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CONTENTS

21 OCTOBER 1988

CHINA

China To Provide Services for Foreign Satellites [CEI Database 6 Oct]	1
Television Receiving Stations Planned in Tibet	1
Satellite Technology Reaches Advanced Levels	1
Weather Satellite Functioning Well	1
Shanghai Commends Weather Satellite Technology	2
Beijing TV Shows Jiuquan Satellite Launch Site	2
Achievements of Jiuquan Satellite Center Viewed	2
Center at 'Forefront' [RENMIN RIBAO 6 Oct]	3
Bid To Build Satellite Stations Successful	3
Satellites on Show at Export Commodities Fair [CHINA DAILY 15 Oct]	4
Inefficiency of Telecommunications Noted	4
'Expert' Views Use of Meteorological Satellites	4
[Hong Kong LIAOWANG OVERSEAS EDITION 19 Sep]	4
'Revealing' Visit to Jiuquan Satellite Center [RENMIN RIBAO 9 Oct]	6

EAST ASIA

AUSTRALIA

Intelsat Contract	9
-------------------	---

HONG KONG

Government Publishes Regulations for Cable Television	9
Reversal on Foreign Ownership [SOUTH CHINA MORNING POST 7 Sep]	9
License, Other Requirements [SOUTH CHINA MORNING POST 20 Sep]	9
Cable TV Parameters, Requirements Spelled Out	10
Government Channel [SOUTH CHINA MORNING POST 24 Aug]	10
Other Official Plans [Hong Kong HONGKONG STANDARD 2 Sep]	11
Officials Voice Concern Over Impact of Macao TV [HONGKONG STANDARD 28 Aug]	11
HK-TVB Will Sever Ties to TV Broadcasts Subsidiary	12
[SOUTH CHINA MORNING POST 9 Sep]	12

EAST EUROPE

BULGARIA

Future Application of Satellite Communications Technology [SOFIA NEWS 24 Aug]	13
---	----

LATIN AMERICA

BARBADOS

Prime Minister Names Directors of Broadcasting Authority [CANAL]	14
--	----

GRENADA

Joint Venture Firm To Handle All Communications [Bridgetown SUNDAY SUN 11 Sep]	14
--	----

JAMAICA

Broadcasting Licenses Awarded Under Divestment Policy	[CANA]	14
Public TV Broadcasting, Other Developments in Spotlight	[THE DAILY GLEANER 7 Sep]	14

NEAR EAST & SOUTH ASIA

INDIA

Panel Studying Failure of 13 Jul Satellite Flight	[PATRIOT 22 Aug]	16
Satellite Facilitates Regional Television Service	[THE HINDU 16 Aug]	16
Importance of INSAT-C to Telecommunications Told	[THE HINDU 6 Aug]	17
INSAT-1C Satellite 'Made Operational'		18
9-Year Life Span for INSAT-1C		18
Production of 4,000-Line Phone Exchange Planned	[THE HINDU 5 Aug]	18

IRAN

Izeh Radio Relay Becomes Operational	[RESALAT 12 Sep]	19
--------------------------------------	------------------	----

WEST EUROPE

EUROPEAN AFFAIRS

PTT Deregulation in EC Criticized	[Amsterdam COMPUTABLE 6 May]	20
-----------------------------------	------------------------------	----

FEDERAL REPUBLIC OF GERMANY

Bundespost To Build Inmarsat Ground Station in Raisting	[FRANKFURTER ZEITUNG/BLICK DURCH DIE WIRTSCHAFT 1 Sep]	20
---	--	----

FRANCE

New TV Channel To Serve Lehman Basin	[LE FIGARO-ECO 8 Aug]	21
--------------------------------------	-----------------------	----

SWEDEN

Purchase of Ericsson Switching System	[Stockholm DAGENS NYHETER 26 Sep]	21
---------------------------------------	-----------------------------------	----

UNITED KINGDOM

Broadcasting Panel Proposes Ethnic Radio Stations	[THE DAILY TELEGRAPH 14 Sep]	22
---	------------------------------	----

China To Provide Services for Foreign Satellites
HK0610153588 Beijing CEI Database in English
6 Oct 88

[Text] Beijing (CEI)—Directors of the Chinese Launching, Monitoring and Control System Department of the National Defense Science and Technology Commission and the International Marine Satellite Organization have recently signed a contract in London, Britain.

According to the contract, the Chinese Satellite Launching, Monitoring and Control System Department will provide direct service for marine satellite over Pacific area under International Marine Satellite Organization.

The Chinese partner will build a marine coastal ground satellite station for satellite tracking, monitoring and controlling and will take charge of operation, supporting work and management of the control system. The station will be completed and begin service in the second half of 1990.

Television Receiving Stations Planned in Tibet
OW0910050288 Beijing XINHUA Domestic Service in Chinese
0725 GMT 8 Oct 88

[By correspondent Su Rong]

[Text] Lhasa, 8 Oct (XINHUA)—The state will appropriate special funds to build a number of ground stations to receive satellite-transmitted television programs for Frontier Guards in Tibet. With the completion of these stations, the Frontier Guards stationed at mountain outposts will be able to watch the Central Television Station's programs all year round. This will put an end to the period during which all that these Frontier Guards can look at are their fellow soldiers in the daytime and stars in the sky at night.

This project, aimed at receiving satellite-transmitted television programs on the plateau, consists of 80 3-meter-tall [san mi 0005 4717] ground receiving stations that can be disassembled. The entire project is expected to be completed in 3 years. While 18 stations will be built this year, 50 others will be built in 1989. The work for 1990 will be the construction of the remaining 12 stations and the general inspection of the entire project.

For the purpose of building this project to enable officers and men to watch television on the plateau, a joint work team was formed by responsible comrades of the departments concerned of the Tibet Military District and the Tibet Autonomous Region. Since the end of last year, the team has traveled some 6,000 kilometers to go deep into the frontier areas to make on-site surveys. Now, the locations of the ground receiving stations for PLA units on the first and second lines have been selected. Each year, based on the progress of the project, the State Planning Commission will appropriate funds for the PLA units involved in the construction of these stations.

Satellite Technology Reaches Advanced Levels
HK1310150188 Beijing ZHONGGUO XINWEN SHE
in Chinese 1020 GMT 12 Oct 88

[Report: "Photographic Technology Applied by China's Satellite 'Fengyun 1' in Producing Cloud Charts Is Among the World's Most Advanced"—ZHONGGUO XINWEN SHE headline]

[Text] Beijing, 12 Oct (ZHONGGUO XINWEN SHE)—According to the Ministry of Astronautics Industry, the clarity and resolution ratio of the cloud charts transmitted by the meteorological satellite "Fengyun 1" which is now under operation in the space has surpassed that of the Soviet Union and Japan and reached the NOAA level of the United States in the 1980's.

Launched on 7 September, China's meteorological satellite "Fengyun 1" transmitted cloud charts to the earth on the same day.

On 20 September, the satellite turned on its infra-red scanning channel which could take earth's surface pictures at night. It is capable of telemetering the earth's surface, cloud charts, ocean surface, and earth's surface temperature.

In addition to meteorology, information transmitted by the satellite is also extensively applied in aviation, navigation, communications, agriculture, forestry, fishery, port construction, and environment monitoring.

When all instruments are turned on, the satellite can also perform the functions of an ocean satellite which includes surveying ocean water color, chlorophyll, and silt content. Experts say that the new design of the satellite which has dual functions is unprecedented in the history of astronautics at home and abroad.

Weather Satellite Functioning Well
OW1410132488 Beijing XINHUA Domestic Service in Chinese
0654 GMT 12 Oct 88

[By reporter Zhang Gaopeng and correspondent Wang Junxin]

[Text] Shanghai, 12 Oct (XINHUA)—The "Fengyun No.1" solar synchronized meteorological satellite, electric power source system for which was supplied by the Xinyu electric power source plant of the Shanghai astronautical base, had made 480 revolutions around the earth as of 1200 on 1 October. It has transmitted thousands and thousands of cloud maps to various parts of the world. According to a report by the Xian Satellite Survey and Control Center, the electric power source system on the satellite is functioning normally and well. This shows that China's astronautical electric power source technology has attained the world's advanced level.

Shanghai Commends Weather Satellite Technology

*OW0410174088 Shanghai City Service in Mandarin
2300 GMT 29 Sep 88*

[Text] By yesterday afternoon, Fengyun No 1, the first meteorological satellite launched by China on 7 September, has circled the globe 315 times to cover the entire Earth once daily. The quality of cloud chart pictures it has sent back to Earth has always been good. This shows that China's space remote sensing technology has reached the advanced level of the 1980's.

Yesterday morning the Shanghai Branch Academy of the Chinese Academy of Sciences held a meeting to commend scientific research personnel of the Shanghai Technological Physics Institute for their meritorious service in developing and manufacturing the scanning radiation device of the meteorological satellite.

(Gong Huizhen), researcher of the Shanghai Machinery Institute and Assistant Chief Design Engineer of the remote sensing system of Fengyun No 1, was on hand to brief the participants on the 15 years of hard work in development of Fengyun No 1. According to his briefing, the Machinery Institute shouldered the tasks of producing the VHF scanning radiation device and a high-precision infrared device for controlling the satellite's attitude, which are known to be the most difficult, most demanding, and most complicated job in the entire development of Fengyun No 1.

The VHF scanning radiation device, which is composed of 11 component parts and is located in the satellite's core detector, can scan the Earth's surface at a speed of six times per second at an altitude of 900 km above the Earth covering a strip of the Earth's surface some 2,860 km in width to obtain cloud chart data of the entire Earth. The scientific and technological personnel of the Machinery Institute continuously worked for several thousand days and nights and finally succeeded in greatly upgrading the level of the scanner and raising the sharpness and resolving power of satellite pictures by nearly 10 times, reaching the U.S. level of the 1980's.

Beijing TV Shows Jiuquan Satellite Launch Site

[Editorial Report] Beijing Television Service in Mandarin, in its 1100 GMT cast on 8 October, carries a 1.5-minute video report on the Jiuquan Satellite Launching Center.

