pradesh State Electronic Corporation would be undertaking the manufacture of the fibre optic cables while ITI would manufacture the equipment required to introduce this sophisticated technology in the country. He added that the choice of collaborators for the manufacture of optic fibre equipment with ITI would be finalised by a committee in three months time.

Of the Rs 610 crores that is required for ITI's expansion and modernisation programmes and to manufacture hi-tech communications equipments, the total capital outlay by the government in the Seventh Plan is Rs 335 crores. This would raise the production level to 46.50 lakh telephones and 32.65 lakh lines of switching equipment. ITI will be the first public sector enterprise to mobilise Rs 100 crores for its investment plans through the issue of 14 per cent secured non-convertible bonds. As for the balance, Rs 275 crores Mr Nambirar said the ITI would issue bonds again later at an appropriate time.

With an investment of Rs 610 crores a sales turnover at the end of the Seventh Plan of Rs 1000 crores per annum can be expected, he said. The department of telecommunication intends to have complete digitalisation by the end of the Seventh Plan, he added.

The telephone density in India is only four per 1000, which is only one-tenth of that of developing countries like Mexico and Brazil. While the world average of telephone density is 19.1 per cent, India hopes to achieve a target of 12 per cent in urban and two per cent in rural areas by the end of the decade, said Mr Nambiar. This target calls for a production figure which is eight times what it is now. As it is not possible for ITI to fulfil this target alone, he welcomed the government's decision to involve the private sector in this sphere. He denied that there would be competition between the ITI and the private sector regarding the manufacture of telecommunication equipment asserting that private sector participation would help in coping

with the heavy demand. Even so he pointed out that the centre had allowed the private sector to manufacture terminal equipment like telephones, telex and teleprinters and rural exchanges.

Out of the 10,000,000 bonds, 5,00,000 would be reserved for private placement with UTI, LIC and GIC. The remaining 5,00,000 are being offerd to the public.

There will be no tax deduction at source and investment in bonds will be exempt from wealth tax without any ceiling. Investors have the choice of receiving interest every six months or allow interest to be compounded under the cumulative scheme, said Mr Nambiar.

Out of the approved outlay of Rs 335 crores in the Seventh Plan for the company, approximately Rs 25.35 crores is expected to be invested in plant and machinery for manufacture of components and assembly and testing of telecommunication equipment, including switching and transmission equipment and telephones.

With CIT-Alcatel Thomson of France, it has collaborated to manufacture state-of-art proven electronic switching systems of 500,000 lines per year for direct exchange units at its Mankapur unit and 30,000 lines per year of trunk automatic exchanges at its Palghat unit. In the field of telephone instruments technology, an agreement has been entered into with Industries Face Standard of Italy to manufacture 500,000 rotary and 500,000 electornic push button type telephones at the company's units at Bangalore and Naini.

The company has entered into technical collaboration with Kokusai Electric Company of Japan for the manufacture of multi-access rural radio system.

/13104
CSO: 5550/0081

PLANS FOR SECOND GENERATION SATELLITES TOLD

Calcutta THE TELEGRAPH in English 14 Jan 86 p 4

[Text]

**New Delhi, Jan. 13:** India proposes to launch its second generation satellites, Insat-II, around the end of the Seventh Plan, the Union minister for communications, Mr Ram Niwas Mirdha, said here today.

The new series will be aimed at augmenting digital communication, television and mateorological networks throughout the country, he said. However, before that the next satellite, Insat IC would be launched this year with a total capacity of satellite circuit/television transponders of about 6,000 CCTS.

Mr Mirdha was inaugurating the first regional seminar on cooperation in telecommunications under the integrated programme of action of the South Asian Association for Regional Cooperation. The seminar, organised by the advanced level telecom training centre, is being attended by participants from Pakistan, Bhutan, Sri Lanka, The Maldives and Nepal besides India.

Mr Mirdha said India intended to establish about 80 additional fixed earth stations and 20 transportable stations during the Seventh Plan. It launched its first satellite communication with the Insat-I series in 1982 and has successfully implemented the Satellite communication programme through Insat-IB so far. There are 29 fixed earth stations and four transportable stations with 4,000 circuits working through satellites in the country today, he said.

With the experience now gained in planning, engineering, operation and maintenance of such a system, Mr Mirdha said these benefits could be shared with other member-countries of SAARC through cooperation in telecommunications.

**Insat channels utilised:** The department of telecommunications has fully utilised all the 4,000 telecom channels in the Insat-1B satellite almost one year ahead of schedule, the minister said. All the telecom channels were fully utilised by December following the Prime Minister's advice to take full advantage of the satellite's limited life. The scheduled date for completion was December 1986.

The addition of 2,000 telecom channels, to be available after the launching of Insat-1C later this year, would further boost the telecommunication facilities.

/13104
CSO: 5550/0080

INDIA

# PTI TO COOPERATE IN INFORMATION TECHNOLOGY PRODUCTION

New Delhi PATRIOT in English 8 Jan 86 p 2

[Text]

A new company to manufacture state-of-the-art information technology products and design and execute complete systems using such technology for news agencies, newspapers, banks, industrial organisations and Government agencies is being set up jointly by PTI and the Madhya Pradesh State Electronics Development Corporation (MPSEDC), reports PTI.

An agreement for setting up the new company was signed in Delhi by Mr Ramnath Goenka, chairman of PTI, and Mr V N Kaul, chairman of MPSEDC at a ceremony attended also by Mr P N Haksar and Mr R M Cama, directors of PTI and Mr B D Khurana, managing director of MPSEDC. The new company will initially have an authorised share capital of Rs 2 crore, with PTI and MPSEDC participating in the equity in the ratio of 50:50.

The company is sought to be registered as Information Technologies Ltd, as it will address systems involving computers and data communication products which constitute the basic building blocks of the information revolution. It is proposed to be set up at Manideep in the backward district of Baisen in Madhya Pradesh.

The company proposes to manufacture "news terminals" including printers, video display terminals, facsimile equipment as also computer-based message switching systems, concentrators, multiplexers and other data communication equipment. Newspapers and other subscribers require such equipment to receive PTI's existing news, commercial and news-scan services in English and those planned in various languages as also PTI's photo and other specialised services. These equipments and services are also needed by Government agencies like the Meteorological Department as also in office automation in a major way, particularly in the banking industry.

Over the last five years, PTI has computerised its news operations and diversified its activities to provide new specialised news and information services to banks, commercial and industrial organisations, in addition to newspapers, All India Radio, Doordarshan and other traditional subscribers. The news terminals required to provide these services, including electronic printers and teleprinters, photo and document quality facsimile machines would be manufactured by the new company.

PTI's R and D department, set up as part of its modernisation and expansion programme, has designed a series of specialised electronic products such as concentrators and selectors, standalone terminals and specialised video display receivers. PTI would be able to provide the new company this know-how, with its experience as a nation-wide user of information technology, products, and as an initial market for the new company.

Mr Khurana, managing director of the corporation, said MPSEDC was concentrating on high technology electronic systems and equipment for professional applications and on high volume production of consumer products. One of the key projects of MPSEDC was the manufacture of optical fibre communication systems for the Department of Telecommunications, Railways, oil and power companies etc.

It was setting up the joint venture company with PTI because computers and data communication products were expected to play a vital role in meeting the information needs of the country and of other developing countries in numerous areas of the economy, he said.

Besides putting into a production the products developed by PTI's R and D Department, the new company would obtain technical know how for latest generation, state-of-the-art data communication products from leading world manufacturers. It would set up its own development and engineering group to assimilate such imported technology and a strong system engineering and turnkey project execution group to design and implement information technology systems meeting the country's needs and conditions.

/13104
CSO: 5550/0077

INDIA

## OFFER TO SHARE MEDIA EXPERTISE WITH NONALIGNED

New Delhi PATRIOT in English 13 Jan 86 p 7

[Text]

Minister of State for Information and Broadcasting V N Gadgil has reaffirmed India's commitment sharing its expertise in the field of communications and media with other non-aligned countries and its resolve to enhance the flow of information among member countries.

Addressing the eight session of inter-governmental council of non-aligned Information Ministers here yesterday, he urged them to increase mutual cooperation at this juncture when revolutionary changes were taking place in communication technology.

Mr Gadgil said that the challenges were of much magnitude that unless they mutually cooperated among themselves and absorbed benefits from these changes, they would be fighting a losing battle in their struggle for decolonisation of information which the non-aligned countries had committed themselves in New Delhi in 1983.

The Minister said the new world information and communication order was no longer a mere concept. Its many practical manifestations were already evident. One such was the non-aligned agencies poll, he added.

Mr Gadgil quoted the late Prime Minister, Mrs Indira Gandhi's address to the first media conference of the non-aligned (NAMEDIA) in New Delhi in December 1983: "It was then stated, and again and again clarified that the main objective of the pool was to concentrate on developmental news of the non-aligned countries and not to compete with well established news agencies. In spite of this, I vividly remember how vociferously the western press reacted against it".

He recalled the words of Prime Minister Rajiv Gandhi, who, while addressing the UNESCO in Paris last year, said: "Excessive power over means of communication on the part of a handful of countries is not conducive to real freedom as it affects the right to inform and the right to be informed of people in the less developed countries".

Mr Gadgil said India would continue to make available the facilities at the Indian Institute of Mass Communication at New Delhi and the Film and Television Institute, Pune, to a number of experts from non-algined countries. India would expand the scope for such training in India.

