Post-it™ brand fax transmittal memo 7671

	# of pages ▸ 20
To Ms Whitehead	From G. Nickias
Co. Whitehead + Ass	Co. PAS
Dept.	Phone #
Fax # 703/847-8804	Fax #

ite Systems in Asia and The Pacific Rim"

The Pacific Rim has always been known to be on the forefront of technology. However, because of the distance, the Pacific Rim countries have often been isolated in its communications with the West. Until recently, most countries had limited access to international communications and had to rely on whatever means were available to them. Because of this, communications were expensive, limited and often not even available. The emergence of Private Separate Satellite Systems in the West has proven that the field of telecommunications can advance to suit the needs of the consumers not just the governments.

In order to explore the special applications of private systems in the Pacific Rim, it is necessary to examine the development of competition in international communications, and the recent global and regulatory changes affecting Private Systems. This can be done by using the example of the successful expansion of the world's first private international satellite system, Pan American Satellite.

The emergence of competition into the telecommunications arena has dramatically changed the course of communications. Because other companies are allowed to and even encouraged to enter the market, everyone has benefitted from an open market system. From the satellite service providers, to the individuals receiving programming on their television sets, competition has made telecommunications accessible to all. The mass growth of communications through competition has led to the advance development of fiber cable and satellite services. It is through these two means that communications can be linked across the world regardless of physical or cultural barriers.

With the combination of fiber and satellites, services such as broadcasting, video, data and telephony can be received by a larger population. Fiber can link signals directly point-to-point while satellites can traverse greater distances and geographical barriers to provide point-to-multi-point transmissions.

The first development of satellite systems originated with Intelsat. Intelsat, a consortium of 119 member nations, was set up to provide global satellite telecommunications services to countries around the world on a commercial basis. While Intelsat controlled the satellite services directly, the member nations PTTs controlled the ground segment therefore creating a "super monopoly." In order to have access to any type of satellite communications, it was necessary to go through the PTTs to gain access to the Intelsat Satellite System itself. This obviously has proved to be very costly because of the different charges incurred going through various channels for any type of satellite service.

Previously, services could also be difficult to obtain because of the heavy restrictions placed on telecommunications by the PTTs as well as by Intelsat. Basic services were often limited, expensive, and supply driven not market driven. Because of this, telecommunications in many parts of the world have remained at a stagnant elementary level.

Therefore, the need for a competitive system was inevitable. Competition had to be introduced in order to reduce the cost of satellite services and create a more responsive means to meet the dynamic communications requirements of users.

A direct result of competition in an open market system was the emergence of domestic satellites. These regional satellites are owned by individual companies instead of by the governments. Their purpose is to provide specific broadcast transmissions to strategic regional areas. With the developments of domsats, cable television became a household name. Individual domsats carried a variety of programming ranging from free news channels to pay television entertainment channels. These domestic satellites via regional transmissions have succeeded in providing competitive programming to the mass public.

Nevertheless, the same open market system which had proved to be so successful in the United States, had to be introduced to other areas of the world. Europe was quick to follow suit and launched their own system, Eutelsat, which was jointly owned by several European countries. Eutelsat, like the American domsats, provided broadcasters with an alternative to the Intelsat system.

However, satellite services were still limited to their individual region and did not provide a viable alternative for international communications. In the mid 1980's the United States policy for domestic communications was transplanted into the international arena with the United States Separate Systems Policy. Pan American Satellite, Orion and several other companies were the first private companies to file with the Federal Communications Commission for access into the field of international communications. Following the Presidential Determination, the Federal Communications Commission authorized the establishment of private systems separate from Intelsat.

With the emergence of Private international satellite systems, previous obstacles to satellite services were overcome. Services can be booked directly, bypassing expensive surcharges and inflexible schedules. Competition in turn, forces companies to create innovative services and lowers the cost of such services.

Through higher technology, services become more readily available thus beneficial to all requiring communications. Companies can be linked internationally, transmitting vital data on a real time basis, people from around the world can witness breaking news events as they happen and nations from different continents can share cultural events and entertainment. Private systems also differ themselves from controlled governments systems in that private systems are responsive to the needs of the customers. Customers receive the services they require for their international transmissions, not merely the limited services offered by Intelsat.

The advancements of competition in the telecommunications market came about through the many changes occurring in the world today. The upcoming Unification of Europe into a single European common market in 1992 has radically changed the policies of communications. In addition, the Duopoly Review in England this year has initiated the changing process in Europe. With the de-regulation of communications policies in Europe, customers are now allowed direct access to private systems. This in turn will allow them to enjoy the benefit of competition through an open market system.