The video begins with an overhead shot of a launching pad, cutting to short color and black-and-white clips of launches for rockets of varying sizes and a black-and-white shot of a cloud rising after a nuclear explosion.

In voice over video, the announcer says: The Jiuquan Satellite Launching Center was built in 1958. On 5 November 1960 it successfully launched China's first

self-manufactured missile. Afterward it successfully carried out a series of major test launches, including nuclear missiles, long-range carrier rockets, and recoverable satellites. Over the past 30 years the center has successfully launched 19 satellites of all types and tested nearly 1,000 carrier rockets, as well as strategic and tactical missiles. Its rate of successful launches has approached that of advanced countries.

He adds: Because of its accuracy and high rate of success, the center has opened the window for China's astronautics technology to compete with the rest of the world.

Video then shows medium shots of a young Chinese woman in uniform talking with three French scientists, all working with small computers and other equipment. Report concludes with medium shot of rocket launch, with announcer saying in voice over video that experts and customers from four countries attended an August launch of a payload for a FRG company.

Achievements of Jiuquan Satellite Center Viewed *OW0910042588 Beijing Domestic Service in Mandarin 1030 GMT 5 Oct 88*

[Dispatch from the Jiuquan Satellite Center by station reporters (Su Kuoshan) and (Liu Manxue)]

[Excerpt] The way to the sky starts from here. Since its inauguration 30 years ago, personnel in Jiuquan, China's largest satellite launch center, have worked hard, surmounted innumerable difficulties through their own efforts, and scored great successes. As of now, the center, in addition to having successfully launched 19 manmade satellites of various types, has also launched nearly 1,000 carrier rockets and strategic and tactical missiles of all types. Its success rate of 87 percent ranks among the world's advanced levels. In recent years, it has also won an international reputation by successfully performing carrying [da zai] services for foreign customers.

On 10 September 1960, the Jiuquan Satellite Launch Center opened the first page in the annals of China's development of guided missiles by successfully firing a short-range guided ballistic missile. After that, the center conducted China's first test of nuclear guided missiles and launched China's first manmade earth satellite "Dongfanghong No 1," the first retrievable remote sensing satellite, the first intercontinental guided missile, and the first "three satellites in one rocket." Since the 1975 launch of the first retrievable satellite, the center has achieved a 100 percent retrievable success rate by launching and retrieving 11 satellites. These spectacular achievements have enhanced the prestige of our military and our nation and have had a profound impact internationally.

The achievements of the Jiuquan Satellite Launch Center are the embodiment of the painstaking labor of generations of scientific and technological personnel. Natural conditions here were harsh when the center was

first set up. As a result of the withdrawal of foreign experts, both data and equipment were lacking. Scientific and technological personnel at the center made a determined effort and carried out a series of technological innovations to ensure the successful completion of the launch tasks. In the past 10 years alone, they have received awards for more than 400 achievements in scientific and technology research. An electronic system they developed has enabled the center to fully automate launching, monitoring, and control, and has saved the state a great amount of funds. [passage omitted on how scientific and technological personnel endured the hardships of desert weather and dedicated themselves to building the center]

Center at 'Forefront'

*HK1210075188 Beijing RENMIN RIBAO in Chinese
6 Oct 88 p 3*

[Report by He Huangbiao (0149 7806 1753): "The Successful Launching Rate of China's Jiuquan Satellite Center Ranks in the Forefront of Advanced World Levels"]

[Text] Through hard work the engineers, technological personnel, cadres, and soldiers of the Jiuquan satellite launching center have improved the center's successful launching rate, which now ranks in the forefront of advanced world levels and is highly appreciated by foreign customers.

This launching center is situated in Haohan Gebi covering Ejina Banner in Alxa League of Inner Mongolia and Jinta County of Jiuquan Prefecture in Gansu Province. It is the earliest and largest missile and satellite experimental base built by China undertaking arduous tasks such as testing and launching missiles and satellites, conducting flight surveys on powered phases, and post-processing experimental data. For the first time in 30 years it successfully launched a short-range missile by means of Chinese-made fuels, thereby opening up a new chapter in the country's history of missile experiments. Subsequently, the center launched the first Chinese-made nuclear missile, the first satellite "Dongfanghong," the first long-range carrier rocket, the carrier rocket "Yijian Sanxing," and the first recoverable satellite. Then it began to provide launching services for foreign countries. Statistics suggest that the center has successfully launched 19 satellites of various types, many types of carrier rockets, and almost 1,000 strategic and tactical missiles, registering a successful launching rate of 87 percent. It has also launched 11 recoverable satellites, with a successful rate of 100 percent, ranking in the forefront of advanced world levels.

The center has acquired a high successful launching rate because its engineers, technological personnel, officers, and soldiers have a perfect mastery of technology and a high sense of responsibility. Of the many top students who graduated from famous universities and were assigned to work here when the center just started its

construction, 40 or so are still devoting their efforts to all types of experiments. Several thousand graduates from higher learning institutions and secondary technical schools assigned here have now become backbone forces in many experimental fields.

Another reason why the center has acquired a high successful launching rate is that it has continuously transformed its equipment, conducted technical innovations, updated the knowledge of its engineers and technological personnel, and enhanced their scientific and technological levels. According to incomplete statistics, they made 404 scientific and technological achievements from 1976 to 1987, 107 of which won awards from the state, the Army, and the Commission of Science, Technology, and Industry for National Defense. Apart from enhancing the scientific and technological levels of the center's personnel, these advanced achievements have also improved the utilization rate and reliability of its equipment and increased its ability to conduct experiments, thereby turning the center into a world-famous, comprehensive satellite launching base that has made great contributions to the motherland's space flight technology.

Following the development of reform and opening up to the world, this center has arranged reception for visits by delegations from the United States, France, the FRG, and Sweden. From 1987 to 1988, the center provided satellite launching services for four companies from France and the FRG and made satisfactory successes in this respect. President (Hoffman) of the FRG space exploration corporation sent a telegram to the Jiuquan satellite launching center on 18 August saying: "Your technological achievements have made an unforgettable impression on us. This is the result of hard work of the highly responsible working personnel."

Bid To Build Satellite Stations Successful
*OW1510062688 Beijing XINHUA in English
1444 GMT 14 Oct 88*

[Text] Beijing, October 14 (XINHUA)—The Beijing Telecommunications Administration has won two contracts to build two satellite monitoring and data stations in Asia in an international tender held recently by the International Telecommunications Earth Satellite Organization, an official from the Ministry of Posts and Telecommunications announced here today.

This is the first time China has won an international bid in this field, he said, adding that the contracts became effective on October 1.

According to the official, the stations are expected to be completed by the beginning of 1991.

After completion, he said, the monitoring and data stations will offer such services as tracking, remote sensing and monitoring for international telecommunications satellites stationed above the Pacific Ocean and the Indian Ocean.

Satellites on Show at Export Commodities Fair
HK1510045488 Beijing CHINA DAILY in English
15 Oct 88 p 2

[By staff reporters Yuan Zhou and Wu Caibin]

[Text] Guangzhou—The Chinese-made Long March satellites and launchers are to go on show for the first time at the 64th Chinese Export Commodities Fair, which opens here today.

The China Great Wall Industry Corporation will put four of its launch vehicle models, two communication satellite models and a weather satellite on display at the autumn fair. Two of the engines produced by the corporation have been used to launch all but one of the Chinese satellites, and these will also be on display.

"We hope to use the fair to co-operate with international customers on space technology and services," said corporation vice president Lin Jingliang.

New products, ranging from a robot machine to high-tech satellites, account for more than 20 per cent of the commodities at the bi-annual export fair, according to officials at the China Foreign Trade Centre here.

More than 38,000 international business people, a 10 per cent increase over the number at the Guangzhou spring fair, are expected to attend. The number of Chinese business representatives attending from throughout the country is expected to exceed 11,000, a 30 per cent increase over the figure at last year's autumn fair.

To help business people from Taiwan, the Foreign Trade Centre has opened a special business consultation service. About 300 Taiwanese business people visited the last autumn fair, and 800 came to the spring fair.

"The prospects for completing business transactions look very good in view of the growing numbers of business people attending these fairs and ample supplies of goods," said an official at the centre.

He predicted that this fair would beat the sales figure of \$4.7 billion achieved at the last autumn fair. Many trade officials here even hope it will catch up with the \$5.27 billion record set by the spring fair.

The sponsors have adopted measures to encourage the completion of more business transactions at the fair. A new 4,000-square-metre exhibition gallery has been built to house several trading delegations.

There will also be tighter controls on people entering the 12-gallery fair complex just for sightseeing. The trading delegations will be required to apply and pay for any extra entrance permits for their staff.

Inefficiency of Telecommunications Noted
OW0510191588 Beijing XINHUA in English
0705 GMT 5 Oct 88

[Text] Beijing, October 5 (XINHUA)—About one-third of all bus and train travellers on official business could save themselves the trouble and conduct their business by telephone or cable, according to a survey conducted jointly by the Ministry of Posts and Telecommunications.

But this modern technology, which is quick, efficient and cheap in transmitting messages, has long been ignored in China, PEOPLE'S DAILY reported today.

If more people telephoned rather than travelled to do their business, this would reduce the number of passengers using air transport by 40 percent, water transport by 30 percent and rail transport by almost one-half, according to a recent survey in 11 provinces and autonomous regions.

This would save China more than 10 billion yuan of administrative expenditures annually, the paper reported.

The paper called for more investment in telecommunications. The paper quoted one telephone subscriber as saying that it takes longer to make a call in the city than it does to travel within the city. Other people in Beijing said it often takes three to four hours to be connected with Shanghai.

'Expert' Views Use of Meteorological Satellites
HK0110052488 Hong Kong LIAOWANG OVERSEAS
EDITION in Chinese No 38, 19 Sep 88 pp 3-4

[Article by LIAOWANG reporter: "Space Technology Expert Sun Jiadong on Meteorological Satellites and the Use and Exploitation of Space"]

[Text] On 7 September when China's "Fengyun No 1" meteorological satellite entered orbit and started functioning, this reporter interviewed Professor Sun Jiadong, Vice Minister of the Aviation and Astronautics Industries and a famous space technology expert.