Referring to the reduction of telecommunication tariffs, Mr Gadgil noted that a joint conference of Information Ministers and Telecommunications Ministers of countries acting as distribution centres of the non-aligned news agencies pool was held in Cario in May 1984, which discussed practical measures for reducing the tariffs.

He said a working group on reduction of satellite tariff for exchanges of TV programmes also met in Jakarta in July 1985.

In keeping with the decisions of the Heads of State and Government of the New Delhi summit, Mr Gadgil said India had reduced the satellite transmission tariff. He said India had also introduced a developmental press bulletin service from May, 1984, at half the concessional PBS tariff.

/13104
CSO: 5550/0078

INDIA

REGIONAL ASSOCIATION OFFERED SATELLITE KNOW-HOW

Bombay THE TIMES OF INDIA in English 14 Jan 86 p 9

[Text] India has offered to share with the member countries of the South Asian Association of Regional Co-operation its satellite comunication programme.

Inaugurating the first regional seminar in telecom co-operation under the integrated programme of action of the SAARC, the communications minister, Mr. Ram Niwas Mirdha, said India had made giant strides in the satellite programme. "With the experience gained in planning, engineering operation and maintenance of such a system, we feel that these benefits can be shared with other member countries of the SAARC."

The seminar, which is being organised by the advanced level telecom training centre, is being attended by representatives of all SAARC countries except Bangladesh.

Mr. Mirdha said India has successfully completed the first phase of the satellite programme through the launching of Insat-IA and Insat-IB.

He pointed out that at present there were 29 fixed earth satellite data receiving centres and four transportable stations with 4,000 circuits. In the seventh plan it was proposed to establish about 80 additional fixed earth stations and 20 more transportable centres.

The minister further said that with the help of domestic satellites, India had been able to provide long distance circuits and link up remote, in accessibly hilly areas. Almost 70 per cent of the population is thus coverd by television through 200 transmitters.

/13104
CSO: 5550/0079

INDIA

TELELINKS WITH AUSTRIA, MALAYSIA INAUGURATED

Calcutta THE STATESMAN in English 11 Jan 86 p 11

[Text] Mr Ram Niwas Mirdha, Union Minister for Communications, yesterday signalled the start of the international subscriber dialling service from India to Malaysia and Austria by speaking on the trunk telephone to Mr Leo Maggie, Minister of Energy, Telecom and Post, of Malaysia and later to the Austrian Minister of Public Economy and Transport, Mr Ferdinand Lacina.

Telephone subscribers of Delhi, Bombay, Calcutta, and Madras can dial directly to Malaysia and Austria.

Subscribers in the four metropolitan cities are now linked through direct dialling to nine countries-the U.K., Australia, Singapore, Hongkong, Japan, France, and recently to Italy, besides Malaysia and Austria.

The Overseas Communication Service provides international telecommunication services to several countries through Intelsat satellites and locom sub-marine cable and four gateway centres at Bombay, New Delhi, Madras and Calcutta. The seventh plan of OCS includes expansion and improvement of existing cable system between India and the United Arab Emirates, including small dish satellite earth stations, a full-fledged international gateway at Calcutta and establishment of satelliite communication facilites with ships on high seas through the Inmarsat coast search station in Bombay.

Speaking on the occasion, Mr Mirdha said the growth rate had been 155 times in international telephone traffic and 27 times in telex traffic duing the past 14 years.

The international subscriber dialling facility now available in the four metropolitan centres, will be extended to 230 more cities, including Hyderabad, Bangalore, Lucknow, Kanpur, Jalandhar and Agra by April.

The first international subscriber dialling facility was introduced in October 1976.

/13104
CSO: 5550/0082

SUBMARINE CABLE LINK WITH UAE PLANNED

Calcutta THE TELEGRAPH in English 9 Jan 86 p 6

[Text]

**Abu Dhabi, Jan. 8** (UNI): A $50 million submarine telecommunication cable providing 1200 channels between India and the United Arab Emirates (UAE) would be commissioned by the end of next year, the Union communications minister, Mr Ram Niwas Mirdha, said.

Talking to reporters at the end of his two-day visit the UAE, Mr Mirdha said that work on the submarine project was due to begin this March with equal cost sharing between India and the UAE. Gradually, this provide a link between other South Asian and Southeast Asian states and the Golf countries.

Mr Mirdha, who held discussions here with the UAE communications minister, Mohammed Saeed al Mulla, on cooperation between the two countries, said a Swedish company, Swedeetel, had been chosen as consultants for the project while a decision to choose the contractors for executing the project would be taken next month.

So far, the standard telephones of Britain, AT&T of the United States, Fujitsu and NEC from Japan and a French company had submitted bids in this regard.

Mr Mirdha said India had set up a microwave system between Madras and Penang in Malaysia and it would be through this that the Fareastern countries would be linked to the UAE, and then to other countries of the Arab world.

Submarine cables provide a cheaper way of telecommunications than satellites.

He said that initially, it had been considered to use optic fibres for the project but later, to reduce costs, it was decided to use coaxial cables.

/13104
CSO: 5550/0084

INDIA

## BRIEFS

AGARTALA STD--Agartala was put on the subscriber trunk dialling map today when the Union Minister for Communications, Mr Ram Niwas Mirdha, received the inaugural call from Mr Nripen Chakraborty, Chief Minister of Tripura. With this, all the State capitals are now connected to Delhi. Out of nine Union Territories, only three are yet to be provided with STD facilities to Delhi. The three are Port Blair (Andamana and Nicobar), Kavarthy (Lakshadweep), and Sylvasa (Dadra and Nagar Haveli). The three stations are likely to be provided STD facilities during the Seventh Plan. Following its policy of linking all State capitals with Delhi, the Department of Telecommunications has, as a first step, started to convert all manual telephone exchanges to automatic. A new exchange was installed at Agartala with a 2,700-line capacity recently to enable STD facilites to be extended to the Tripura capital. Six circuits have been proivded for the direct dialling service, three for outgoing calls and three for incoming. The service will be through the electronic stored programme controlled trunk at the automatic exchange in New Delhi. All the circuits will be through the satellite media of INSAT-IB. The dialling code to Agartala is 0381. [Text] [Calcutta THE STATESMAN in English 11 Jan 86 p 9] /13104

CSO: 5550/0083

## BRIEFS

ORUMIYEH CENTER RECEIVING STATION--Following the inauguration of Tehran's satellite receiving station today, on the 2nd day of the blessed 10 Days of Dawn, and because of the hard work of the employees of the Voice and Vision of the Islamic Republic of Iran's Television and FM Transmitter Units of Orumiyeh Center, the receiving station of the mentioned center was installed and commissioned to receive picture and sound transmissions from Tehran's receiving station. /as heard/ the picture quality of the vision of the Islamic Republic of Iran, Orumiyeh Center, will improve with this station's operation and the disrupted reception of programs, resulting from microwave lines, will be eliminated. All stages in the installation and operation of this station were completed by the employees of the Television and FM Transmitters Unit of the Voice and Vision of the Islamic Republic of Iran, Orumiyeh Center. The same unit is presently completing the installation of 30 similar stations in western Azarbayjan, which will become operational soon. /Text/ /Tehran Domestic Service in Persian 1630 GMT 2 Feb 86 LD/ 12228

SHAHR-E KORD TV TRANSMITTERS--Because of the joint efforts of the Repair and Maintenance Unit of the television transmitters in Esfahan region and the network's Expansion Unit, the new television transmitter of the first program of Shahr-e Kord Center, UHF band, became operational on channel 34, on the 2nd day of the 10 Days of Dawn. This report indicates that the new relay system of the first program for Shahr-e Kord region on channel 6 was simultaneously installed and commissioned. /Text/ /Tehran Domestic Service in Persian 1630 GMT 2 Feb 86 LD/ 12228

KHORASAN SATELLITE STATION--The Makharz satellite ground station went into operation yesterday. The station, located in the township of Makharz approximately 60 km from Tayyebat and 50 km from Torbat-e Jam in Khorasan Province, was installed by the television station maintenance personnel of the Voice and Vision of the Islamic Repbulic, Hashhad center. Using satellite broadcasts, the station will cover Makharz township and approximately 50 villages in the region, broadcasting the programs of the first network of the Vision of the Islamic Republic of Iran. /Summary/ /Tehran Domestic Service in Persian 0430 GMT 31 Jan 86 GF/ 12228

TV TRANSMITTER OPENED--According to the Central News Unit, yesterday on the 6th day of the 10 days of dawn celebrations, a new 50-watt television transmitter began work in Mahabad. According to the report this transmitter is able to broadcast channel one programs from the Mahamad broadcasting center with a 500 watt radius. [As heard] [Summary] [Tehran Domestic Service in Persian 0430 GMT 7 Feb 86] /9604

CSO: 5500/4721

PIDC TO FINANCE 24 COMMUNICATIONS PROJECTS IN AFRICA

AB221315 Dakar PANA in French 0946 GMT 22 Jan 86

[Text] Dakar, 22 Jan (PANA)--The seventh intergovernmental session of the International Program for Communication Development (PIDC) [Programme International pour le Developpement de la Communication] whose deliberations recently ended in Paris, has decided to grant around $830,000 to finance 24 projects in African countries south of the Sahara, according to a UNESCO communique received Tuesday in Dakar.

The financing represents nearly 35.5 percent of the $2,338,000 total budget that the Council has decided to give this year to 61 projects in underdeveloped countries.