Two monumental regulatory changes in Latin America over the past two years were the freedom to allow access to private satellite systems, and the de-monopolization of the PTTs. These changes have welcomed competition in the telecommunications industry and as a result, Latin America has developed communication infrastructures and has allowed for access into international markets.

These telecommunications policy changes are now likewise being felt in the Pacific Rim. With the "Beazley Plan" in Australia, Australia has made great strides to invite open competition in the hope of having a more successful telecommunications system. By inviting foreign investments and allowing foreign ownership of Aussat under the Beazley Plan, Australia is in fact creating a new duopoly system.

Likewise, Japan has opened its doors to the benefits of competition. Previously, Japan has been involved in the satellite industry in so far as its usage of American built satellites for domestic purposes. Today Japan is a leader in the field of technology by designing its own satellite system and opening its doors through de-regulation.

We believe that the area of the Pacific Rim shows great promise as the future of telecommunications continues to develop. The growth of telecommunications can be aided through the benefits of competition acheived through private systems.

Increases in demand and improvements in technology have laid the groundwork for private systems including the expansion of a series of additional satellites for the Pan American Satellite System.

Pan American Satellite is the world's first international telecommunications satellite system. The company, solely owned by Rene Anselmo, was formed in 1984. The PAS-1 satellite was launched in June of 1988 and became operational in September of that year. From a humble beginning of providing services to one country, Today, only two and one half years after the launch, Pan American Satellite provides international data and broadcast services to over 60 countries on three continents.

The success of this international private system is largely due to the unique service it provides its customers. Unlike other satellite companies, the PAS-1 Satellite System is owned and operated by the same company. Therefore, a wider variety of services can be offered to the satellite user.

Additionally, because the user does not have to coordinate with several different channels for the same service, services can be direct, inexpensive, and flexible. This is in addition to having the option of obtaining full turnkey services or just leasing bulk capacity. There are also no hidden charges involved. Because the user is directly accessing the satellite, the charges are the same for point-to-multipoint transmissions as it is for point-to-point transmissions.

The success of the first PAS-1 satellite has led to further expansion plans. In 1993, Pan American Satellite plans to launch a duplicate satellite over the Atlantic Ocean Region. Because of the need for further satellite capacity and service in Europe, the Soviet Union, the Middle East and Africa, the new large hybrid international satellite will access these regions as well as the Americas. The new AOR satellite will be capable of cross-strapping both Ku and C Band beams. This will allow for "one-hop" services between all three continents resulting in increased flexibility, speed and service.

The second area of expansion will be in the Pacific Ocean Region. Plans for this Pacific Satellite are to launch the satellite sometime at the end of 1993. This POR satellite will have international coverage of the Pacific Rim countries and will have 24 C band and 18 Ku band transponders. The satellite will provide service to Japan, Korea, Taiwan, China, Hong Kong, Singapore, Australia, New Zealand, the United States, Alaska and Hawaii. The satellite will be able to connect signals from other PAS satellites and is also capable of cross strapping beams.

The last area of expansion is in the Indian Ocean Region in 1995. The last satellite will have coverage of Europe, Soviet Union, Central Asia, Middle East, Eastern Africa, East Asia and Australia. With the expansion of three new satellites, the prospects for true international coverage via a private system will be realized.

The significance of these majestic expansion plans is that through expansion, the benefits of competition can be actualized around the world. With true global coverage through an international private system, nations can link their transmissions anywhere around the world simply, economically and quickly. No longer will there be the barriers of geography and distance.

These benefits of competition through an international private satellite system can be actualized in the Pacific Rim in the near future. The Pacific Rim can benefit greatly from a variety of different satellite services available through a private system. A series of domsats can provide strategic regional services to specific areas. Domsats also allow customers the flexibility of owning transponders on a "time shared" basis. These "condominium" domsats still have the benefits of targeting specific regions, but offer the option of only owning the time segment which would be most useful to them.

Another benefit of a private system satellite is that the satellite's high power enables customers to use smaller receive antennas. This proves to be more economical for customers and allows more customers direct access to the satellite without having to use the services of teleports. Likewise, this opens the market for further VSAT usage.