New Satellite, New Carrier Rocket, New Base

This reporter raised a question on the characteristics of the launching of the "Fengyun No 1" meteorological satellite by China, vice minister Sun Jiadong summarized them as: new satellite, new carrier rocket, and new base.

He said, since the 1960's, various countries have launched some 100 meteorological satellites. Space bureaus in the United States, Soviet Union, European countries, Japan, and even India and Brazil are developing their meteorological satellites. The special role of the application of the data collected by meteorological satellites is being fully displayed in weather forecasts, scientific research, professional meteorological services, providing meteorological assurance for military purposes, and other aspects. Over the past years, China has been using the data collected by meteorological satellites, and the science of meteorology has been promoted. With the widening of the applications of the data collected by meteorological satellites in the building up of the national economy, the demands on meteorological satellites have become greater. Therefore, in developing the "Fengyun No 1" meteorological satellite, successful experiences of foreign countries have been drawn upon and the new demands raised in the process of the development of China's meteorological satellites have also been taken into account. In choosing the means of remote control of the satellite, a scanning radiometer with high resolving power and multi-channels was chosen. In this way, China has leaped over two generations of products—radiometer with television image and radiometer with low resolving power—which were used by foreign countries in developing meteorological satellites. This satellite has adopted the system of transmitting information through images, and advanced digital technology. In order to ensure the quality of the images transmitted, the satellite has chosen a solar synchronous orbit, so that the images of all areas of the world it transmits when it moves along in orbit have the same brightness. It also employs a 3-axis stabilization control, so that a high degree of stability of the position of the satellite can be maintained. Apart from these, a positive multi-fold solar cell system, in which folds accounting to a large total area, are used to ensure the supply of electricity. The "Fengyun No 1" meteorological satellite has two high-resolving-power scanning radiometers, and five detection channels. It can therefore detect day and night cloud patterns, earth surface patterns, sea water patterns, patterns of water boundaries, sea water surface temperature, areas covered by ice, and vegetation.

On the so-called new rocket carrier and new base, he said: "Fengyun No 1" meteorological satellite was launched by the newly developed Changzheng No 4 carrier rocket. It is a regular grade-three carrier rocket, and has the capability of launching satellites which have a solar synchronous orbit. The launching of the Fengyun No 1 satellite was conducted at the Taiyuan launching base. Following the Jiuquan and the Xichang bases, the Taiyuan launching base is the third to be announced by China. The success of this launching proved that China has, in the initial stage, the capability of launching various types of satellites, and it can serve more domestic and foreign customers.

The Use and Exploitation of Space Should Be Strengthened

Vice minister Sun Jiadong told this reporter that space technology itself is a large system project, and to develop and launch meteorological satellites is a great, difficult and complicated task that can only be completed through concerted efforts contributed by many departments and with close coordination. After the launching of the meteorological satellite, more application systems should be developed, so that the social and economic returns of the satellite can be realized. Before the launching of the meteorological satellite, plenty of work has been done in the application aspect.

Therefore, the accuracy of weather forecasts in China has been raised continuously, in particular the capability of monitoring and detecting disastrous weather such as typhoons, rainstorms, strong convection thunderstorms, hailstones, and so on has apparently increased. The benefits are obvious. With the continual increase in the standard of analyzing and usage of the data collected by meteorological satellites, the scope of the application of the data collected by meteorological satellites has been expanded, and it can provide satellite images and data for various industries and activities of the national economy such as: building up of factories and mines, town planning, monitoring and detecting forest fires, fishing for aquatic items, port construction, surveying the coastal environment, detecting grasslands, agricultural area planning, estimating the output of agricultural products, studying regional geological structure, supervision over water supply, detecting hailstone distribution, and so on. The production and development of meteorological satellites have greatly promoted meteorological science, and in using meteorological satellites, meteorological science has promoted a higher level development of meteorological satellites.

Over recent years, China's space technology has become active as reform has brought it vitality. The benefits of the use and exploitation of space have gradually been shown; and attention has been paid to bringing into play the enthusiasm of various related departments, and international cooperation. The use and exploitation of space is a large system project, and the realms and investment scale it will involve will require the state to unify plans, to have unified coordination among related departments, and to have planned development at the state level. Apart from these, in some aspects, it will require close international cooperation, and will require the whole world to take joint action. These are the essential conditions for the use and exploitation of space. Only in this way can it bring into play its strong points, and obtain greater benefits.

Satellites Play an Effective Role in Forecasting Natural Disasters

Vice minister Sun Jiadong talked with this reporter on some questions concerning space technology, and precautions against disasters. Since ancient times, natural

disasters such as earthquakes, storms (hot whirlwinds, hurricanes, tornados, typhoons, and so on), tsunami, floods, landslides, mud-rock flows, volcano explosions, natural fires, draughts, and other disasters result from other natural factors such as plant diseases and insect pests like locusts have often brought serious suffering and threatened human lives. Particularly in the present world where large scale economic construction, the use and exploitation of land resources, and where the population has continuously increased and is highly concentrated, the damage brought by natural disasters to human beings is serious. To take precautions against natural disasters and to alleviate their effects is of important significance to human beings, in particular to developing countries. The Resolution No 169 passed by the United Nations' 42nd congress on 11 Dec 1987 decided to name the last 10 years, from 1990, of the 20th century as "International Decade for Alleviating Natural Disasters." I consider that satellites will become advanced tools in forecasting natural disasters in these 10 years, and space technology should make a contribution in this field.

He said, on the basis of the viewpoints of a system project, although different natural disasters are formed and their effects propagated in different ways, the processes whereby they are formed, occur, and develop are not isolated, and there is a certain degree of inherent connection among them. That means they are affecting and constraining each other, and they lead to the formation of each other. Serious results they have brought about are often similar, and the methods to be adopted to monitor and forecast them, and the emergency measures to be taken are interlinked. Therefore, the study on comprehensively forecasting and taking comprehensive precautions against natural disasters has become the current development trend of people in the world to fight and take precautions against natural disasters. The practice of the use of meteorological satellites proved that satellites are advanced tools in forecasting natural disasters.

On the basis of the use of the technology of meteorological satellites, satellites for detecting resources, oceanic satellites, and communication satellites, and with the means employed by land-surveying satellites, satellites for forecasting earthquakes and space physics satellites, it is possible that a comprehensive satellite for forecasting disasters on earth will be developed. It will play a significant role in monitoring and forecasting natural disasters and environmental pollution. In the use of space technology, a new subject of forecasting natural disasters by cross-scientific satellites will emerge, and this subject will in turn encourage the development of science and technology. With the help of these, precautionary measures could be taken to prevent natural disasters, to alleviate life and property damages brought about by natural disasters, and to reduce damages to the minimum. Sun Jiadong has also stressed and pointed out that in order to achieve this target, the use and exploitation of space should be especially strengthened, the

plans should be unified, cooperation among departments and subjects should be enhanced, and international cooperation should be strengthened. He strongly believes that space technology will definitely make positive contributions in the taking of precautions against natural disasters and in establishing a preliminary warning system.

'Revealing' Visit to Jiuquan Satellite Center
HK1310105388 Beijing RENMIN RIBAO in Chinese
9 Oct 88 p 3

[Article by RENMIN RIBAO reporter He Huangbiao (0149 7806 1753): "Revealing This Mysterious Place—A Visit to Jiuquan Satellite Launching Center"]

[Text] We got off the train at the Qingshui Station in the western part of Gansu Province and went on board another train to continue our trip to the headquarters of the Jiuquan Satellite Launching Center. The Jiuquan Satellite Launching Center is the oldest and biggest satellite launching center in our country. Our train traveled along a special railroad which cannot be found on a map of China. After going through more than 200 km of the vast Gobi Desert, we finally reached our destination.

The Jiuquan Satellite Launching Center is a mysterious place. Because of various reasons, this mysterious place has seldom been mentioned in our country's newspapers. This mysterious place has only been noted as "a certain satellite launching center in the western part of our motherland" in our country's newspapers. The hardships and difficulties experienced by people working in this mysterious place have seldom been mentioned in our country's newspapers, either. Very few people in the world know that the people working in this mysterious place have been quietly making important contributions to China's development over the past decades.

Now, it is time for us to reveal this mysterious place to the outside world.

Make Headway by Braving Hardships and Difficulties

The Jiuquan Satellite Launching Center consists of both the main area and the surrounding area. The main area of the Jiuquan Satellite Launching Center is situated between Jinta County of Jiuquan Prefecture of Gansu Province and the vast Gobi Desert in Ejin Banner of Alxa League of Inner Mongolia Autonomous Region. The surrounding area of the Jiuquan Satellite Launching Center extends from Gansu Province to the southernmost part of Xinjiang Uygur Autonomous Region where the Haohan Desert, which is also known as the "Death Zone," is situated.

"Numerous hardships and difficulties!" sighed the responsible person of the Jiuquan Satellite Launching Center with emotion. The responsible person of the Jiuquan Satellite Launching Center also said: "The

development of our country's astronautics industry met with a lot of difficulties and obstacles and was almost killed in its infancy in the early days."

China began to develop its own astronautics industry in 1958. According to the decision of the CPC Central Committee and the State Council, a batch of Red Army-men, who had taken part in the 25,000-li Long March; veteran Eighth Route Army-men, who had fought the Japanese aggressors in the green curtain of tall crops; veteran PLA men, who had overthrown the Jiang dynasty; members of the Chinese People's Volunteers, who had just returned to their motherland from the Korean battlefield; and a large number of outstanding scientific and technological personnel arrived at this uninhabited Gobi Desert in 1958. These people slept in the tents and worked hard in the extremely windy and dusty weather for over a year. Finally, they completed the construction of China's first rocket launching center.

However, just as they were preparing to launch the first rocket provided by a big country, the entire international situation changed. As a result, our heroic men working on China's first rocket launching center had to face enormous difficulties and endure various pressures.

In September of 1960, all the foreign experts sent by that big country left the rocket launching center. At that time, the Chinese scientific and technological personnel had not yet completely mastered the advanced rocket-launching technology. When leaving China's first rocket launching center, the foreign experts of that big country left only a rocket.