Among the 24 African projects are six regional projects covering:

--Research within the Communication Institute (CAEC), a regional institution created in 1976 and whose headquarters is in Nairobi, Kenya, ($25,000);

--Development of broadcasting in Africa, a project submitted by the International Union of Female Communications Specialists ($75,000);

--Productions of books destined to the training of journalists ($20,000);

--Production of reading materials in Hausa and Fufulde ($35,000);

--And the use of media in the promotion of public health and nutrition, a project submitted by WHO ($25,000).

Among the 18 countries whose national projects have been retained are:

--Angola, which will receive $40,000 for the training of cadres for press agencies and for the supply of materials;

--Benin, $25,000 for the supply of radio equipment;

--Cameroon, $35,000 to computerize its press agency;

--Cape Verde, $35,000 for training and consultancy;

--Comoro, $40,000 for equipment and consultancy;

--Ethiopia, $45,000 for consultancy and scholarships;

--Ghana, $40,000 for the development of the book publishing industry;

--Equatorial Guinea, $40,000 for equipment and consultancy;

--Kenya, $5,000 for reading materials destined for the blind;

--Malagasy Republic, $30,000 for scholarships and equipment for the press agency;

--Mali, $35,000 for audio-visual materials;

--Mauritania, $70,000 for training and equipment;

--Nigeria, $20,000 for training sessions for illustrators of children's books;

--Central African Republic, $35,000 for equipment and consultancy;

--Sao Tome and Principle, $30,000 for radio equipment;

--Seychelles, $15,000 for radio and press agency equipment;

--Zimbabwe, $2,000 for cinematography training.

The African National Radio-Television Union (URTNA), which includes organizations of countries north and south of the Sahara, has received $25,000 for the training of specialists in video-reportage. Moreover, the Council approved a regional project for the development of press agencies in seven southern and east African countries. That project, which will be granted $440,000 from the Federal Republic of Germany, concerns Botswana, Malawi, Madagascar, Mauritius, Mozambique, Seychelles and Zimbabwe.

The next PIDC annual session is due to convene 20 to 26 January 1987 in Budapest, Hungary.

/9604
CSO: 5500/47

BOTSWANA

PHONE SYSTEM MODERNIZATION

Gaborone DAILY NEWS in English 27 Jan 86 p 1

[Article by Molefe Mmamaplio]

[Text]

GABORONE: Botswana is modernising its telephone network by installing advanced digital microwave radio system this year. Initially this will be built along the Gaborone-Francistown highway.

The commercial manager, Mr Jon Thompson and the Chief Executive Officer, Mr Anthony Hope have confirmed that radio microwaves systems are now in an advance stage in the country. The Gaborone-Jwaneng system would be ready for operation before the end of the year. These are public telephones with special slots in which the customer inserts a coin to get the number he wants without going through the exchange.

According to Mr Thompson, quotations for the installation programme has been received from local contractors. He announced that they have commenced a programme of installing automatic pay phones and initially this would be in both urban centres and densely populated villages.

He said so far they are installing pay phones in eight villages on trial basis, and that they would also be introducing a computerised directory inquiry systems in the first half of 1986.

Mr Thompson said that they would also introduce "International Direct Dialling" (IDD) by the end of this year, which would allow subscribers to dial most countries throughout the world.

Mr Anthony Hope disclosed that work on a new microwave link between Botswana and South Africa was completed late last year and is now in full operation.

He dismissed allegations that the new system was a problem especially during rainly seasons because they intermittently cut off as untrue. He said this was because the new cables are housed in pipes so that chances of getting in touch with the soil are very remote and that the impact of lightning are slim. ***BOPA***

/9317
CSO: 5500/46

# PANAFTEL PROJECT TO SAVE IN FOREIGN EXCHANGE

Dar es Salaam DAILY NEWS in English 29 Jan 86 p 1

[Article by Charles Kizigha]

[Text] The completed part of the Pan African Telecommunications Network (PANAFTEL) project has enabled the country to save at least 21m/- annually in foreign exchange for not routing telephone, telex and telegraph traffic through Nairobi, London and Rome.

The Director General of the Tanzania Posts and Telecommunications Corporations (TPTC), Ndugu J.W.J. Maeda, said this in an interview in Dar es Salaam yesterday.

Completion of the project in 1982 enabled Tanzania to open up direct telecommunication links with Zambia, Kenya, Ethiopia and Zimbabwe.

Before that, he said, communication by telephone, telex and telegraph was only possible through hardpatch circuits or using transit facilities through Nairobi, London and Rome centre, necessitating payment of transit charges in foreign exchange.

The links (PANAFTEL and microwave) which are in service are Moshi-Arusha-Nairobi (since 1982), Arusha-Dodoma-Tunduma (1983) and Dodoma-Tabora-Shinyanga-Mwanza (1994). Other links in progress are Mwanza-Bukoba-Kigoma expect to be commissioned this June.

Civil works for the Nyololo-Njombe-Songea links were nearing completion and outdoor and indoor installations would commence soon after commissioning of the Mwanza-Bukoba-Kigoma links.

Meanwhile, Ndugu Maeda said the solar power system for the Mwanza-Bukoba-Kigma microwave radio does not function properly because the solar array does not charge the batteries.

However, a Japanese firm - Sharp - which designed and assembled the system has been requested to come and solve the problem.

He also said that the capacity standard 'B' Mwenge ground satellite station commissioned in 1979 had been exhausted forcing the country to re-route the additional traffic through other counties - an exercise which costs the country a lot of foreign exchange.

The Director General said the Mwenge station's 60 voice grade circuits capacity was exhausted since 1983. The station started operating commercially on September 1, 1979.

Efforts were being made to secure funds for installation of a bigger (standard 'A' type) satellite, he said.

Ndugu Maeda said the shortage of teleprinters and switchboards would continue until foreign exchange is secured by TPTC.

/13104
`CSO: 5500/49

TANZANIA

ISLES RADIO GETS NEW TRANSMITTERS

Dar es Salaam DAILY NEWS in English 6 Feb 86 p 1

[Text] President Ali Hassan Mwinyi yesterday commissioned new radio transmission equipment for Radio Tanzania Zanzibar at Dole, 17 kilometres north of the Zanzibar Municipality. The commissioning was part of the celebration to mark the Ninth Anniversary of Chama Cha Mapinduzi.

The new equipment supplied and installed by the People's Republic of China under a 20.8m/- soft loan, constitutes two transmitters of 50 kilowatts each, a broadcasting studio and set of electric generators for emergency purposes.

The new transmitter, however, is linked by a cable to Rahaleo in Zanzibar town, where the recording studios are situated.

Welcoming the President to start off the transmitters, the Zanzibar Minister for Information, Culture and Sports, Ndugu Ramadhani Shaaban, said the project was conceived by the Zanzibar Government in 1975. Preliminary studies on its feasibility were concluded by Chinese experts in 1977.

In 1982, he said, Zanzibar and China signed an agreement under which China was to supply and erect the transmitter and train local technicians on how to handle and service the equipment. Zanzibar, on its part, was to contribute another 21m/- in local currency for the purchase of building materials and other accessories.

The Minister informed the President that construction of the station which replaces a 10-kilowatt transmitter at Chunguni, on the outskirts of Zanzibar town, began shortly after the Chinese Premier, Ndugu Zhao Ziyang, laid the foundation stone on January 12, 1983. It was completed in June, 1984, six months ahead of schedule.

With the commissioning of the new transmitters yesterday, Radio Tanzania Zanzibar can now be heard throughout Africa and some parts of the Middle East, Ndugu Shaban explained.

Earlier, the Chinese Ambassador to Tanzania, Ndugu Liu Qingyou, said his country had been impressed by the determination of Tanzanians to build their country and the role the country plays towards the liberation of Africa.

"This new transmission equipment will therefore, enable Tanzania not only to broaden her relations across borders, but shall also spearhead the liberation struggle in Africa," the Ambassador noted.

The new transmission station, complete with spacious residential quarters for engieers and technicians to man the facility, is to date the largest single Chinese assisted project in Zanzibar.

Previously, China has extended financial and technical assistance to Zanzibar to set up the Mahouda Sugar Mill, leather and shoe factories and the cigarette plant.

For the past two decades, China has also taken an effective part in the administration of public health services and agriculture in Zanzibar.

Before President Mwinyi unveiled the plaque on the entrance of the transmission complex and pressed the nob to activiate the equipment, Radio Tanzania Zanzivbar staff pledged to handle with care the installed machinery and buildings. They asked the Zanzibar Government to look for external donors to rehabilitate boradcasting studios at Rahaleo.

They also told Ndugu Mwinyi that lack of adequate transport and poor remunerations were hampering the smooth operations at Radio Zanzibar.