The possibilities are endless. The advantages of satellite transmissions far outweigh those over fiber for a region such as the Pacific Rim. Satellites cover thin routes which don't carry an abundance of traffic. They also have direct access to smaller cities and rural areas. In an area surrounded by islands, this is imperative. The cost of laying fiber over such long distances in very costly. Access to the rural areas will be years away.

International communications via a private satellite system will connect the Pacific Rim to the world. Smaller cities, factories, schools and small businesses can receive data, television and radio. Telecommunications is our future, and the future is closer with private international satellite systems.

ALPHA LYRACOM
SPACE COMMUNICATIONS

VIA FACSIMILE 011-8862-719 7982

January 10, 1991

Mr. Joseph Chou
President
Taiwan Telecommunications Company
Taipei, Taiwan

Dear Mr. Chou:

Several companies, including Hughes Network Systems, are impressed by your company and your plans for satellite communications in the Pacific Rim. My company, Alpha Lyracom, also provides private international satellite services in the Atlantic Ocean region. We have recently announced our intention of expanding beyond the Atlantic Ocean Region into the Pacific and Indian Ocean Regions. In this regard, we are interested in exploring the possibility of future cooperations with telecommunication companies based in Asia.

I will be on an extended trip throughout Asia this month to explore establishing relations with strategic partners. (Enclosed is a summary of the Offering Memorandum.)

If there is an interest on your part, I would like to meet with you and your staff. I plan on being in Taiwan from January 27th through January 30th.

I look forward to hearing from you.

Sincerely,

Frederick A. Landman
President

FAL:mf

PAN AMERICAN SATELLITE · ONE PICKWICK PLAZA · GREENWICH, CONNECTICUT 06830 · TELEPHONE 203/622/6664 · FAX 203/622/9163

ALPHA LYRACOM
SPACE COMMUNICATIONS

Post-It™ brand fax transmittal memo 7671	# of pages ▸ 3
To T. Whitehead	From FAL
Co. FYI	Co.
Dept.	Phone #
Fax #	Fax #

VIA FACSIMILE 011-82-2-812-5355

January 10, 1991

Dr. Yong Son, Professor & Dean
Graduate School of Mass Communication
Chung Ang University
Seoul, 156-756, Korea

Dear Dr. Son:

Phil Spector, whose firm represents our communication interests in the United States, suggested that I contact you concerning our interest in establishing satellite communications within the Pacific Rim and between that area and North America. I believe that Mr. Spector briefed you in Seoul in August on our specific interests relative to Korea and that you met with Dr. Clay Whitehead in Washington in November of last year.

Our interests include:

- Obtaining an equity investment from a strategic partner in our satellite venture (a strategic partner might, for example, be a company interested in contracting or subcontracting with respect to our planned satellites' construction;
- Securing one or more large users of satellite capacity, either for international or domestic Korean use; and
- Securing Korean Government approval with respect to landing rights and operating authority.

I've enclosed a summary of the investment offering which we are just now bringing to market. This document is confidential, but may be shared with those that you think would be interested in the project.

Pan American Satellite
Rubin, Bednarek and Associates, Inc.

TECHNICAL MEMORANDUM

Date: **January 4, 1991**

To: **Fred Landman**
Fm: **Philip Rubin**

Sb: **C-Band Frequency Reuse in Pacific**

I am attaching one option for frequency reuse at C-Band in the Pacific for your review. In this case, all transponders are 72MHz. In Figure 1, the US uplinks 6 transponders (500MHz) at H Pol and the satellite transmits the 500 MHz in V Pol to the Pacific region.

In Figure 2, the US uplinks 6 transponders at V Pol and the satellite transmits 250MHz (3 transponders) to each downlink beam. The South Beam is H Pol down 3.7-3.95GHz and the North Beam is H Pol 3.95 to 4.2GHz.

In Figure 3, a Pacific uplink beam transmits 500 Mhz (6 transponders) at H Pol to the satellite and the satellite transmits 6 transponders at V Pol to US.

In Figure 4, each of the two Pacific uplink spots transmit three channels to the satellite at V Pol. A switch in the satellite is able to place each channel either in the US downlink, or back to the same Beam. This is done by selecting the frequency band which was not used when the US transmitted to the two spot beams in Figure 2. Thus, the South Beam uplinks a V Pol 6.175-6.425GHz signal which enters the switch in the satellite. The switch sends this transmission either to the US beam or back to the South Beam, using the frequencies not previously used in H Pol, i.e., 3.95-4.2GHz. Likewise the North Beam has the option of sending any or all of its three channels to the US or back to the North Beam.