Our heroic rocket-launching contingent withstood such a big pressure and bravely faced up to this grave reality. At the rocket launching center, people could see such a slogan: "Work with one will to make our country strong!"

Only 17 days after the foreign experts left, a flash streaked across the sky. Our heroic men successfully launched the rocket left by the foreign experts into the space by using China-made fuel. Soon afterwards, our heroic men successfully launched the first China-made rocket into the space. After the first China-made rocket accurately reached its designated destination, Marshal Nie Rongzhen said with excitement at the testing ground: "We will solemnly declare to the whole world that China has successfully launched the first China-made missile by using a China-made propellant!"

Since then, China has embarked on the road of developing the astronautics industry by maintaining independence and keeping the initiative in her own hands.

Advance Toward Comprehensive Missile Testing Ground

After opening a new chapter in the annals of the history of China's astronautics industry by successfully launching the first China-made rocket into space, our rocket-launching contingent got ready for building China's own comprehensive missile testing ground.

In order to build a comprehensive missile testing ground, a large number of scientific and technological personnel industriously carried out relevant scientific research and experiments day and night. Leaning on his bed and enduring the great pain, deputy general engineer Xing Chunpu, who had just got out of the hospital after undergoing a gastrectomy operation, operated a manual computer to calculate the missile launching precision. All his blueprints were drenched with his sweat. Finally, he successfully worked out the "new method for calculating differences between different ballistic instruments."

On 27 October of 1966, the heating test aimed at connecting an atom bomb with a missile was carried out. That was the first time in the world that a country had carried out such an actual combat launching test on its own territory.

In order to successfully carry out that significant test, with the approval of the State Commission of Science, Technology, and Industry for National Defense, seven test control personnel entered the testing ground. They clearly knew what would happen to them if the test failed and the atom bomb fell to the ground! However, all of them were duty-bound not to turn back. They indirectly made their last remarks to their families and wrote their testaments to their organizations.

"I'm willing to devote all I have to the development of the sophisticated national defense technology of our motherland!" wrote a 20-year old operator with tears in his eyes. The young operator also said: "I am not yet a CPC member but I'm grateful that the party organization has put complete trust in me. If I die, I'll give all my salary to the party as my CPC membership fee." After saying these words, the young operator quickly climbed into the area between the warhead of the atom bomb and the missile to connect the atom bomb with the missile at the risk of an explosion. When the young operator was connecting a dangerous plug, all the other personnel withdrew from the site and took cover. The young operator calmly connected the ignition system of the atom bomb with the power supply so as to place the nuclear bomb in a good launching state. With a terrific sound, the nuclear bomb took off in a cloud of smoke. In the twinkling of an eye, people heard a sudden clap of thunder in the distant *luo bu po* [5012 1580 3124] and immediately saw a huge mushroom cloud solemnly rising up.

This is one of the dangerous events our heroes at the Jiuquan Satellite Launching Center experienced. When launching a certain medium-and-long-range rocket, a sudden explosion happened. At this important juncture of life and death, Deputy General Engineer Hu Shixiang thought to himself: This type of rocket will be used as the means of delivery for launching China's first man-made earth satellite. So the cause of the accident must be found out at once. He quickly climbed up the control tower which was more than 40 meters high amidst the thick

smoke spurting out from the middle section of the huge rocket. When he was approaching the rocket, "Bang," the module door was blown open and a metal object narrowly missed his ear but hit the thick steel plate, making a deep mark. However, deputy general engineer Hu Shixiang feared nothing and bent over the rocket to look for the real cause of the explosion.

On 20 April of 1970, our heroes at the Jiuquan Satellite Launching Center successfully sent the "Dongfanghong" satellite into the space. In 1975, they succeeded in successively launching two scientific and technological experimental satellites and China's first retrievable experimental satellite into the space, thus realizing the beautiful dream of "sending three Chinese satellites into the space within one year."

Enter the New Period Stressing Practicality

With the 1980's approaching, the Jiuquan Satellite Launching Center took on a new look.

Li Fengzhou, general engineer of the Jiuquan Satellite Launching Center, who had repeatedly been awarded for his meritorious services and had been named as a "Lei-Feng-Type Cadre," carried out a thorough transformation of the existing computer of the center. In order to successfully carry out a thorough transformation of the existing computer of the center, general engineer Li Fengzhou went to almost all the relevant enterprises and research institutions in China by enduring the hardships of many long journeys and read a large number of relevant domestic and foreign materials. Even during over 10 days' time when his child was receiving a medical treatment in the hospital, general engineer Li Fengzhou sat at his child's bedside, repeatedly carrying out calculations. On New Year's Eve, while others were happily setting off fireworks outside, general engineer Li Fengzhou was busy designing the new computer system in the engine room of the center. He did not know that New Year's Day had arrived until his neighbors sent boiled dumplings to him early the next morning. After making strenuous efforts for over a year, general engineer Li Fengzhou finally succeeded in updating the computer system and increasing the calculating speed of the existing computer of the center to a level desirable to the launching of new rockets in the future.

Thanks to their long-time strenuous efforts, the scientific and technological personnel at the Jiuquan Satellite Launching Center have achieved one major breakthrough after another in their scientific and technological research and experiments. The most notable achievements made by the scientific and technological personnel at the Jiuquan Satellite Launching Center include: A new-type half-inch tap unit, an advanced automatic command system, the Ka Ma Ke [0595 7456 0344] General Survey and Calculation Program, and so on.

On 18 May of 1980, our heroes at the Jiuquan Satellite Launching Center successfully launched a long-range carrier rocket into the space above the southern Pacific Ocean. In and around the same period, our heroes also succeeded in launching 11 retrievable satellites and one rocket carrying three satellites into the space. Between 1987 and 1988, along with the deepening of the reform and opening up to the outside world, our heroes at the Jiuquan Satellite Launching Center have also successfully launched two satellites into space for the foreign companies. All the satellites launched by the Jiuquan Satellite Launching Center have become an important means of obtaining information about the territorial resources. With the help of these satellites, China has been able to "understand clearly the ocean situation, the underground fault zones, and the historical sites in her archaeological studies." Now China's astronautics industry has been developed from the experimental stage into the new stage stressing practicality. Such a rapid development has brought enormous social benefits and economic results to China.

"Take delight in fighting against difficulties and hardships, die in the Gobi Desert, and be buried on the green hills." Many veteran comrades who took part in the building of the Jiuquan Satellite Launching Center in the early days have already passed away. Generation after generation of new builders have arrived at the Jiuquan Satellite Launching Center. After 30 years of hard work, our heroes have turned the Jiuquan Satellite Launching Center from the past "stony, grassless, and uninhabited" Gobi Desert into a quiet and beautiful modern astronautics industrial city which has government organs, schools, department stores, hotels, banks, and post offices. While walking on the streets of the Jiuquan Satellite Launching Center, you will never know that you are in the depth of the Gobi Desert. When seeing large stretches of tall and green white poplar trees, you will feel that the Jiuquan Satellite Launching Center is a world full of vitality and our heroes there are not only capable of launching satellites into space and retrieving satellites from space, but also capable of transforming nature.

AUSTRALIA

Intelsat Contract

BK2209081288 Melbourne Overseas Service in English
0500 GMT 22 Sep 88

[Text]—Australia's international telecommunications organization, OTC, has won a major contract with one of the world's biggest space communications networks. It involves managing Intelsat over the Indian and Pacific Oceans and is expected to earn Australia more than \$40 million [currency not further specified—FBIS]. OTC will be responsible for monitoring and adjusting the correct position of the satellite and checking the quality of transmissions. The telecommunications minister says the contract says Australia's ability has been in the forefront of high technology.

HONG KONG

Government Publishes Regulations for Cable Television

Reversal on Foreign Ownership

55400006 Hong Kong SOUTH CHINA MORNING
POST in English 7 Sep 88 p 1

[Article by Tad Stoner]

[Excerpts] Hongkong's cable television policy-makers performed another radical reversal yesterday to make it more attractive to owners and operators.

The revisions cancel the limits on ownership by overseas individuals and drop the controls on royalty payments required of a system operator.

The Executive Council elected to withdraw the provisions yesterday after potential bidders for the cable franchise protested that vital overseas investment would be discouraged by the restrictions.

A six-month period for submission of formal tenders for a cable-TV network will open on September 19 after almost two years of delays.

Neither Cable Television Hongkong (CTHK) nor Hutchison Cable Vision (HCV), the two main contenders for the licence, were willing to comment on the changes.

The original restriction to 20 per cent of individual foreign holdings has been removed, although the ceiling of 49 per cent on aggregate overseas ownership remains.

Royalty payments, originally pegged at a ceiling of 12 per cent of total revenues, will be left entirely to the discretion of the bidder.

License, Other Requirements

55400006 Hong Kong SOUTH CHINA MORNING
POST in English 20 Sep 88 p 3

[Text] The holder of the first 15-year licence to operate Hongkong's cable television franchise will enjoy only a three-year monopoly, after which other licences may be granted.

This was revealed yesterday when the Government released the long-delayed documents outlining its requirements for a system.

Another condition is that two licences will be granted—one going to a program broadcaster and the other to the builder and operator of the network of cables.

The \$160 kit, which explains to investors all they need to know about the cable television system, went on sale at 8.30 am and 27 were snapped up by the end of the day.

Principal Assistant Secretary (Entertainment) Stephen Selby said the number sold was surprising but that did not mean an equivalent number of bids would be received.

Mr Selby said some kits would have been sold to parties who were probably not serious about building a cable television system.

He declined to list the purchasers, but said: "People like the commercial broadcasters would probably buy one, although they cannot have a license.

"There are banks, some trade commissions and companies that have formed a consortium with others, perhaps to bid for the licence, who themselves would not be bidding but who want their own copy of the conditions."

The kit is divided into six sections: A broad background on Hongkong for overseas investors, a comprehensive description of the territory's commercial television and telecommunications industries, a series of general notes on how a cable operator should be structured, advice on programming and advertising requirements, information sought in the tender proposals and legal prescriptions and technical specifications for a cable system.

Other major highlights of the document are:

- Successful submissions must comprise bids for both licences.
- The successful cable applicant may also apply to provide non-franchised telecommunications services and should describe those intentions.
- Royalty payments are left to the discretion of the bidder.
- Program and advertising standards are similar to

those for commercial television and advertisements are limited to five minutes in each hour.