/13104
CSO: 5500/49

TANZANIA

BRIEFS

PRC EQUIPS NEW STATION--Dar es Salaam, 6 Feb (AFP)--A 2.4-million dollar radio transmission station, built with Chinese assistance, was commissioned in the Tanzanian Indian Ocean island of Zanzibar Wednesday, enabling Radio Zanzibar to be heard all over Africa and some parts of the Middle East. The station--installed with two new transmitters of 50 kilowatts each, a broadcasting studio and emergency generators--is linked to the recording studios in Zanzibar town, some 17 km (about 11 miles) away. Tanzanian President Ali Hassan Mwinyi, who commissioned the new radio station, was informed that China had supplied equipment worth 20.8 million shillings (about 1.2 million dollars) and the remaining cost of 21 million shillings was met by the Zanzibar government. The new station, whose construction began shortly after its foundation stone was laid by Chinese Prime Minister Zhao Ziyang on 12 January 1983, replaced the antique 10-kilowatt transmitter at Chunguni on the outskirts of Zanzibar town. [Text] [Paris AFP in English 1245 GMT 6 Feb 86] /9604

CSO: 5500/43

USSR

U.S. ACTION AGAINST UN RADIO SERVICE HIT

LD121435 Moscow Domestic Service in Russian 0730 GMT 11 Jan 86

[Commentary by Pavel Kasparov]

[Text] REUTER has reported that the U.S. government has interrupted the work of the UN broadcasting service which is supposed to inform the world community about the work of the forum of the peoples of the planet. Formally the broadcasts of the UN radio have been stopped because of the lack of a contract with Voice of America. The REUTER cable even emphasizes that it is a question of an ordinary financial problem, as the Voice of America bosses asked the United Nations too much for the renting of broadcasting equipment. But the deeper one goes into the substance of what is taking place, the clearer it becomes that the problems of financial order in the UN radio case are merely a convenient excuse for Washington to deliver a blow against the international organization which is conducting a policy of establishing a new, fairer information order.

The thing is that over the last few years the overwhelming majority of UN members from Asia, Africa and Latin America have been advancing a resolute demand for an end to the complete mastery of western, and especially American, services in the world information market. Judge for yourselves: outside the boundaries of the socialist countries, western agencies control 80-90 percent of all information disseminated there. In a single year U.S. television companies sell to the so-called Third World countries up to 200,000 hours of television programming, while those countries themselves have only 5 percent of radio and television stations on the planet at their disposal. That kind of one-sided flow of information distorts the picture of the contemporary world, foists alien ideals on millions of people and obstructs the development of their own culture. That is why the international community devotes a lot of attention to eradication of that kind of western imperialism in respect of the world's developing countries. The work of the UN radio also serves those objectives to a certain extent.

But that is precisely not to the liking of the United States, which strives, as we all know, to dictate not only its views but also its wishes to the entire world, not stopping even at open blackmail. And so this time too Washington saw an opportunity to scare the United Nations lest, as they say, it made a habit of it.

/12712
CSO: 5500/1008

# EBU OFFICIAL COMMENTS ON PLANS FOR ALL-EUROPEAN CHANNEL

Milan VIDICON in Italian Nov 85 pp 29-31

[Article by Cecilia Zecchinelli entitled: "'Europe TV' Is The First All-European Channel Created by 5 Public Networks, One of Which Is RAI"]

[Text] The war between state television and commercial networks in Europe will shortly take on a truly continental dimension by really creating, for the first time, one "great electronic village" extending past national borders. And if on one hand the private entrepreneurs have for some time been sharpening their weapons, namely, satellites, the public networks are not just looking on but have begun the counterattack.

A project that will shortly cause much discussion in Italy also, although for the moment few people outside the restricted circle of those working on it know much about it, is that of the EBU (European Broadcasting Union), officially inaugurated in its experimental phase on 5 October in Holland. It is "Europe TV" (the original name 'Olympus' had to be changed after protests from the makers of the Japanese camera of the same name), the satellite and cable channel to which five European countries are subscribing today.

In order to find out more about it, we asked Frank Naef to explain the project to us.

"Europe TV, the all-European satellite channel," explained Naef, "is a typical example of how the European public televisions and their association, the EBU, intend to operate today in an audiovisual world which is continuously evolving. It is the quality response to the commercial satellites and to the invasion of American programs, which will find very little space among Europe TV broadcasts. Finally, it is evidence, at a high technical level, of the desire of state television to become more competitive, more modern, less self-centered and nationalistic."

As we have said, for the moment, five televisions have subscribed to the project: The Netherlands' NOS, which in a sense is leading the operation at least in its experimental phase which will last until 31 December with diffusion via satellite and cable (the Netherlands, furthermore, has made available the center for "Europe TV" at Hilversum), the Irish RTE, the FRG's ARD, the Portugal's RTP, and finally, Italian RAI.

The five networks have financed the initial phase of the project with a sum of approximately $14 million and are studying the development of the next phase, which will come into being for Ireland, the FRG, and Portugal at the beginning of 1986. For the moment the diffusion is restricted to the Netherlands alone, and is brought about via satellite (one channel on the ECS - European Communication Satellite) and via cable system, which are numerous and highly developed in the Netherlands. The precise diffusion of the all-European channel within the Netherlands is yet to be defined, since many systems cannot carry more than eight channels and overcrowding is already a problem. However, it is very likely that the Netherlands parliament will soon pass a law on the basis of which the national channels will have precedence over foreign channels, and that "Europe TV" will be able to benefit from this same right. This is an example of the power that an association of state televisions can obtain at both national and international levels.

At the beginning of next year, however, although the experimental phase will not really have been concluded, the other countries too, except Italy, will begin to broadcast the "Europe TV" program; Ireland and Germany via cable system; Portugal, on the other hand, will transmit over the air on the second channel of the RTP. In Portugal, in fact, as in Italy, cable systems are practically nonexistent.

Italy should actively take part later on, limiting herself for the moment to taking part in the financing and organization of the project, while waiting for the launch of the European "Olympus" satellite (the name has been kept for the moment) forecast for 1987-88.

"In the second phase, which will start with the launching of 'Olympus'" Naef added, "we will go on to direct broadcasting."

"Of course, we will arrive at this stage only if the first years of the 'Europe experiment' have been positive, if the program has had a good audience and the advertisers have supported it!"

The chances are good: According to EBU forecasts, the potential public after 1988 amounts to 20 million families, not an impossible target if one considers that 360 million television sets in Europe can be connected to a DBS system.

But what is this channel like? What does it broadcast?

First of all, both by political and cultural choice, and for budget reasons, "Europe TV" is almost exclusively a European channel. The programs will be obtained in three different ways: some will be "recorded" by the member countries of the association and by the other televisions of the EBU; others will be purchased only at cost price, that is, for as little as possible; others finally, will be bought normally on the international markets or through business contacts. Like any other TV network in the world, the "Europe" buyers were present at the fall markets. The kind of transmissions, which for the moment are restricted to 3 hours per day, are defined by Paul Henriksen, general secretary of "Europe," with this slogan: "the best of European program for European viewers."

There will be cultural and scientific programs, documentaries, news (for the moment only on Sundays, but beginning next year every day), cartoons and other programs for children, entertainment and a lot of sports. The possibility of buying from the United States or other countries is not excluded (we must remember that the EBU has "associated members" all over the world, from the Japanese Asaji and Fuji, to the three large American networks), "but they certainly will not be the serials or soap operas of the 'Dallas' and 'Dynasty' kind," Henriksen added.

Even if the directors of "Europe" were interested in the affairs of the Ewings and the Carringtons (and they are not) the newly born channel could not afford similar purchases. The estimated running costs for the first period are approximately $10 million, which will become $42 million a year in the next phase. These figures only allow for economical running of the channel, so much so that the price paid by "Europe" cannot exceed $1500-2000 per programming hour.

Advertising, however, is not only permitted but definitely encouraged, although it will be broadcast only between one program and another or in "natural breaks" (for example, between the first and second half of a match.) Klaas Jan Hindriks, director of programs, in the American weekly VARIETY affirmed that there are considerable possibilities for getting a good number of commercials together. "The market research we have carried out indicates that there is still a lot of space in Europe for advertising. We are aiming at rather special advertisers, those who are interested in an international market.

"Obviously a rather special medium, too, is needed for them, with a different audience than that of the national networks."

"Well, we are that medium."

In the projects of the new satellite channel, the progressive growth in publicity returns will be such as to allow for total self-sufficiency of the network by 1990.

This network will, its directors emphasize, supply an absolutely free service, and thus benefit from greater competitive power as compared with the commercial cable TVs which charge a monthly subscription.

And so "Europe TV" will be, indeed already is, free, cultural, international and, of course, polyglot. During the first year, in fact, broadcasts will be in four languages (English, German, Portuguese and Dutch). The programs will be broadcast and received in their original language, while other parts of broadcasting will allow for the use of subtitles or dubbing (voiceover) of the dialogue in the viewer's language.

We shall probably have to wait until 1988 for the introduction of "Europe" in Italy; we lack cable networks and the space for television is definitely too crowded at present to allow for experimentation. However, our country views the all-European channel with great interest. After years of long discussions and very few results, "Europe" is one of the recent signs, along with the growth in coproduction, of a new or "continental" age in television.

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EUROPEAN RESEARCH IN OPTICAL SWITCHES

London THE ECONOMIST in English 26 Jan 86 p 87

[Excerpts] Telecommunications firms everywhere are planning to use fibre optics to send more information, more quickly, than can conventional cables.

Electronic switches can handle only about 100 megabits of information a second, the equivalent of about 1,500 normal telephone conversations. Fibre-optic transmission lines, on the other hand, promise to carry the equivalent of about 1.5m telephone conversations, or 100 gigabits a second of data. Unfortunately, many networks require electronic switches to sit across the line like a traffic light on a motorway slowing everything down to their speed.

Researchers have three basic approaches to opening this bottleneck. The simplest, and the only one now in use, relies on the flexibility of optical fibres. Half a dozen or so optical fibres are arrayed around the mouth of a device which behaves like a funnel. Each is attached to a tiny arm, which, when flexed, pushes the fibre down into the throat of the funnel. Here it meets a fibre running out the other end of the funnel and, presto, a connection is made.