The only thing this option does not provide is communication between the two spot beams. However, that can be accomplished at Ku-Band, except for the Oceana Beam.

Attachments: Figures 1-4.

cc: Tom Whitehead

Dr. Yong Son, Professor & Dean
Graduate School of Mass Communication
1/10/91 Page -2-

I plan on attending the Pacific Telecommunications Conference in Hawaii next week. I understand that you may also be in attendance. I will be staying at the Sheraton Royal Hawaiian Hotel in Honolulu (telephone number: 808/923-7311; fax number: 808/924-7098 from Sunday, January 13th thru Tuesday, January 15th. I will then be travelling West and tentatively expect to be in Seoul towards the end of the month.

I would like to know if you would be available to meet either in Hawaii or Seoul to discuss these matters. I look forward to meeting you.

Sincerely,

Frederick A. Landman
President

FAL:mf
Enclosure

cc: Tom Whitehead
Tom Carroux

FIGURE 1

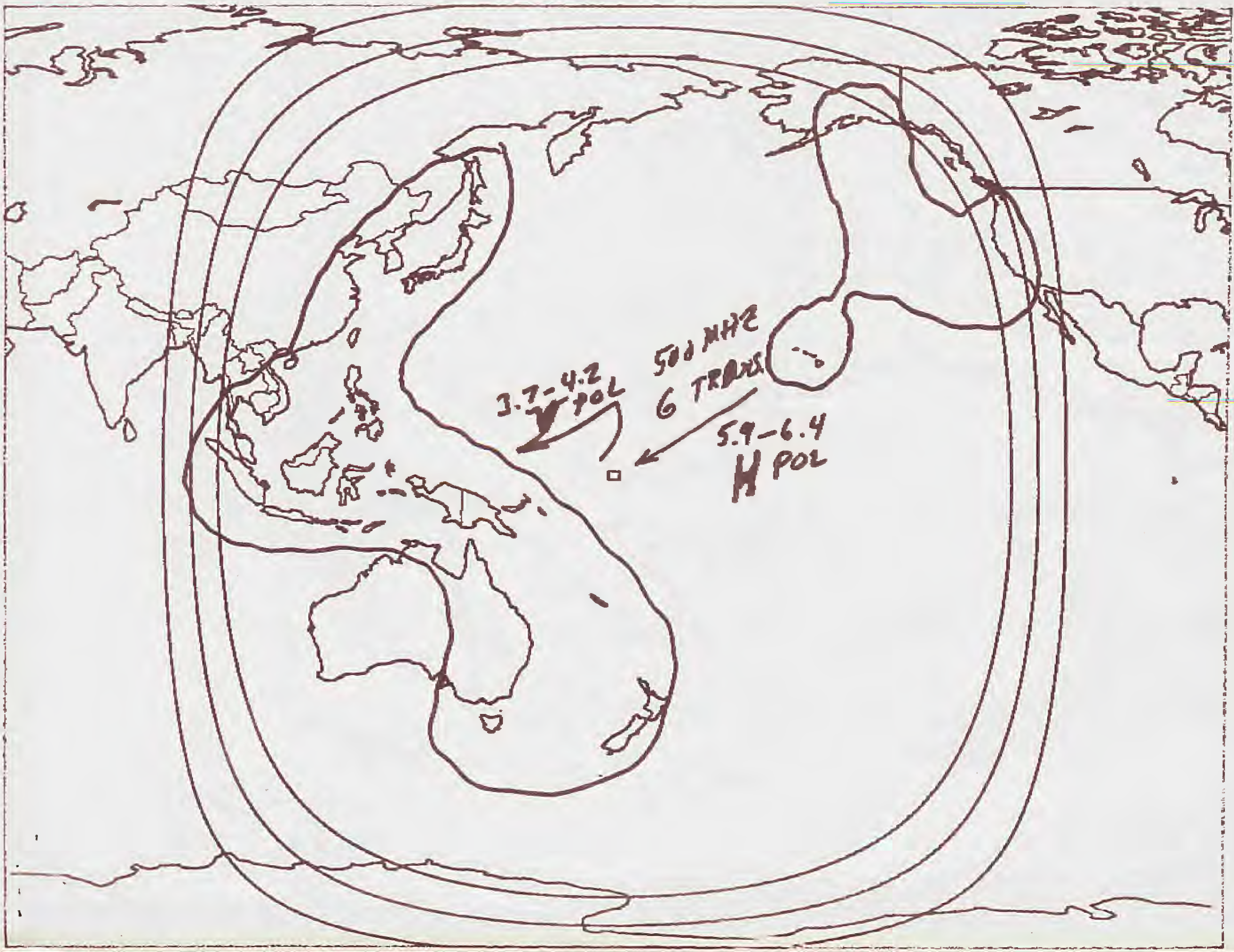


FIGURE 2

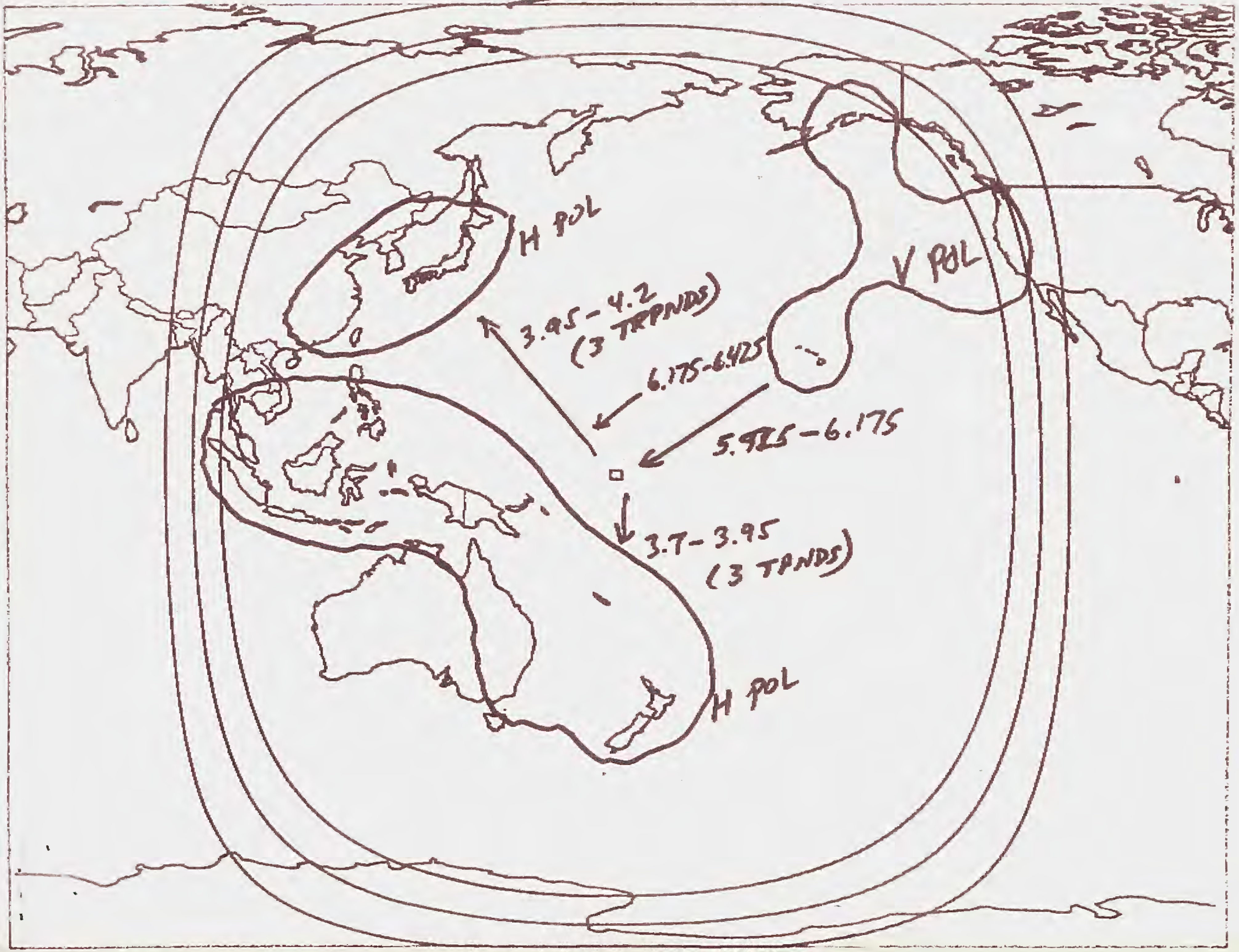

H POL
3.95 - 4.2
(3 TRPNDS)
6.175-6.425
5.925 - 6.175
V POL
3.7 - 3.95
(3 TPNDS)
H POL

FIGURE 3

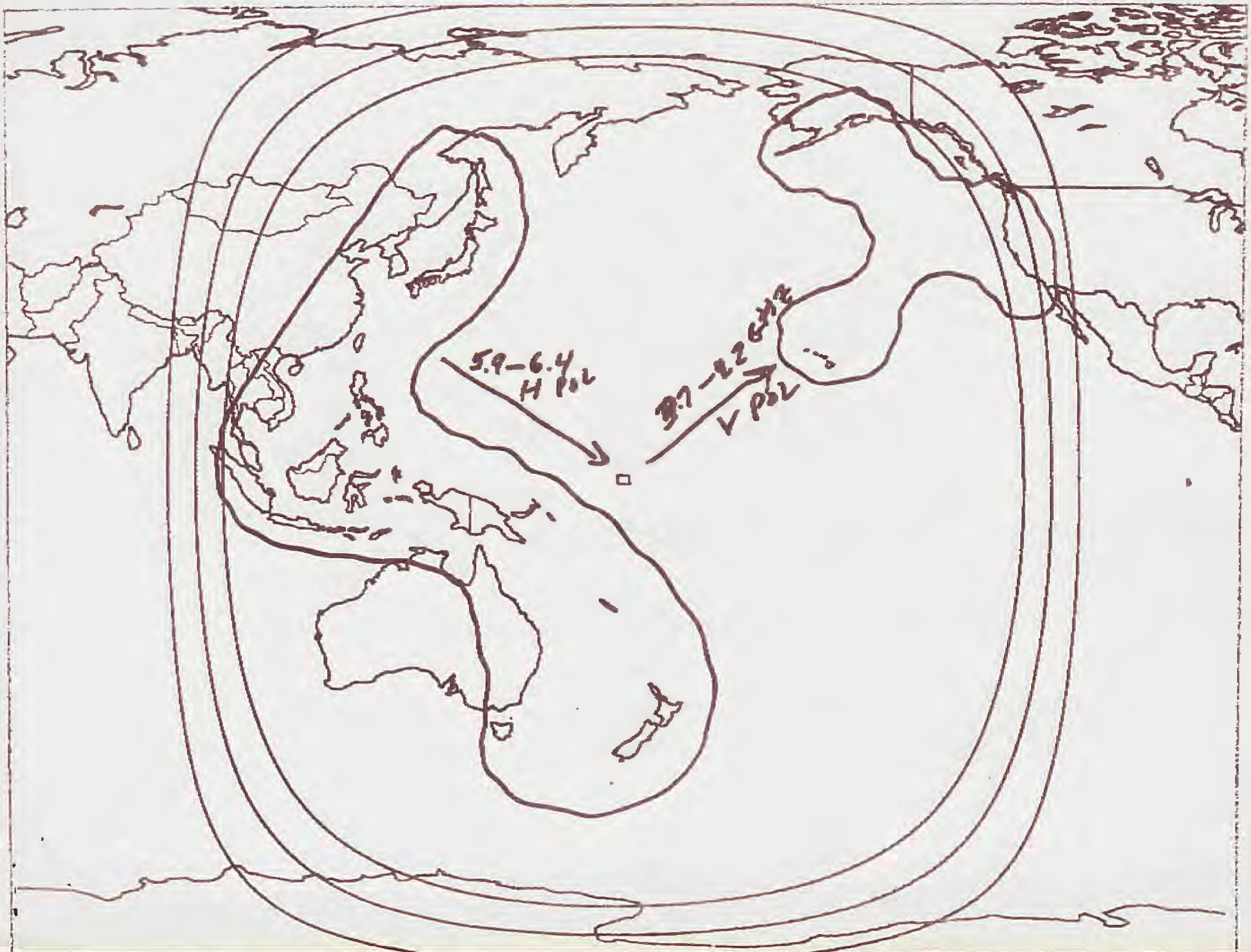
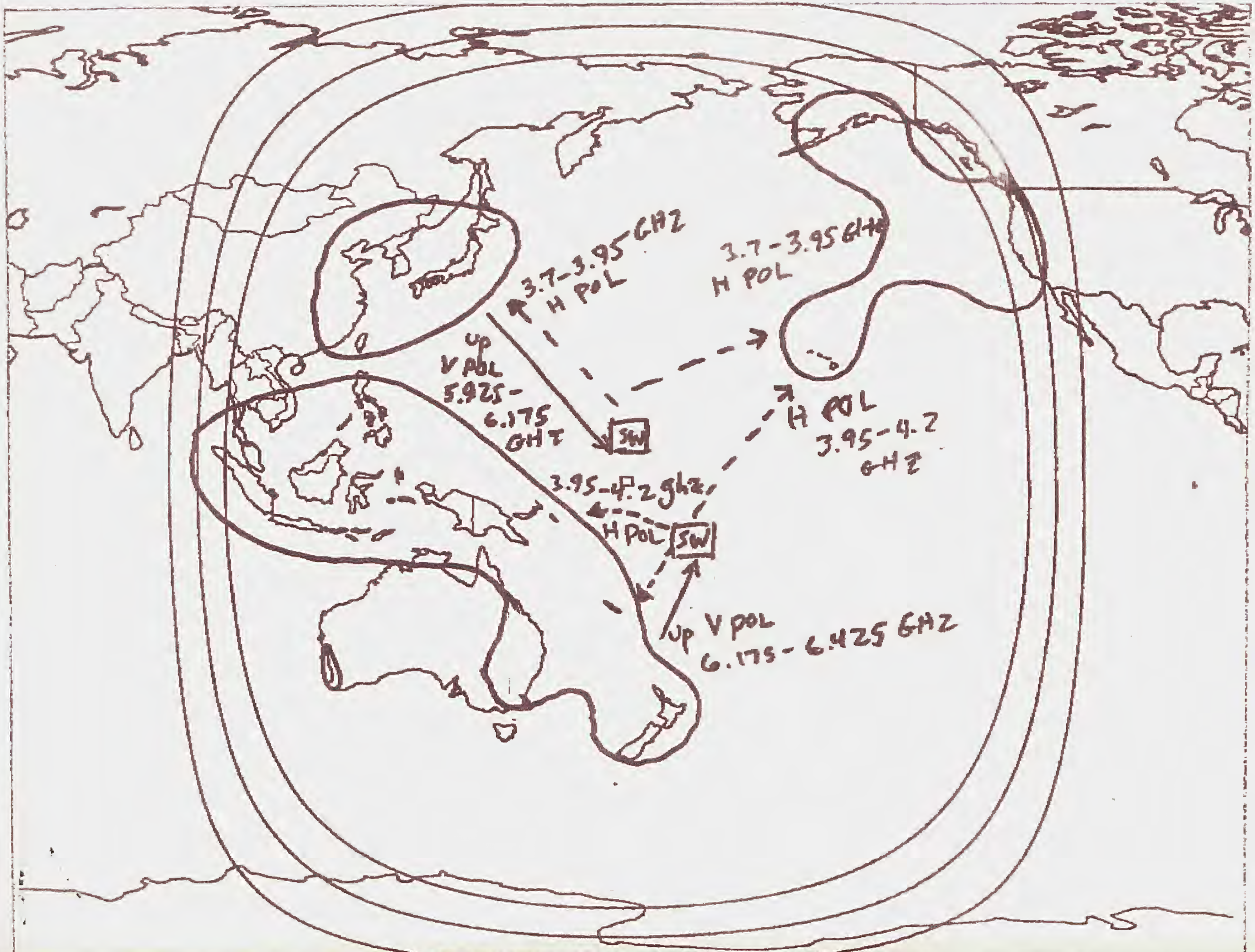