- A Government channel must be carried and self-censorship is required to current commercial standards.

Bids are due by February 28. The successful applicant will be selected on the proposed speed of providing the service, the cost of subscription and installation, the payment of royalties, the number of channels to be provided, the hours of broadcasting, the amount of advertising, the amount of minority programming and the variety of programming.

Reaction from Hutchison Cable Vision, one of the two major contenders for the licence, was both quiet and confident.

"There were no real surprises, it was basically what we expected," said its managing director, Mr Craig Ehrlich.

"The only thing a little bit worrying is the part where they say they still have the right to change their mind. That makes it difficult to know what they really want and it's a little bit of a guessing game for us to respond," Mr Ehrlich said.

The other major bidder, Cable Television Hongkong, declined to comment.

Cable TV Parameters, Requirements Spelled Out

Government Channel

55400058b Hong Kong *SOUTH CHINA MORNING POST* in English 24 Aug 88 p 1

[Article by Lulu Yu: "Government Channel for Cable TV"]

[Text] The future operator of cable TV will be required to carry a free Government channel on the territory's second network.

A 24-hour station known as PEG, which stands for Public, Education, Government, will be established when cable television starts next year.

PEG is an idea modelled on public cable stations known by the same name in North America. The Government, the territory's educational institutions and public members are expected to participate in the programming of the new station.

Bidders for the cable TV network and broadcasting licences will be told they must make provisions for the transmission of PEG and the existing wireless channels on the new network in a tendering document prepared by Government.

They will also be told no obscenity will be permitted on a proposed adult channel where censorship standards will be more relaxed than on other channels.

Officials of the Administrative Services and Information Branch are now putting the finishing touches to the document, which will be made available to interested parties at a cost of \$195 from September 1.

Tenderers will have six months to complete their applications, which will then be studied by a Government working party.

Following recommendations by the working party, the Broadcasting Authority is expected to make submissions to the Executive Council for approval next autumn.

Only one party, Hutchison CableVision, has expressed formal interest in providing the network and programming for cable TV since the Hongkong Telecommunications groups were barred from owning more than a 15 per cent equity in the second network.

Mr Craig Ehrlich, general manager of Hutchison CableVision, said yesterday his company had no objection to carrying PEG and the four channels of TVB and ATV on the future cable TV network, but was concerned at the proposed rate of royalty to be imposed on the cable TV operator.

The Government has decided to charge the future cable TV operator royalties of up to 12 per cent of their gross revenues over the 15-year cable licensing period.

Bidders will be told in the tendering document that the winner would be required to pay an initial two per cent of their revenues, which will include subscription and advertising, from the third year, to be increased every other year thereafter.

Mr Ehrlich said the proposed royalties were likely to greatly reduce the profitability of the cable TV business in the early stages of development.

But he said he found the proposal of limiting advertising time on cable TV to five minutes per hour reasonable and acceptable.

Mr Stephen Selby, Deputy Secretary (Information) of the Administrative Services and Information Branch, said yesterday the criteria for the future cable TV broadcaster largely followed existing provisions for TVB and ATV.

The cable broadcaster will have to be a company registered in Hongkong, with at least 51 per cent of the shares owned by Hongkong interests.

It cannot be an advertising agent or a subsidiary of another company, and its subsidiaries will not be allowed to engage in activities outside of the cable TV business.

Other Official Plans

55400058b Hong Kong *HONGKONG STANDARD* in
English 2 Sep 88 p 3

[Article by Victor Agustin: "Cable TV To Broadcast as Scheduled"]

[Text] Cable television is expected to be up and running by the middle of next year as planned despite the half-month delay in calling tenders, the Government said yesterday.

The Administrative Services and Information Secretary, Mr Peter Tsao, also said consultants might have to assess the bids to avoid a possible row with Broadcasting Authority chairman Mr Allen Lee.

A principal aide for Mr Tsao has said the Government has enough financial and technical expertise to judge the proposals. But Mr Lee, fearing public flak, is understood to be pushing for the hiring of outside experts.

Mr Tsao outlined the main conditions in tender documents for the new network that will be distributed from September 19.

The key points he told the Rotary Club of Hongkong North are:

- The cable network will have 8-30 channels, four of which would be for the existing ATV and TVB channels. Another channel, for a Government information station, would also be required.

"There is no question of having a large number of channels in cable television which all broadcast foreign material (as long as) there is a local programme content," Mr Tsao said.

"The successful broadcaster must be prepared to undertake serious locally-based programme production."

The network provider must ensure at least 75 percent of all homes will be reached by cable TV.

No minimum requirement has been set for the first year of the licence but the network must gradually broaden its broadcast area until it covers the territory by the seventh year.

In particular, this would mean reaching 160,000 homes by the second year, 320,000 by the third, 400,000 by the fourth and 840,000 by the fifth year, Mr Tsao said.

For planning purposes, the Administrative Services and Information Branch has divided the territory into districts similar to the Legislative Council electoral colleges: North and South Hongkong, East, West and Central Kowloon, North, East and West New Territories.

The preference is for one company to build the cable network and provide programmes.

"While we would not rule out licensing separate companies, one for the network and one for broadcasting, proposals which do not somehow link up the two would not earn as many 'brownie points' as those which properly link up the network and the broadcasting," Mr Tsao said.

"While we welcome bids from parties working in tandem to build and operate the network under one company and to do the broadcasting under another, we cannot agree to become matchmakers."

He said the Government had received inquiries from four to five companies or consortia for the cable TV project, two of which were the Hutchison CableVision and Cable Television Hongkong.

Mr Tsao said his department and the Broadcasting Authority would need about four months to analyse submissions after the close of tenders at the end of February.

The successful bidder would be announced by the Executive Council next summer, he said.

Mr Tsao said the Government was aware of the criticisms from some prospective bidders about the rate of the cable TV tax but he said that was an issue for the Financial Secretary, Mr Piers Jacobs.

Officials Voice Concern Over Impact of Macao TV

55400058a Hong Kong *HONGKONG STANDARD* in
English 28 Aug 88 p 3

[Text] Discussions with Macau on the beaming of TV programmes into Hongkong centre on the potential impact on local TV stations, Administration Services and Information secretary Mr Peter Tsao said yesterday.

Although Macau is eager to transmit to the territory, Hongkong officials are concerned it would affect ATV and TVB advertising revenue.

Mr Tsao, who met Macau officials on Friday, said the talks had reached "understandings on a number of points." Issues discussed including broadcasting strengths and censorship.

Mr Tsao refused to elaborate, saying he would first have to report details to the Executive Council.

Macau casino tycoon Mr Stanley Ho, one of the partners in the consortium, said he hoped Macau programmes would reach Hongkong.

Mr Tsao said: "What matters is the viability of our own TV stations, which rely on limited advertising revenue."

He said if Macau increased its signal strength so that some programmes reached Hongkong, the earnings of the territory's two stations could be affected.

Macau has long wanted to boost transmission signals to the territory but local authorities were concerned about signal interference and censorship standards.

**HK-TVB Will Sever Ties to TV Broadcasts
Subsidiary**

*55400061 Hong Kong SOUTH CHINA MORNING
POST in English 9 Sep 88 p 1*

[Article by Tad Stoner]

[Text] The Broadcasting Authority yesterday announced HK-TVB would sever its relationship with its subsidiary, Television Broadcasts, establishing it as an independent publicly listed company.

"The Broadcasting Authority examined the investment plans submitted by both TVB and ATV and in principle can accept both," Secretary for Administrative Services and Information Mr Peter Tsao Kwang-yung said.

"TVB's licence will remain with the current company which will go public and take over the shares of its holding company HK-TVB."

The move came after protracted negotiations in the wake of licensing conditions announced by chairman of the 12-member authority Mr Allen Lee Peng-fei in February.

The conditions required a broadcasting company to submit a 6-year investment plan to the authority and to divest itself of any non-broadcasting interests.

TVB is part of a conglomerate composed of a publishing section, a retailing arm, program licensing, entertainment interests and commercial production.

Yesterday's development means the severance of HK-TVB's broadcasting interests from the remainder of the company.

"We can accept the structure as proposed, although details have yet to be submitted and confirmed by us," Mr Tsao said.

"We mainly have to identify the subsidiary companies of TVB and their functions."

The licenses of the two stations expire on 1 December and the authority requires all necessary changes be effected before renewal.

TVB general manager Mr Kelly Cheng Kwan-leuk said the company would have no problem restructuring itself. But he refused to elaborate on the final form the corporation would assume.

Financial analysts said the move was unlikely to damage the broadcaster, which was largely responsible for HK-TVB's 1987 revenue of \$311 million.

Asia Television recently announced a \$200 million investment plan for the next 6 years in the terms of its licence renewal.

BULGARIA

Future Application of Satellite Communications Technology

55003003 Sofia *SOFIA NEWS in Bulgarian*
24 Aug 88 p 5

[Text] Computer games simulating real-life situations in modern international business are extremely popular in all manager courses. Bulgarian manager trainees are no exception. Imagine you are a long-distance trucking controller who attends a training course. You sit at the computer terminal and find out that now that a truck operated by your company, SOMAT, is to deliver a freight at some address in Odense, two blocks away in that same Danish city an opportunity opens up for your truck to take on its way back a suitable cargo under very lucrative terms. The computer tells you to evaluate the probability of getting there before your competitors and of securing the haul for the SOMAT truck....

Both in the game and in real life you will need to know the whereabouts of your truck, whether it is travelling on schedule, whether it is in good repair, how long will unloading take, etc. Of course, you have at your disposal the ramified Euronetwork of telephone and telex lines, but it does not provide coverage of trucks. With all your professional expertise, you may count yourself extremely lucky if you manage to reach your trucker in less than an hour of two, and you may waste a whole day before you can get in touch with him.

You don't need a computer to know that in the meantime your competitors are on the lookout. Thus, the chances are that your truck, whether in the game or in real life, will head back empty and that you will not be able to snatch the lucrative cargo under the nose of your rivals. This is how things stand at present, but they may well change quite soon.