This clumsy device is not the sort of thing on which researchers' reputations are made. A more promising approach being pursued by several companies--including America's AT&T and Huges, Japan's NEC and Fujitsu, and Sweden's Ericsson--exploits an interesting property of a material called lithium niobate; namely, that it transmits light differently when an electric field is passing through it than when one is not.

Put light through a lithium niobate channel laid side-by-side with a similar channel and the light beam will swing back and forth from channel to channel, as regularly as a pendulum. But pass an electric field through one of the channels and the beam stops moving back and forth; the affected channel no longer transmits light in the same way as its neighbour. By carefully timing when the electricity is switched on, it is possible to choose the channel in which the beam will be trapped--and so a switch is born.

The obvious drawback to this switch is that two channels must travel side-by-side for a short distance. That means complicated wiring for even relatively simple switches; to connect four input lines to four output lines, for example,

requires 16 side-by-side couplings. And the bending and twisting needed to make these connections increases the amount of light lost in the switch.

Researchers at France's Thomson, among others, have a third approach to optical switching. The idea is to use a square block of a crystal called bismuth silicon oxide to direct any one of up to 1,000 incoming light beams into any one of up to 1,000 outgoing channels. The neat part of the trick is that the direction of the bending is itself controlled by light.

By playing two lasers over the crystal, the researchers create a hologram which, in turn, changes the way in which light is diffracted by the crystal. Thomson has created a prototype that can switch an incoming beam to any one of about 200 outgoing lines in about one 5,000th of a second. But much work remains to be done; both on improving the light-transmitting efficiency of the switch and on reducing the cost of the lasers and other equipment needed to control it.

/9274
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# EUROPEAN TELECOMMUNICATIONS POLICIES, STRATEGIES VIEWED

Milan TELECOMUNICAZIONI OGGI in Italian Nov 85 pp 42-48

[Article by Santolo Cirillo under the "Technology and Markets" rubric: "Italian Is One of the Languages Spoken on the Planet Telecom"]

[Text] The pluralistic nature of telecommunications in Italy, which are based on a system of conventions and on a division of organizational and management responsibilities, is now at the center of a complex discussion which clearly shows that change can no longer be postponed.

The trends towards integration of methods and services into a single telecommunications network, a trend strengthened by technological innovations, stipulates one basic premise: that a full review be made of existing telecommunications services and that the areas of responsibilities of both State and concessionary enterprises be clearly and unequivocally defined. In order to review the whole organization and management of telecommunications it would be well to modernize services in an attempt to unify them, although this will have to be accomplished both gradually and by making specific choices. In line with this, the renewals of the concessions with the companies SIP, ITALCABLE and TELESPAZIO has been based on the need to overcome the existing difficulties by eliminating the present inconsistencies in the distribution of the traffic and making the management and organization of the system more functional and cost effective. This certainly represents a first significant step towards the modernization and requisite updating of the national telecommunications system.

In addition to this, a more thorough and complete process of reorganization of the telecommunications sector includes additional aspects, which are fundamental to a course of action of this kind. These aspects can be summarized as follows:

--Necessity to regard telecommunications as a unified system, both as regards domestic relations and international relations, in order to achieve a systematic development of networks and services;

--The need to bring the national network rapidly into line with the evolution of methods and systems in the network of world telecommunications.

--The need to coordinate and systematically develop the individual sectors of the national system of telecommunications on the basis of growing internal and external requirements.

The new structure of the sector has to take account of all these trends in order to cope with all the requirements mentioned above regarding State-run structures and concessionary companies and in order to optimize the allocation of all available resources.

At present everything points to the reorganization of both the Ministry of Posts and Telecommunications and of telecommunications services to create a unified system.

According to existing regulations, the Ministry of Posts and Telecommunications has responsibility for all the services; it is assisted by the relevant associated bodies, that is, the Managing Board and the Higher Technical Committee PTA, and also by the director general of the PT Authority along with the chief of the General Supreme Inspectorate for Telecommunications.

However, a better organizational structure would require that the minister should perform the typical activities of organization, coordination, programming and control for which he--in his official capacity--is responsible by making use of a specific ministerial authority. This body must be a separate entity from the structures in charge of running the services, which should be, in turn, granted a degree of self-management and act on the basis of the guidelines established by the minister. This would be based on programs formulated and finalized by the Government.

The need to stress the tasks for which the Ministry of Posts and Telecommunications is responsible has long been felt. The solutions suggested by the different political and social forces and by trade unions point to a unification of the organization and management of all telecommunications services in a single system. Therefore, all tasks concerning strategic planning, content, control and coordination of all the activities carried out in the telecommunications sector, along with the running of all the public authorities involved in this activity, will be dependent on the Ministry of Posts and Telecommunications, as was stipulated by the legislative provisions regarding postal and telecommunications services, approved by Decree No. 156 of the President of the Republic on 29 March, 1973 by the regulations in force.

In order to achieve new organization and management in the telecommunications sector, operating structures should be rationalized, thereby unifying the services into a homogenous organizational area and separating organization and management of domestic services from international ones, without affecting the concept of state monopoly of all sectors of telecommunications services, except for the so-called "value added" services. Considering the importance that must be attached to the sector in functional terms, a definitive solution to the problem calls for an intensive study of the subject and an extensive constructive discussion on the part of all political and social forces, with the aim of establishing, by means of concrete verification and checking at a practical level, the most widely accepted choices for an optimal organization

of the whole telecommunications sector. However, this organization will have to ensure that the management and organization of telecommunications will be based on the requirements of the public and on meeting user demands. Also, and most importantly, it must be in line with the evolution of the country.

This commitment entails considerable, highly complex problems: making new services available; the creation of systems capable of integrating services and methods; technological change and the consequences for production structures and employment levels. All these form part of a far-reaching development process involving not only the bodies responsible for services and manufacturing companies, but which also requires the allocation of vast financial resources and therefore specific economic choices.

Italian Telecommunications in Europe: Outlook and Development

A reorganization of the whole sector of Italian telecommunications, brought about by new developments in technology and by changes in systems of information, must acknowledge that methods of communication cannot be regarded as the heritage and wealth of one nation alone, but rather as the result of efforts of all mankind. Therefore, it would be meaningless to plan the development of telecommunications in Italy differently from that which is underway in other European countries. In order to achieve a closer and constant collaboration, it would be advisable to compare the stage of technological development attained by those countries in the information sector and also to try to reach international agreements mainly between Italy and other EEC countries. In this way, it could be possible to attain an optimal and mutual utilization of information systems in the future, both on a national and international level. Moreover, the increasingly extensive use of telecommunications satellites in Europe and all over the world has recently opened attractive horizons and extremely interesting prospects, although technical, legal, economic, and practical problems cannot be avoided.

Some international organizations such as the EEC and the Council of Europe are helping to overcome these problems by suggesting a series of initiatives designed to draw up a common strategy, hinging on the supposition that the countries involved have a European approach.

The new European audio-visual structure basically will be composed of satellites, cable and optical fiber systems, and video receiver equipment. When considering the decisions adopted by numerous governments to set up cable transmission systems, it is possible that by the end of the 1980's the situation will be the following:

--A keyboard will be added to the household receiver set, that is, the current television set, which will be transformed into a terminal. Using this, it will be possible to access numerous services (telecommunications, data banks, different services, and so on). Therefore, television will be no more than one of these services;

--The receiver set will be fed via cable (especially in urban areas) and also through antennae capable of directly receiving both satellite signals (TDS) and overland signals (especially in nonurban areas).

The new technological developments in telecommunications and above all, in satellite television (TDS) will enable all European citizens to get to know and appreciate the cultural unity of our continent and to take part in it.

In the face of possible telecommunications developments of this kind, Italy, as well as other European countries, must commit itself on a number of fronts, which could be summarized as follows:

--Institutional policy: An overall regulation of the "European system" must be formulated and enforced. This system would be composed of an interconnected body of satellites, cable networks and conventional networks.

--Industrial policy: The standardization of technical regulations should be promoted and the European industry should be supported.

--Policy of program production: No European country will succeed in singlehandedly satisfying the rocketing demand of tomorrow's television in this field. Europe will not be able to ignore two important needs, that is, the integration of the market for programs--both as regards supply (production) and demand--and the integration of the cinema and television sectors.

--Cultural policy in the strict sense of the term: The pluralism of the individual national identities, which makes up Europe's cultural identity must be safeguarded.

In this context, the formulation of common programs in telecommunications must be seen as a first important step toward a more European awareness of future prospects and problems.

Organizational Coordination and Technical Regulations of European Telecommunications Within the Framework of the CEPT

The CEPT [European Conference of Postal and Telecommunications Administrations] has to be placed within the general framework of technological renewal of systems of information and of the proliferation of new kinds of telecommunications services (Videotext, Teletext, Videoconference, Electronic Mail, and so on) that have been added to traditional services. This international technical body has come to assume a role of fundamental importance in Europe. The authorities and public bodies responsible for telecommunications services of 26 European countries depend on the CEPT, which is in charge of telecommunications policy on our continent and, more importantly, supervises the relevant regulations.

In the face of a rapid development in telecommunications, the CEPT countries, including Italy, in response to an explicit EEC invitation have undertaken a coordinated action designed to rationalize the telecommunications sector as much as possible through a harmonized policy which also takes into account production requirements.