Experts Meet in Varna

Experts of the member countries of the International Maritime Satellite Organization (INMARSAT) met in Varna at the end of June. Bulgaria hosted the conference in acknowledgement of her being a founding signatory and an active member of the organization. Experts met here back in 1979 when INMARSAT was still in the making. Later on this country served four terms of office on the organization's Council. One year ago Bulgaria was one of the seven countries in the world to test INMARSAT's new location radio beacon, made by the Dornier company and intended to help search and rescue at sea. Now more than 40 Bulgarian ships have access to INMARSAT's satellite space segment through on-board terminals.

The INMARSAT experts gathered in Varna this year to put the finishing touches on a collective motion for amendments to the organization's Convention and Operating Agreement, which will allow it to extend its satellite communication services to overland transport

as well. The amendments to the INMARSAT Convention recently approved by the Assembly made civil aviation eligible for its services. The participants in the Varna conference were familiarized with the capabilities of the new Standard-C equipment. More than 7,000 vessels of the world merchant marine carry Standard-A ship earth stations interfacing with the international public switched networks.

In Several Year's Time

You are on a Balkan airlines flight to Calcutta and you hear a buzz from the back of the seat in front of you. You pick up the phone and a colleague of yours tells you that instead of flying on to Bangkok, you will have to change planes and go to Singapore because a company there offers better terms for a deal. Without as much as getting up, you use the same INMARSAT telephone to book a seat on the flight from Calcutta to Singapore, to make an appointment with the company, to rent a car in Singapore and to reserve hotel accommodation. While you are airborne on your way to Singapore, the satellite terminal even helps you with the passport and customs formalities, so that going through immigration at Singapore Airport takes you just a couple of minutes.

Needless to say, the high-quality telephone and telex communication service to any part of the world will be available to the airliner crew, too.

For the time being, only ship passengers and crews can use these advantages of satellite communications, but they will soon be accessible to air transport people as well. For the purpose, a new modification of the Standard-C class of equipment is undergoing trials.

Back to Earth

The mobile earth station Standard-C can handle text messages and computer images. If it were installed on your computer game truck, you would be able to decide in a matter of seconds whether you can assign it the lucrative way-back freight. The system gives you updates on the vehicle's whereabouts every other minute or so. Under-the-hood sensors tell you whether the truck is sufficiently roadworthy. You keep in touch with the trucker on a 24-hour, seven days per week, basis. For his part, he can rely on the computer for tips about the best route to take, for early warning of road repairs and traffic jams and even for the menu of the nearest roadside restaurant frequented by long-haul drivers.

The INMARSAT experts expect the Standard-C mobile earth stations to go into general use even before the end of this year, when the amendments to the INMARSAT Convention will probably be approved. The new generation of satellites, INMARSAT 2, the Standard-A ship earth stations and the Standard-C mobile earth stations will enable the organization to offer access to satellite communication to all types of transport. Then, the competitive strength of an international haulage operation will be measured, among other things, by the extent to which its vehicles use INMARSAT's services.

BARBADOS

Prime Minister Names Directors of Broadcasting Authority
55400001 Bridgetown CANA in English
1550 GMT 6 Sep 88

[Excerpts] Bridgetown, Sept 6—Prime Minister and Minister Responsible for Information Erskine Sandiford has named the five-member board of directors for the island's broadcasting authority. The chairman of the board is former chief audio-visual aids officer in the public service, Gordon Corbin. The other members of the board are: Former Sunday editor of the BARBADOS ADVOCATE newspaper Ulric Rice, Government's Chief Information Officer Margaret Hope, Lawyer Lawson Bayley, and engineer Erskine Durant.

GRENADA

Joint Venture Firm To Handle All Communications
55400004 Bridgetown SUNDAY SUN in English
11 Sep 88 p 12

[Text] St George's, Grenada—A new company called Grenada Telecommunications Limited (GRENTel) will handle this country's internal and external communications from November.

Officials of government and Cable and Wireless officially signed the agreement to establish the joint venture company last Thursday, concluding a year of negotiations between the Grenada Telephone Company and Cable and Wireless for the merging of the two organisations.

Prime Minister Herbert Blaize signed for government, while Cable and Wireless' Regional Marketing Manager Andrew Fyfe did so for his company on the agreement which shows that Cable and Wireless will own 49 per cent of the shares in GRENTel to government's 51.

Neither side would reveal the values at which the existing companies or the new company were set, but unofficial estimates put the assets of the two at EC\$75 million, with those of Cable and Wireless being \$19 million.

Government has already received an advance of \$27 million from Cable and Wireless, but the issue of how much more cash will hang, according to the reports, on the extent of the debt owed by the Grenada Telephone Company.

The new partners are expected to name their members on the seven-man Board of Directors anytime now. Under the terms of the agreement, government will have four members on the board.

JAMAICA

Broadcasting Licenses Awarded Under Divestment Policy
55400005 Bridgetown CANA in English
2151 GMT 14 Sep 88

[Text] Kingston, Jamaica, 11 Sep (CANA)—The Jamaica Government says it has awarded licences to operate radio stations it is selling under a media divestment plan. A firm called New Radio Company of Jamaica received the licence to run a national AM/FM service, utilising facilities of the state-owned Jamaica Broadcasting Corporation (JBC) that are to be sold off.

The government plans to run an FM radio service under a Public Broadcasting Service (PBS) radio and television system that will deal mainly with public affairs broadcasting. Licences are also granted for three regional stations that are owned by the JBC 00 Radio West, Radio Central and Radio East. These will operate on FM.

The government said that Radio West's Licence has gone to a company called Western Broadcasting Services Limited, and that Radio Central has gone to Island Broadcasting Services. A syndicate coordinated by businessman Karl Young won the licence for Radio East. However, in the case of the regional radio stations there was only one applicant for each. In the case of the National Service there were two applicants, according to the statement from Prime Minister Edward Seaga, who is also the minister of information. Seaga said that one of the applicants for the national service declined to give an undertaking to accept the terms of the proposed agreement.

THE GLEANER newspaper has long been interested in acquiring a radio and television station. This group apparently had problems with, among other things, the level of shares that could be held by one entity and the right of the Broadcast Commission to demand information on material intended to be broadcast. The commission would then have the right to halt the broadcast in the national interest.

In a recent speech, GLEANER company Chairman Oliver Clarke claimed that licences requirements were being changed arbitrarily by the government. THE GLEANER has also been attempting to get a licence for television. Although the government had not yet announced any decision on the applicants for the proposed divestment of JBC TV, Prime Minister Edward Seaga has in recent remarks indicated that THE GLEANER is not receiving a license.

Public TV Broadcasting, Other Developments in Spotlight
55400002 Kingston THE DAILY GLEANER in English
7 Sep 88 p 3

[Text] Public Broadcasting Corporation of Jamaica (PBJ) which will produce local programmes for television, was launched by the Government yesterday, Jamaica, the government news agency, reported.

The new company will begin broadcasting material initially for three-and-a half hours a week and will have its pilot run on Sunday, September 11 on the Jamaica Broadcasting Corporation television, according to Jampress.

PBJ will provide the local television market with magazine programmes and will attempt to fill the slots which will be created when the broadcast media are divested, Jampress announced.

The station will produce mainly educational programmes with emphasis on public affairs, culture and sports on a special channel.

"This will allow the privately-owned media to focus more on commercial-type entertainment," the release stated.

The announcement was made by Mr Carey Robinson, executive director of PBJ at a luncheon at the Liguanea Club, New Kingston, Jampress said.

Last year, Prime Minister Edward Seaga announced the divestment of the Government-owned electronic media saying there would be a government-operated second television channel.

Up for divestment are JBC Television, JBC AM radio and three regional stations—in Ocho Rios, Montego Bay and Mandeville.

In launching PBJ yesterday, Mr Robinson, a former general manager of JBC said that attempts at developing interesting and attractively packaged programmes on the Jamaican and Caribbean experiences have been made over the years, but some viewers were "skeptical and might have been turned off by poor production and performance."

Mr Robinson said the PBJ was dedicated to turning the situation around and could produce programmes of high quality that could be marketed outside Jamaica.

Creative Production and Training Centre (CPTC), another government-owned entity located at Arnold Road, Kingston, will become the production arm of PBJ Television.

INDIA

Panel Studying Failure of 13 Jul Satellite Flight *55500004 New Delhi PATRIOT in English* 22 Aug 88 p 2

[Text] Madras, Aug 21 (UNI)—The top of the Augmented Satellite Launch Vehicle (ASLV-2) broke up during the burning of the first stage motor resulting in the failure of the second developmental flight of the satellite on 13 July, top space research organisation officials said.

This conclusion was arrived at by the failure analysis committee of the ISRO, which is still continuing its review.

Officials said that the break up and disintegration of the top of the vehicle which also contained the equipment bay was due to the aerodynamic load of the vehicle exceeding the designed load.

While the strap on motors burned out as planned 48.5 seconds after lift off, the strap on motor casings did not separate from the main vehicle since there was no command to do so because of the disintegration of the equipment bay, officials said.

One had to wait for the full report of the (internal) failure analysis committee headed by Vikram Sarabhai Space Centre Director S. L. Gupta at Trivandrum and also the national review committee headed by National Aeronautical Laboratory Director Prof Narasimhan to arrive at the totality of the factors leading to the failure, they said.

The national review committee was being given inputs by the internal review committee.

The internal review committee was expected to finalise its report in a month's time, they added.

Officials said preparations were on for the launch of the third developmental flight (ASLV-D3) with standby system already made.

Barring the detection of any major design flaw by the internal and national review committees, the third developmental flight could be launched in 10 months, they said. "As of now, we do not expect any major design flaw," they said adding that minor modifications could be incorporated within this time frame.

The first developmental flight of ASLV in March 1987 had also failed when the first stage of the vehicle did not ignite.

However, the strap on motors had separated as planned then. Officials asserted that there was no question of giving up the ASLV programme because of two failures.

Satellite Facilitates Regional Television Service *55500003 Madras THE HINDU in English* 16 Aug 88 p 1

[Text] Madras, Aug. 15—Madras Doordarshan has been taken to the whole of Tamil Nadu and Pondicherry with the inauguration of the regional service by the Governor, Dr P. C. Alexander, today.

This has been made possible by linking all low power transmitters in the State to Madras Kendra via satellite.

Areas hitherto served by LPTs in Nagercoil, Tiruchi, Kumbakonam, Neyveli, Vellore, Salem, Coimbatore and Madurai will now get Madras Doordarshan's Tamil programmes. The service will be available on five days of the week from Monday to Friday between 7-30 p.m. and 8-40 p.m. daily. The news in brief in Tamil will be at 7-30 p.m. and at 8-35 p.m. there will be special announcements including programme summary for the next day.

On Saturdays and Sundays LPTs in the State will be hooked to Delhi as at present. Doordarshan Madras-Kodaikanal will continue to telecast the programmes according to the existing schedule.

According to Doordarshan authorities, the present arrangement will be reviewed after INSAT 1C becomes operational for transmission.

The regional service will provide programmes, including weekly Tamil play, weekly song and dance sequences from Tamil films, special literary programmes, classical music concert, quiz in Tamil apart from informative developmental programmes in different areas of the State.

Content of Programme

Commending the expansion of the regional service, the Governor hoped that Madras Doordarshan would produce and present programmes in Tamil which would be a balanced blend of the interests of the people in the rural and the urban areas. The programmes should be both educative and entertaining.

"I am mentioning this particularly because of the popular prejudice against Doordarshan among the rural people. They think that Doordarshan is mainly an urban oriented service. I do not subscribe to that view. But if you go to rural areas and talk to them about TV, they express the view that Doordarshan is primarily having an urban bias. It may be a misconception or perhaps because historically Doordarshan and even radio started serving the people in rural areas."

Dr Alexander said it was time that Doordarshan and radio took note of these feelings of the people.

He had a sense of personal satisfaction in inaugurating the service as he had played a small role in persuading the Union Minister for Information, Mr. H.K.L. Bhagat to get the service started even in a limited way without waiting for the commission of technical and other service facilities required for regular service. He conveyed his appreciation to the Union Minister and the officers and the staff of the Doordarshan for the prompt action they had taken. The extension of the Tamil programmes to the entire State was a long felt demand of the people. "I hope we will not have to wait for long for the expansion of the regional service into a fullfledged service," he said.

Pointing out that the main objectives of TV was to provide education, information and entertainment, the Governor said it was difficult to fix any norms of how much of the time should be allotted for each. It should be possible with imagination and skill to present some educational programmes, though not suitable for entertainment, at least interesting to the regional people.

Similarly it should be possible to convey some useful message to the people even through programmes which might be occasionally aimed at entertainment. "The point that I am making is that education and entertainment need not be treated as water-tight compartments when it comes to providing service to the people".

Earlier on arrival the Governor was received by the Director of the Kendra, Mr K. P. K. Nambiar.

**Importance of INSAT-C to
Telecommunications Told**
55500002 Madras THE HINDU in English
6 Aug 88 p 9

[Text] New Delhi, Aug. 5—If the technical snag in the INSAT-1C is not rectified in a week's time, then both the Telecommunication and Doordarshan services might get affected and leasing of additional transponders from INTELSAT will become necessary if the planned expansion of television services are to be fully met, according to officials in the departments concerned. The Meteorological package in the satellite is reported to be safe, they said.

In fact the sources said both the American and Indian experts were still engaged in checking up the functions like "house keeping", thermal balance etc., which are necessary for the successful operation of "residual services."

According to an official at the Meteorological Department, testing was being conducted on the meteorological package, and he felt "everything is fine with the Met package." Thus any problem in the INSAT-1C will now affect the extension of telecommunication facilities and transmission of programmes over the television. Perhaps the INSAT Coordination Committee (ICC), as and when

it meets, may decide as to whether Indians at home will have more of speech circuits or will see more programmes on the television. The choice appears to be vital especially in the context of Doordarshan's decision to show more of regional programmes in its national network.

According to a Department of Space official, almost half the packages of Communication, Television and full Met package seem to have been tested and it is now established that half the package can work on half the power. Though INSAT-1D will be launched sometime in the second half of 1989, the problems encountered in INSAT-1C has given a setback to the level of confidence.

The Department of Telecommunications (DOT) officials have, however, expressed the view that it is premature to write off half the satellite. If it does happen, then INSAT-1C will have in working condition Six C-Band transponders, besides the Very High Resolution Radio Metre (VHRR), one Doordarshan channel and one Data Relay Transmitter (DRT). The VHRR provides the cloud pictures one sees on television.

Incidentally, the INSAT-1C, among other things, was to make available Twelve C-Band transponders and two Doordarshan channels. Since only half of it would be available now, the Government's reported options of making alternative arrangements assumes importance. May be, as the officials in the departments concerned said, a few more transponders will be taken on lease from the INTELSAT.

Transponders on Lease

At present, two transponders are on lease from INTELSAT and the Government is understood to have asked for one more transponder on lease. But in view of the changed situation because of INSAT-1C, it is likely that more of them would be leased. Each transponder on lease costs a million dollars a year and the lease period ranges between three to five years.

DOT officials, however, said the leasing of additional transponders will not be entered into immediately as at no point of time the satellite was to be loaded fully and its utilisation was to be only in a phased manner. Moreover one transponder was always kept free to meet any emergency.

The issue therefore boils down, insofar as telecommunication is concerned, as to which services will get delayed. To this query, the DOT officials said basically the public service augmentation will not be available to the extent it would have been, had the INSAT-1C been fully operational. In other words, they said services connecting the Golden Triangle namely Delhi, Bombay, Calcutta on the one hand and Madras on the other may suffer. The services could 9099include telephone and teleprinters. However, all those services which are solely and wholly

dependent on satellite would be fully taken care of. Thus the remote area communication services, rural and other business communication network etc. will not be affected, they asserted.

The DOT officials noted that the moment the Department of Space informed them of their capacity, the DOT will work out the requirement to be met from the satellite and also the transponders leased from INTELSAT. Today about 4000 channels, mainly telephones, are using the satellite facility. According to the officials, one such channel can be broken down into 24 teleprinter channels of 4 kwh bandwidth. Newer technologies can now give even 48 teleprinter channels from one telephone channel.

The telecommunications operate on four mediums which include microwave, coaxial, optical fibres and satellite. There is no doubt that the satellite provided the cheapest mode of communication today, given the large block of channels. For instance if one were to connect Trivandrum with Leh, only satellite could provide the most effective means of communication. The DOT officials said despite INSAT-1C's disability, these aspects of remote area communication will be fully protected. Only the public network will not see that much of expansion as originally planned through satellite channels.

INSAT-1C Satellite 'Made Operational'

BK0810163588 *Delhi Domestic Service in English*
1530 GMT 8 Oct 88

[Text] The multipurpose Indian National Satellite, INSAT-1C, plagued by a (?power burst) anomaly in one of the two power lines, has now been made operational. An Indian Space Research Organization communique said utilization of the communication and broadcasting transponders on board the spacecraft would commence this month. The master control facility at Hassan is already taking very high resolution radiometer imageries every day.

9-Year Life Span for INSAT-1C

BK1010105488 *Delhi Domestic Service in English*
0830 GMT 10 Oct 88

[Text] The Indian communication satellite, INSAT-1C, is to work for its designed 9-year period despite the on-board power problem. The chairman of the Indian Space Research Organization, Prof U. R. Rao, told PTI in Bangalore that efforts to rectify the short circuit in one of the power buses have been abandoned as it is felt that the operation would be risky. The available capacity of the satellite was put to use on Saturday [8 October].

Prof Rao said that if for any reason the telemetry failed, the satellite would become useless as the backup system on board is connected to the damaged power bus. He

assured that the reduced capacity of the INSAT-1C would have no impact on the existing services, like telecommunications, television, and weather monitoring.

Production of 4,000-Line Phone Exchange Planned

55500001 *Madras THE HINDU in English*
5 Aug 88 p 11

[Text] Madras, Aug. 4—The main 4,000-line exchange being developed by the Centre for Development of Telematics (C-DOT) is expected to be ready for mass commercial production at the latest by 1991.

Giving this information at a press conference here today, Mr. K. P. P. Nambiar, Secretary, Union Department of Electronics, said "according to optimistic projections, the exchange will be ready by 1989-90 and the pessimistic figure is 1991-92."

He said that the 512-line rural automatic exchange would be ready by the year end. There was need for 2,000 such exchanges.

Answering questions, Mr Nambiar said the electronic industry was growing "very fast and was flourishing." There were no problems in licensing the industries and there was no time delay now.

He said the industry had recorded a growth of 37 per cent last year and hoped that it would go up to 40 per cent for the current year. By 1989-90, the industry would touch the Rs. 10,800 crore mark. "Assuming we have a 20 per cent growth in the 1990s, we will be able to reach the Rs. 100,000 crore mark by 2000 A.D.," he said.

The Electronics Secretary said the licensing system for electronic industries had been liberalised. The Department was also emphasising that R&D centres be set up. The Technology Development Council had been reconstituted with more professionals being included. The Council was inviting proposals from universities, IITs and industries, which if found feasible would be liberally funded.

Material Development Centres

Mr Nambiar said the Government had decided to set up two Material Development Centres at Pune and Hyderabad during the current financial year.

He said the private sector industries could now apply for manufacturing Electronic Private Automatic Branch Exchanges (EPABXs) and so far 28 licences had been issued for this. Manufacture of Rural Automatic Exchanges had also been thrown open to the private

sector, but the response to it had not been good and so far nobody had applied, he said. Similarly, on the communication side manufacture of transmission equipment, paging equipment and chordless telephones, had all been opened to private sector companies.

Mr Nambiar said the Government would allow import of technology in the communication side wherever necessary. He said it was important that local entrepreneurs be encouraged to manufacture equipment and they should be given all clearances much faster.

IRAN

Izeh Radio Relay Becomes Operational

55004700 Tehran RESALAT in Persian 12 Sep 88 p 11

[Text] Izeh's one kilowatt radio relay became operational last week. With the inauguration of this transmitter, from now on the inhabitants of Izeh can listen to the voice of the Islamic Republic from 0700 in the morning until the end of the 2000 news on 1485 kilohertz wave within a 50 kilometer radius.