A "coordinated" policy was therefore passed by the CEPT because of the widespread conviction that the central and decisive role played by telecommunications in today's society requires that joint political action be taken at a "supranational" level, taking into account the different interacting factors: administration, finance and economics, manufacturing and social issues. The first result was a series of activities which started in 1976 and led to some changes in the organizational structure. These activities were aimed particularly at setting up specific "Coordinating Committees."

The areas in which the CEPT wishes to carry out its "harmonizing activity" can be summarized as follows:

--development of networks and services;

--standards and regulations for the different services;

--technical standards concerning network designs and equipment and user terminals;

--procedures for approval and use of materials, with particular reference to user terminals.

All four areas mentioned above include technical and political aspects; nevertheless, while political aspects are prevailing in the first area, technical aspects are prevalent in the other ones.

The "Committee of Harmonization," called CCH, is responsible for coordinating activity in the last three areas. This operates through eight technical working groups. Five of these groups, the SF (Services and Facilities), R (Radiocommunications), CD (Datacommunications), CS (Switching and Signaling), and TR (Transmission), are coordinated by the CCH regarding the choice of topics to be dealt with and the priorities and timing to be observed. However, in technical terms, these groups do not depend on the CCH since they report directly to the Telecommunications Commission of the CEPT. The other three study groups are, on the contrary, a direct offshoot of the CCH and as such they directly depend on it regarding the technical content of their work. These three groups are the GSI (for the narrow-band integrated service digital network-ISDN-and for its progressive evolution toward a relatively wideband longdistance network); GSM (for a European cellular 900 MHz mobile radio system), and the GSLB (for the local wideband networks). The state-of-the-art topics dealt with by these three groups are obviously interconnected to a great degree as well as being connected to other areas of research. Therefore, these three groups act as points of collection, coordination, and programming of the work carried out on these three topics by all the other study groups.

In order to accomplish its global coordinating activity in the harmonization process, the CCH makes use of "Plans of Action." These plans establish, for each sector to be harmonized, the topics to be dealt with, the working groups to be involved in the study, the priorities of the different topics, and an outline of the timetable to be observed.

The single "Harmonization Projects" derive from the plans of action. The limits of the phased studies, the level of harmonization which should be reached, the order of priorities and the timing of the individual stages are established in detail for all harmonization projects.

The activity of the CCH has focused particularly on the area of harmonization of the technical regulations governing network design and equipment and user terminals; the most significant leaps forward were made in this area.

In this respect, things are made easier by the widespread conviction that, notwithstanding all accusations which can be made in abstract terms against regulations as an instrument which hinders technological development and represents an obstacle to the creation of a highly competitive market, technical regulations are nonetheless seen to be indispensable if problems of interconnection and interaction between the various parts of the system are to be minimized and "uniform" performance is to be guaranteed.

When defining the harmonization work to be done, the CCH was often and still is compelled to face various problems. Among these problems the following must be mentioned:

a) The telecommunications standards cannot be considered separately from the ones concerning informatics services, that is, the processing of data and information.

b) The rate of technological innovation is increasingly fast, while the intrinsic complexity of the necessary standards increases the time needed to prepare them.

c) Technological innovation enhances the variety and diversity of equipment and services, while the standards aim at unifying or at least reducing the number of solutions needed.

d) International standards should be sufficiently "receptive" to technological innovation and should be composed of as few conditions as possible in order to be prepared quite rapidly. Nevertheless, they should not leave room for completion at a national level since in such cases different regulations could be adopted by various countries and thus the economic and commercial goals, which could be attained by means of a high "scale economy," would be thwarted.

e) In order to prepare standards rapidly, working methods should be based on small groups of experts. It would be well to consider that the CEPT regulations are not compulsory for the CEPT countries; they are simply "recommendations" that can be disregarded or at least adopted some time after their formulation.

The CCH established some fundamental rules governing the harmonization works in view of the above mentioned considerations.

A) Top priority has been given to "topics to be considered," that is, future-oriented services and equipment have been given priority in the harmonization

work. The sectors selected here concern telematic terminals for transport services and teleservices, the impact of high-level protocols, the dedicated networks, including networks via satellite, the narrow band integrated service digital network (ISDN) moving towards wideband systems, the role played by satellites in ISDN, mobile radio systems, local wideband networks and finally LAN (to some extent).

B) The "level or harmonization" comes second. Four possible levels have been established. The level of harmonization is chosen case by case in order to avoid situations which could result in plateaus in technological development and consequent losses of competitiveness. The goal of "functional harmonization" is generally pursued; this represents the third level and can definitely contribute to broaden the international markets. This goal can be reached provided that no operational clauses or functional options--which could result in different products in various countries--are added to the standards. This is certainly the most delicate problem of the whole process of harmonization, which could be solved only by a positive and committed attitude of all the countries involved. In short, it all comes down to promptly adopting the regulations worked out by the CEPT and, with a few exceptions, avoiding functional options and conflicting operating criteria which could considerably impair the international validity of the regulation.

C) The "relations with other regulating authorities" comes third. Here, the primary goal consists of avoiding conflicts with other international authorities such as the CCITT [International Telegraph and Telephone Consultative Committee], CCIR [International Radio Consultative Committee], ISO [International Organization for Standardization], and IEC [not further identified] in keeping with the fundamental consideration that the CEPT standards must be in harmony with world standards. This gives rise to the following fundamental objectives pursued by the CEPT in the formulation of such standards:

1) Whenever possible, to submit a unified point of view of the CEPT countries to CCITT, ISO, CCIR and so on in order to increase the possibility of reaching final solutions that are consistent with the views of the CEPT itself;

2) To start negotiations with other regional organizations, and with delegations of non-CEPT countries, in order to eliminate different points of view on specific subjects and to strive to reach agreements which could make the formulation of unified standards easier;

3) If need be, to anticipate the international standards of CCITT, CCIR, ISO and others;

4) If need be, to complete the standards of CCITT, CCIR, ISO and others, especially when such standards leave different options open;

5) To provide for regulations on specific European needs which are not provided for by other regulating authorities.

D) "Relations with industry" comes fourth. The CEPT is an organization related to the postal and telecommunications authorities, which in theory does not allow external bodies, especially industrial ones, to take part in its activities.

Nevertheless, since harmonization processes necessarily require the cooperation of industry experts, the CCH was entrusted with the task of maintaining relations with European industry both for the requisite exchange of information and to initiate operational collaboration between the working groups. Great interest recently has been given to the problem of user terminals, especially when considering the trends toward free market systems, which are increasing in all countries.

Freeing the market is something which has to occur simultaneously in a number of different countries if it is to be fully effective and constitute a genuine relaunching of the industry. The free market system will thus give rise to a broad and exciting market that will make it possible to achieve "scale economies," something which is absolutely indispensable. In order to pursue such a policy, specific technical and administrative standards for network approval have to be finalized at a European level in order to safeguard networks, users, and bodies responsible for the services. The strictly technical standards are intended to establish the terminal functional characteristics of interoperation between terminals (for teleservices) as well as these conditions that will make it possible to avoid interference with other users and parts of networks. In addition to these technical standards, other important factors are under examination: harmonization of administrative procedures of approval, administrative procedures regarding the use of terminals, and the technical administrative procedures concerning permission to be connected to the network.

Despite the considerable amount of work that already has been done, a considerable effort still has to be made in order to condense and rearrange the authorization procedures, including technical standards and administrative and procedural norms.

In order to better meet these new demands, the present organization of the CEPT harmonization structure will be slightly modified.

Future Development in Telecommunications Services Via Satellite

We have already stressed the extremely important role played by satellites in the field of telecommunications together with the extensive range of possibilities that will be offered by the use of this new and important technological system in the future. The range of new services and connections made possible by satellites is increasing more and more. Italy's interest can be seen in its increasingly active and concrete participation in these new services, many of which are at an advanced stage of utilization in this country.

At present, satellite systems connect telephone and television networks of different countries through ground stations with large antennae (30 m in diameter). In the future, even small centers such as cities, islands and mobile units on land will be directly connected via satellite.

Particular interest should be attached to the telecommunications service operating between ships and coastal stations, carried out by the commercial

satellite "Marisat," which is fully operational. An extension of this such activity has already been scheduled on a world scale and its full realization is in progress. It will make it possible to improve the present services and introduce some new ones, such as full control of maritime traffic and the transmission of news, and various programs and scientific data designed to guarantee highly specialized onboard activities such as medical procedures which will be directly controlled by specific landbased centers.

Another telecommunications service worth mentioning is the connection of computers through satellites. It is an application which makes it possible to integrate the computer capacity of centers in various countries to the great benefit of the economy, research, and all other activities requiring the use of computers.

The development of the exsiting systems and the implementation of new ones will have a considerable effect on the electronics industry. A remarkable increase in the number of land stations of different dimensions is to be expected along with the accomplishment of new technology designed to improve the efficiency of connections and to increasingly optimize equipment for the specific service to be carried out. Therefore, rationalization of domestic programs, within the context of international developments, will enable Italy to have an adequate productivity at a world level.

In general, the technology to be developed will focus on the costs and reliability of the equipment and place the accent on microwave integrated circuits and have an effect on the production of RF equipment in the GHz 1,5 - 2,5 - 4/6 - 11/14 and 20/30 bands. There will be an increasing tendency for ground stations to be modular and automatic; many of them will be unmanned and will have to be designed for the specific environment they operate in (fixed or mobile platforms). They will deal with a high volume of digital traffic and they will have wideranging characteristics, according to the system in which they are used. In addition, new applications will be introduced which are more specifically oriented toward the needs of both users and traffic.

The development of digital transmission systems will be given great priority. Integrated circuits have been widely used for logic functions in computers; nevertheless, these circuits which were experimented with for the first time in 1969, have already been used for some time in telecommunications.

Research and development programs on antennae have long been underway. Indeed, there is a need to increase the efficient use of available frequency bands, which rapidly become saturated. To achieve this, it is necessary to perfect methods designed to obtain extremely accurate reflecting surfaces in order to improve not only the directional accuracy of the satellite but also the radioelectric characteristics in order to reduce all kinds of distortions to a minimum.

Research and development programs are also underway with the aim of producing antennae capable of operating in more than one frequency band with the requisite degree of precision. The availability of multifrequency antennae will succeed in considerably reducing both production and running costs.

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ERICSSON PROPOSES ACCORD WITH CGCT ON SWITCHING EXCHANGES

Paris LA TRIBUNE DE L'ECONOMIE in French 19 Dec 85 p 6

[Article by Eric Rohde: "Ericsson Wants to Create a Consortium Around CGCT with Bull and 'JS'"]

[Text] A new item will have to be added to the telephonic and international alliance projects file: the Swedish [corporation] Ericsson is ready to return to France and work with the CGCT. It was known that Claude Vincent, the PDG of this nationalized corporation had had several conversations with the directors of the Swedish multinational. It is also known that the authorities recently asked him to put an end to these negotiations, considered incompatible with the proposed alliance between ATT-Philips and the CGE, in which, as we know, the CGCT [Compagnie Generale de Constructions Telephoniques] is involved.

What we did not know, on the other hand, is that, as early as November 1984, Ericsson had proposed a return to France (from which it had been ousted in 1977 at the time the telephone industries were made French). The first approach was made at a reception at the Swedish embassy to which Louis Mexandeau had been invited. Nearly a year later, this oral proposal was repeated and clarified in a letter sent by Bjorn Svedberg, Ericsson's PDG, to Edith Cresson, the French minister of industrial deployment and foreign trade. A meeting also took place last November between the company representative and the minister.

What does Ericsson propose? The Swedish group does not conceal the fact that what interests it in France is the share of the public equipment market currently being held by the CGCT: the famous 16 percent at the heart of the CGE-ATT-Philips negotiations. The leaders of the Swedish group are eager not to clash with the authorities--who recently made official their intention to pursue negotiations with ATT-Philipps--by publicly making a counterproposal. Nevertheless, that is indeed what is involved.

To Export 50 Percent

Like ATT-Philips, Ericsson is proposing cooperation with the CGCT for the manufacture of these public switching exchanges in France. But its action is more subtle. On the one hand, Ericsson explains from the outset that it is willing to develop fully the CGCT's production capacities in this field; that

is to say, some 300,000 lines per year. "We could export half of these to one of the 62 markets in which we have won positions throughout the world," Karl Axel Lunell, the Ericsson vice president, explains.

"Ericsson is equally interested in the very considerable research and development potential that currently exists in the CGCT. One of the best in Europe. We might use it, for example, in perfecting our AXE electronic exchange according to American standards." And there again the idea of penetrating the American market... Ericsson, for its part--after the Canadian Northern Telecom, the American ITT and the French Alcatel-Thomson--is determined to force open the doors of the world's foremost market.

The Swedish multinational is also rather cleverly advancing the idea of creating around the CGCT a genuine European consortium in the telecommunications field. With Bull, the French computer manufacturer, and another French [firm] specializing in business communications, Jeumont Schneider or Matra. Companies whose interest in a resumption of certain CGCT activities is already known (LA TRIBUNE of 28 September).

The fact that Ericsson is already present in business telephonics and bureaucracy since its taking back of Data Saab and Facit, and in data processing through an alliance with American Honeywell (an ally of Bull), is not a detriment, according to Lunell. "We might be able to find synergies among ourselves."

If the relevance of such a European industrial group--with extensions across the Atlantic--still requires verification, this proposal by Ericsson cannot fail to have some political impact at a time when the authorities are showing themselves reluctant or hesitant to open France's doors to ATT.

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FRANCE

COMMERCIAL RADIO TO BROADCAST ON FM

Paris LE MONDE in French 3 Jan 86 p 18

[Article by Annick Cojean]

[Text] RTL [Radio-Television of Luxembourg], Europe 1, RMC [Radio Monte Carlo], and Sud Radio [Southern Radio Station] will be authorized before mid-January 1986 to broadcast their programs on frequency modulation. Two frequencies made available by the Army for this purpose--probably 104.3 and 104.7 MHz--will be placed at their disposal in some 30 cities, thus obliging the four radio stations to share the territory and adhere to the present limits of their respective broadcast zone.

What a fuss, what a to-do if the decision to make FM bands available to the major commercial radio stations had been made public only 3 or 4 years ago. FM was then perceived as the opening of the auxiliary, community, and nonprofit stations, a universe of creation that it was appropriate to protect from the commercial pursuits and concerns of the profit-making radio stations, held in contempt by the prime minister of that time, Pierre Mauroy, and whose major private AM radio stations represented the prototype.

But the pressure of events and uses soon disturbed this unrealistic vision: The growing success of the new radio stations, the gradual use of advertising, and the constitution of networks have transformed FM into a new medium, flexible, youthful, endowed with an ease of listening that the major radio stations will never be able to match. FM became an important asset to seduce young listeners who are increasingly demanding in terms of quality of sound, to entice advertisers and announcers definitively won over, despite the persisting high cost of campaigns, by the rosy future of FM.

Rightly concerned, the major radio stations then argued their case: What is the use of new stations, the creation of new subsidies, if the result involves the demise of the earlier radio stations? Is FM the wave of the future? Then there should be open competition in the name of the principle of equality of opportunity among radio stations. The argument convinced SOFIRAD [Financial Company for Radio], a state holding company which controls Europe 1, RMC, and Sud Radio and which was directly concerned with the financial soundness of its affiliates, and the political decision was made some months ago.

Difficult Discussions

What remained simply was to define its methods of implementation. Which frequencies were to be assigned to the peripheral stations when the entire FM band was saturated and the higher authority found itself constrained to refuse applications for broadcast authorization on the single grounds of a shortage of wavelength frequencies? And what to do so that these radio stations have available the same single FM frequency in the entire territory? The solution was found in the expansion of the band which stops today at 104 MHz and the start of negotiations with the Army, which has title to the 104-108 MHz wavelength.

Discussions were slow and difficult, since the 104-108 MHz band was still being used in some regions at the time of military maneuvers; but the secretariat of state in charge of communication technology ended up by securing the two frequencies that it was insistently demanding, namely 104.3 and 104.7 MHz. These are two frequencies that became available throughout the territory and which the three peripheral stations and Sud Radio will have to share.

Undoubtedly, these are two desirable frequencies, but insufficient to satisfy needs. RMC, which ardently hoped to reach Paris with its broadcasts, and the RTL, which hoped to broadcast in the cities of southern France, saw their applications turned down. "The hour for deregulation has not arrived," it was decided. "The only way to emerge from this situation is to respect the existing status quo as regards the respective broadcast zones." Europe 1 and RTL will broadcast using FM north of a line running from Bordeaux to Lyons to Grenoble. Sud Radio and especially RMC will operate in the south. This division obviates the need for the two affiliates of SOFIRAD, namely, Europe 1 and RMC, to compete but does not completely satisfy RTL, which refuses to accept its exclusion from the south as being justified. The secretariat of state, which does not wish to become involved in city-to-city bargaining, feels that "it is up to the radio stations to agree among themselves."

The sharing of the wavelengths is touchy, especially for some "borderline cities" such as Grenoble, Bordeaux, or Clermont-Ferrand, from which one of the three peripheral radio stations will necessarily be excluded. But each of the interlocutors is concerned not to delay a measure whose principle they find highly gratifying. Once the partners are agreed on the distribution of the zones and the methods of their broadcast by TDF in some 30 cities, the government will sign an agreement with each of the four radio stations. A date? By 15 January 1986, it is strongly hoped on both sides, with Europe 1 being ready to broadcast on FM through its own capabilities if by chance the date should again be postponed.

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FRANCE

FUTURE STRATEGY FOR TELEPHONE INDUSTRY DISCUSSED

Paris LE FIGARO in French 14-15 Dec 85 p 17

[Text] To understand new developments in the current negotiations between national and international telephone companies, we must first explain what French policy in telecommunications is going to be.

Barring the unexpected reservations voiced yesterday by Mr. Chevenement, there has nearly been a consensus ever since Michel Noir, national secretary of the RPR in charge of the industry, said that "the head of a firm is in the best position to conduct its international strategy."

Many people took this to mean that the opposition was dropping the criticism leveled at Mr Fabius that he was abandoning a French group to the Americans.

For the public telephone companies, there are two policies, one short-term and one long-term.

a) In the short term, Alcatel Thomson will have a hard time penetrating the American market. It is essential for it to do so. ATT has suggested americanizing one of its companies. However, since deregulation in the United States, every company is free to buy the equipment it wishes, and no guarantees can be given.

Likewise, ATT, which obtains in turn the approval of its exchanges, has no assurance that the PTT's will buy from it, since the orders are approved by the legislature every year.