EUROPEAN AFFAIRS

PTT Deregulation in EC Criticized

5500A046 Amsterdam COMPUTABLE in Dutch
6 May 88 p 1

[Article by Yvette Cramer: "PTT Deregulation To Start Next Year—Commission's Policy Criticized"]

[Text] Berlin—Peter Sutherland, EC commissioner for competition policy, has submitted the Commission's proposals for the deregulation of the telecommunications peripherals trade to the 12 EC ministers. The proposals have caused a major controversy among the ministers, who believe that the Commission is violating Article 90 of the Treaty of Rome.

The proposals discussed informally in Berlin will become a directive after they are published in the EC's OFFICIAL JOURNAL. The ministers might then take the case to court. The directive, which was approved on 29 March, should ensure the smooth demonopolization of the various peripheral equipment market segments in Europe. To implement the directive as soon as possible, the Commission can resort to Article 90 of the Treaty of Rome and ratify the proposal without the EC ministers' consent. This procedure is unique in the EC since another article of the Treaty specifies that, prior to acceptance, a proposal must be submitted for consultation to all ministers and authorities involved. No other decisions were made in Berlin.

These EC directives are intended to force member-state PTT's to observe the timetable outlined in the Green Book published last year. The UK, France, and West Germany have raised objections, indicating that acceptance of the proposals by the Commission implies a violation of Article 90, Section three, of the Treaty of Rome. This article forbids member states to maintain or introduce measures conflicting with the EC's regulations on free competition to the exclusive benefit of their public institutions or enterprises.

Legal Aspects

The article entitles the Commission to sue any violator of the Treaty's regulations. The majority of EC ministers have endorsed the protest of the UK, France, and West Germany, the only exception being the Netherlands minister of transportation and public works, N. Smit-Kroes. She has agreed with the adopted procedure and urged the EC to follow this course more often. The only point the Netherlands wants to discuss with the Commission is the actual timetable, which Smit-Kroes believes is very tight.

There was also criticism about the content of the directives. The French minister remarked that, although provision is being made for opening up the national markets for peripheral equipment, there will still be no

protection against imports of cheap telecommunications equipment from Southeast Asia. Nor are there regulations compelling the PTT's to issue technical specifications for this equipment.

Three Stages

The Commission's proposal suggests a three-stage demonopolization process. The first stage should begin by the middle of next year. The PTT's will have to abandon their monopoly on modems, private branch exchanges, and "second telephones," insofar as this has not yet been done. In the second stage, the PTT's will have to loosen their grip on telex and data transmission equipment, mobile telephones, and satellite receivers (dish antennas). Finally, the distribution of "new telephones" will also be subjected to free-market forces. This stage will begin in late 1989 and last until mid-1990, except for the new member-states, Spain and Portugal, who will be given 2 extra years. The Netherlands PTT, which monopolizes most telecom activities, will find it difficult to conform to the timetable. The telecommunications equipment trade in Europe is estimated to generate ECU 17.5 billion in profits (almost 44 billion guilders), including ECU 9.5 billion from peripherals alone.

FEDERAL REPUBLIC OF GERMANY

Bundespost To Build Inmarsat Ground Station in Raisting

55002402 Frankfurt/Main FRANKFURTER
ZEITUNG/BLICK DURCH DIE WIRTSCHAFT in
German 1 Sep 88 p 8

[Report by K. T.: "Standard C-Service to Start End of 1989/Satellite Traffic Team"]

[Text] Munich—The German Bundespost has just decided to build a new earth ground station for the worldwide Inmarsat Service at its Raisting (Upper Bavaria) Communications Center. This International Maritime Satellite Organization operates, in useful orbit points above the Atlantic, the Indian Ocean and the Pacific, a total of six satellites, three of them active and three as reserves. They provide a communications network for about 7,000 appropriately equipped ships of all sizes, which formerly had to depend on the sometimes unreliable short waves. Within the next few years, this first satellite generation will initially be replaced by three new Inmarsat-2 satellites produced by British Aerospace. They will have three times the capacity of the present ones.

There is indeed a need for these extended communications options because in addition to the network, dating from 1982, of the so-called Standard-A-System (analog) with 1-meter parabolic mirrors on board for telephone, telex, fax and data services in direct-dial traffic, the Standard-C-Service is planned to commence operations in late 1989. It only requires very small terminals weighing a few kilograms, which can additionally be used for

the flow of information between centers and ground vehicles. To keep these antennas small—which is a must for mobile vehicle traffic—the digital transmission rate is limited to 600 bits/sec for telex, Datex-P and text memory storage services; the users regret that no voice communications will be available in this service.

The text will be transmitted from the vehicle broken down into separate packages, "bundled" in the ground station and then transmitted to a second ground station via Inmarsat satellite; from there it reaches the addressee through the normal communications net. A special procedure is used to ensure that the text is correct; if necessary, the terminal transmits the message repeatedly until it is appropriately acknowledged.

Experimental models of these small mobile terminals are already available from Danish and British specialized manufacturers. Initially they will probably cost about DM15,000; in mass production the price could eventually drop to about DM2,000. Standard-C-Service will not be limited to direct point-to-point traffic, e.g., between an office and a truck somewhere on its itinerary; there will be a capability for conference calls to a "fleet" of trucks or ships whose respective geographic positions are known in only a general way.

As of today, Inmarsat has 54 member states, all of them almost exclusively interested in maritime traffic. Inmarsat's capital participation is headed by the United States with 27.5 percent, Great Britain 15.2 percent, Norway 14 percent, followed by Japan, France and the USSR. With its 1.8 percent share, the FRG occupies a modest 12th place. The rear is brought up with 0.05 percent each by Chile, Colombia, Iraq, Israel, and Pakistan.

The introduction of the Standard-C-System is likely to generate increased interest on the part of non-maritime countries. At the present time 20 earth ground stations are operating for Inmarsat, servicing the Atlantic, Pacific, and Indian Ocean areas; 11 additional ones are to become operational by 1989.

Until now, the Bundespost has been servicing its Inmarsat traffic via the three ground stations Goonhilly (Great Britain) for the Atlantic region, Eik (Norway) for the Indian Ocean region and Santa Paula (United States) for the Pacific region, which entails considerable expense. The Bundespost's decision to build its own Inmarsat ground station in Raisting came as a result of an economic feasibility study which included the future System-C-Service in its calculations.

It has not yet been decided whether the Bundespost will construct a new ground station from the ground up in Raisting, which would cost about DM20 million, or whether it will reactivate the mothballed facility which a few years ago had been built for the German-French Symphony experimental satellite. This is purely a question of cost.

Last March, 13 countries, including the USSR, formed a special working group for continued development of satellite communications for land vehicles. Dornier Systems, the Debeg, and MAN are also members of this working group.

FRANCE

New TV Channel To Serve Lehman Basin
55002678 Paris LE FIGARO-ECO in French
8 Aug 88 p 18

[Article by Serve Hirel]

[Excerpts] As of 7:30 on 15 December, the residents of Annecy and two-thirds of the Haute-Savoie will be among the privileged few to be able to tune into their own local television station, or "close-up television" as the promoters of Channel Europe Mont-Blanc prefer to call it. They received the CNCL's authorization to broadcast on 17 June.

Andre Campana, the station's president and associate manager at Lucie, S.A., explains the term: "'Close-up Television' because instead of a small-scale national channel with general programming, we wanted to create complementary programming, highly varied, that will attract, entertain and serve the viewer; programming that is open to the residents, businesses and communities." The concept was established 2 years ago with Channel "Portes du Soleil" [Gateways to the Sun], a 46-day experiment conducted by the same professionals: Andre Campana, Jean-Charles Eleb, Patrice Laffont, and Christian Debois-Frauge, with the assistance of Gerard Bremond, president and director general of Pierre Vacances. The estimated cost of the station, which will employ 29 people, is 16 million francs annually, to be met through national advertising (40 percent) and regional advertising (60 percent). In the first year, a "shortfall" of 3 million francs is expected, but the books should balance as of the second year. INPUT FILE:

SWEDEN

Purchase of Ericsson Switching System
55002405 Stockholm DAGENS NYHETER in Swedish
25 Sep 88 p 16

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

UNITED KINGDOM

Broadcasting Panel Proposes Ethnic Radio Stations

55500008 London THE DAILY TELEGRAPH in English 14 Sep 88 p 10

[Article by Jane Thynne]

[Text] Plans for 20 radio stations catering for ethnic and specialist interests have been put forward by the Independent Broadcasting Authority.

If approved by the Home Office, the independent stations could be in operation from next year.

The IBA proposals are part of a stop-gap measure to accelerate the development of non-BBC radio in Britain.

Government plans to introduce up to 300 community radio stations have been halted by delays in radio legislation, which is not expected to become law until mid-1990.

The scheme is a last-ditch measure by the IBA's radio division, which will be abolished in 1990 and replaced by a Radio Authority.

An earlier Home Office experiment to develop community radio was shelved at the eleventh hour in 1986 because of fears that broadcasters would transmit political propaganda.

The 20 new, advertising-backed stations will not need to carry a broad range of programming. Their relationship to existing local independent radio stations may be similar to that between Channel 4 and ITV.

Following hints made by Mr Hurd, the Home Secretary, earlier this year, broadcasters who have previously operated as "pirates" are expected to be banned from applying for licences.

The IBA is proposing to select the 20 areas most in need of new stations and to specify which should be given to ethnic broadcasters.

If an area is advertised for ethnic service, the type of community to be served will also be specified—an Afro-Caribbean service in South London, for example.

Mr Peter Baldwin, the IBA Director of Radio, said yesterday that the Home Office should respond positively to his proposal because it would "provide a choice of radio at a time when the future of radio is being debated".

Existing local radio contractors would be permitted to bid for the licences, but according to Mr Baldwin, the proposal was intended to "widen the field of people who are broadcasting".

The Community Radio Association estimates that around 50 pirate radio stations are operating in London because of delays in legislation.

It said that Home Office rejection of the IBA plan would be "an open invitation to further unlicensed broadcasting, for which the Government will only have itself to blame".

10

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