So Mrs Cresson wrote to the ATT president confirming the preliminary agreement signed by Mr Pebereau on the following conditions: The automated switchboard must be compatible with the French network (the PTT's will have completed the tests by 15 February) and sold at the same price as domestic equipment (they will be manufactured by the French CGCT factory, which will export an amount similar to that produced by our network at a maximum of 16 percent of the government contracts). In the face of criticism, Georges Pebereau put forward "his arguments." According to him, the critical European dimension had to be achieved, which explains the merger between Cit Alcatel and Thomson (the English and the Italians are now in the process of regrouping in the same way).

To attack the American market, we need to have a partner: we may as well join up with the number one U.S. telephone company, ATT, while maintaining our technological and commercial independence. We cannot compete internationally and keep our own market totally closed.

There are risks, but there are also advantages: for instance, the CGE is going to make wireless beams for ATT and Philips and fill this slot.

b) In the long run, ATT will not be a partner but a competitor. There have been technical agreements for a year between the members of the "gang of four," Alcatel (France), Italtel (Italy), Plessey (Great Britain) and Siemens (Germany), to make way for the "European telephone exchange of the next generation." We must be absolutely sure that the French do not lag behind the Americans, as manufacturing products under license would prevent access to the world market.

Confusion

But there is also the private telephone industry. The CGCT, which will build the public exchanges for ATT, intends to joint with Philips for the private networks.

The CGCT president is consulting other potential partners. He had an offer from a group including Jeumont Schneider, Bull and the German firm Bosch-Telenorma, and another from Matra. It is very probable that giants such as ITT, whose president has vowed, "I will return to France," Northern, Plessey, or Siemens are also interested in the opening of the French market.

And, as the final accords between ATT and CGE will not be signed until after the lengthy technology transfer papers are drafted, which will take nearly 3 months, one of these monsters can always submit a proposal to the French government which is more interesting than ATT's, one that would cover both a public switchboard and the private telephone industry.

Could this be why Mr Fabius, who is satisfied with the protocol signed between ATT and Pebereau in June, has done nothing to speed things up, to say the least?

All of this confusion is surprising. But one must first understand that the stakes are enormous. For employment, and to obtain a share of a colossal world market, which will amount to $90 billion a year by 1988.

We must also consider the fact that the telephone industry used to be protected in all countries. The break up of the ATT monopoly led to a number of significant lawsuits by the Department of Justice, notably, while forty other suits involved the American group and various private firms as adversaries. There was a similar movement in the United Kingdom and Japan. It is not easy to leave the soft pillow of a government administration which reserved its orders for local industries. The nationalized company which used to benefit from it is demanding a more liberal policy, while private industry expects government intervention. What a paradox!

But this great debate was to be expected.

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FRANCE

ARIANE DELAYS POSTPONE TDF-1 LAUNCH UNTIL LATE 1986

Paris AFP SCIENCES in French 28 Nov 85 p 23

[Text] The launch of the French TDF-1 direct television satellite will probably be delayed by several months, being moved from July 1986 to October or November 1986 because of rescheduling in Ariane launches, in the opinion of specialists.

After the failure of the 15th launch of the European launcher rocket last 13 September, the Arianespace company has provided for changes in its launch schedule and the new satellite launch dates will be made public within the coming weeks.

However, agreed aerospace sources, it is now thought that the launch of TDF-1 will not occur before Fall 1986, in October or November, although it had been planned for July 1986. At Arianespace, this information has not been denied, any comments being reserved until the publication of the new schedule.

Similarly, the twin-satellite TV-SAT of the FRG, which was to be launched this coming May, must wait until June or July before taking its working place in orbit.

The launch of TDF-1, initially planned for 1985, had already been rescheduled because of design difficulties with some of its components (Thomson power amplifier travelling wave tubes). The satellite may, however, be launched with German-made (AEG-Telefunken) replacement tubes.

This first French television-broadcasting satellite, which will be followed in 1988 by TDF-2, represents a budget estimated at more than 500 million current francs.

Statements by Aerospatiale

The TDF-1 satellite is currently being assembled at the Aerospatiale factory in Cannes, stated a spokesperson for the French company. "The construction will occur according to the schedule promised to TDF's customers, that is, it will be ready to deliver in mid-July 1986," he added.

Concerning the design problems with some of the satellite components, Aerospatiale indicated that "the evaluation problem with the Thomson tubes (power

amplifier travelling wave tubes) was circumvented by the installation of adaptors equally capable of accepting the AEG Telefunken or the Thomson tubes, if they are evaluated within a reasonable amount of time."

Finally, with regard to the launch schedule, the spokesperson emphasized that the launch delays which have been noted were not imputable to the satellite manufacturer, but instead to failures of the Ariane rocket motor engineers.

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FRANCE

## BRIEFS

'INTELLIGENT' MINITEL IN 1987--A new generation of Minitels will appear at the beginning of 1987. The PTT has just ordered the first lot of "Minitel 20's" whose functions are strangely similar to those of professional microcomputers. Although the manufacturer and the PTT remain quite circumspect about its characteristics, we know that the Minitel 20 will be equipped with an Intel 8086 microprocessor, just as the IBM PC and IBM compatibles are. It will have a minimum of 256,000 characters of read-write memory, and will have several "slots," which allow various peripherals (additional memory, diskette readers, hard readers, hard disks, etc.) to be connected, which each user can do as he pleases. The big question is: Who will market this "super Minitel"? Certainly such a machine will not be distributed free to the telephone subscribers, as the Minitel 1 is. But is the sale of microcomputers among the duties of the administration of the post office and telecommunications public utility? The answer is still under study by the PTT. [Text] [Paris SCIENCES & AVENIR in French Nov 85 p 13] 13146/12859

CSO: 5500/2551

## GREEN LIGHT FOR SATELLITE TV

Reykjavik NEWS FROM ICELAND in English Feb 86 p 24

[Text]

Satellite TV is on its way to Iceland, under a ministry of commerce regulation authorizing individuals and groups to set up dishes for receiving programmes beamed from abroad.

The new regulation is in fact more an official confirmation of an existing pattern. Four private antennas already stand out against the Icelandic skyline, including one on top of Reykjavik's Hotel Holt and another at the Soviet embassy, the source of a minor diplomatic incident when it appeared two years ago.

TV fans in search of more than the 30 hours a week screened by the State Television can now tune in to material from Europe, once the ministry is satisfied that viewing rights have been secured.

Several commercial television stations are about to go on the air under a new law which took effect in the New Year. The rights to commercial distribution of satellite material, however, whether by private or public bodies, remains with the Post and Telecommunications Administration, which will play a supervisory role in the issue of permits.

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CSO: 5500/2589

## BRIEFS

ATT-PHILLIPS IN RACE--Eindhoven--ATT-Philips Telecommunications (APT) will take part in 10 of the 32 projects of the European telecommunications program "RACE." The two firms will jointly have available a total budget of 11.5 million florins, or more than 31 million francs. The European Community is assuming responsibility for half of the 270 million francs represented by the total cost of the 32 projects of the first phase of "RACE" research. The other half is invested by businessmen or establishments that wish to develop part of these projects. The first phase, which has already begun, will continue for a year. At the end of this period the European Council of Ministers will have to announce its final approval regarding the choice of a data communications network for integration of services (RNIS). ATT-Philips is particularly interested in microelectronics and optoelectronics, as well as terminals. [By Catherine Le Bailly] [Text] [Paris LA TRIBUNE DE L'ECONOMIE in French 19 Dec 85 p 6] 9434/12948

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SPAIN

INTELSA OPENS NEW RESEARCH CENTER

Madrid EL PAIS in Spanish 22 Jan 86 p 5

[Article by Azucena Criado]

[Text] This week INTELSA [Telecommunications Industries, Inc.], which is affiliated with Ericsson, the Swedish multinational, is opening a new research and development center. With this center it will change from being a recipient of technology from the parent firm in Sweden to the opposite role: henceforth it will provide technology for the Ericsson group in a number of basic lines. Its principal sphere of activity will be the development of telephone exchanges using the AXE system.

The establishment of this new center in Madrid cost over 200 million pesetas. In its initial phase, it will have a research staff of 60, which will be expanded to up to 120 research scientists within the next 3 years. Most of them will be trained in Ericsson's research centers in other countries. During this company's lengthy history--it is over 100 years old--it has always concentrated on the development of new internationally oriented communications systems. At present the AXE telephone exchange is manufactured under the Ericsson license in over 20 countries. In fact, only 5 percent of the firm's total sales are made in Sweden.

Combined Networks

Just a month ago, the National Telephone Company of Spain installed an AXE 10 digital network on an experimental basis. This is considered to be a step toward the possibility of providing access to multiple services from a customer's single line. The model installed by the National Telephone Company includes a digital telephone which, in addition to ordinary phone conversations, provides access to the number of the caller, which is identified and displayed on a screen.

Messages can be sent on this screen, and at any moment, by reading the counter, the total number of calls made can be determined. It is also possible to incorporate video and teletext terminals to provide access to data bases and to exchange documents between customers in different areas, even if they are not connected to a digital exchange.

Experts say that very few traditional telephone networks can be converted into digital networks immediately, so that combined networks will exist for quite some time.

The AXE system has already been installed in about 25 countries, partly because it is very versatile in adapting to existing networks. With its new processing system, AXE exchanges can handle 800,000 calls in 1 hour.

Technological progress in telecommunications is also concentrating on the use of optical transmission methods because of the enormous quantity of information which can be carried by optical fibers. With its annual production of 125,000 kilometers of optical fiber cable, Ericsson is in a strong position in the development and use of this technology.

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CSO: 5500/2573

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