FIG 4


3.7-3.95 GHZ
H POL
Up
V POL
5.925-
6.175
GHZ
SW
3.7-3.95 GHz
H POL
H POL
3.95-4.2
GHZ
3.95-4.2 ghz
H POL
SW
Up V POL
6.175-6.425 GHZ

Pan American Satellite
Rubin, Bednarek and Associates, Inc.

TECHNICAL MEMORANDUM

Date: **January 3, 1991**

To: **Bill Clopp**
Fm: **Philip Rubin**

Sb: **PAS-4 Pacific Requirements**

This memo describes the PAS-4 satellite requirements for the Pacific service using a satellite which is as close the Atlantic satellite as we can configure it. If you have any suggestions which would make the second more of a clone, please don't hesitate to let me know.

PAS-4 will be located at 192°WL and have twenty-four C-Band 36MHz transponders and eighteen Ku-Band 72MHz transponders. Beam coverages are shown in the attached figures. The frequency band used is the traditional 5.9-6.4GHz uplink and 3.7-4.2GHz downlink.

At C-Band, a single global uplink beam highlights the US (west coast, Hawaii and Alaska), the nations of the Malay peninsula and Oceana, and the Japan/China/Korea/Taiwan/Hong Kong area. This is shown in Figure 1. Please note that although a single uplink beam is being used, coverage is actually quite sparse resulting in very good uplink directivity.

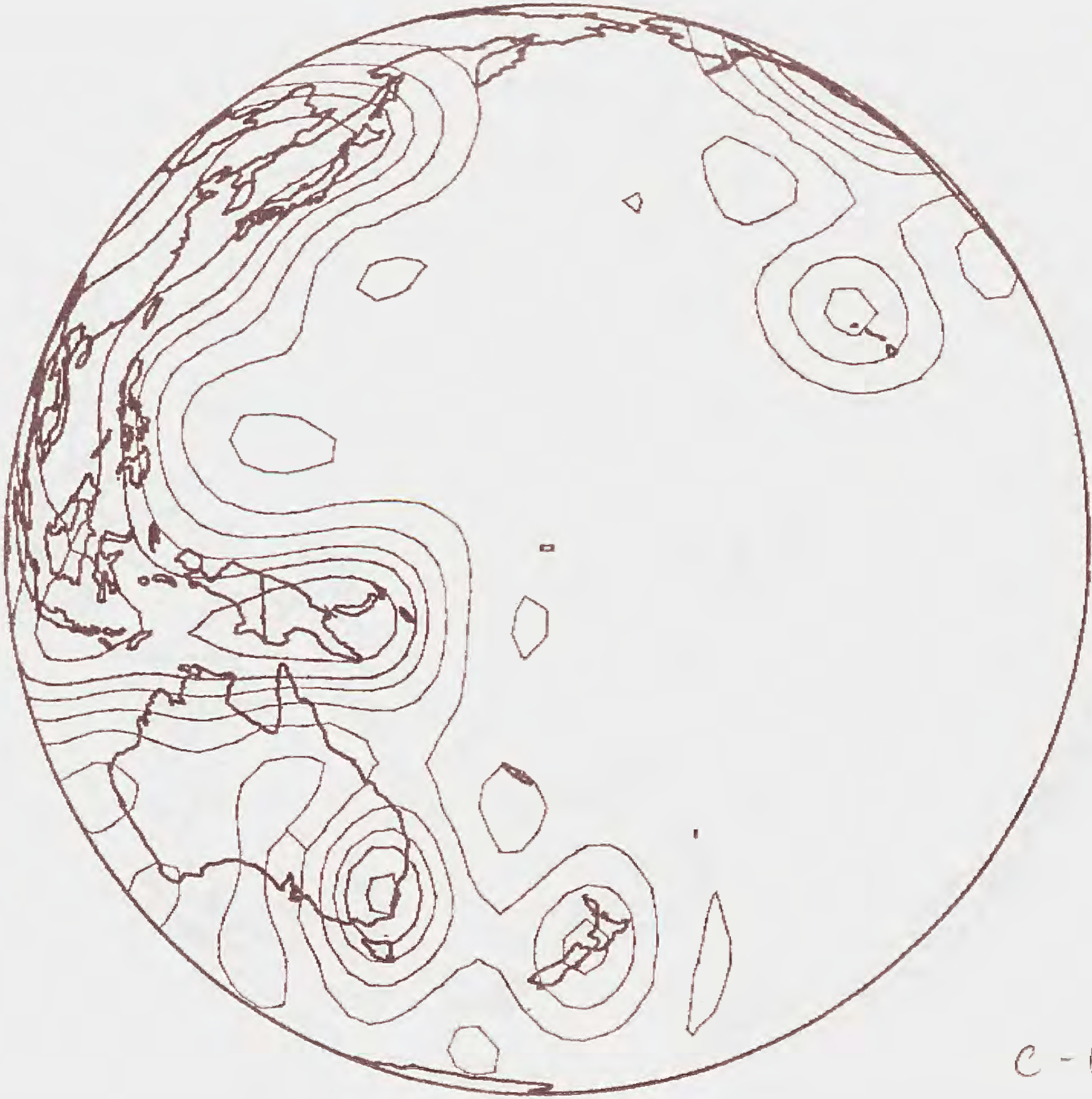
Downlinking in C-Band results in three beams. The first is a US beam shown in Figure 2 which covers one polarization and twelve channels. This beam utilizes the 11 watt SSPA's. The C-Band downlinks for Asia cover the Japan/China/Korea/Taiwan/HK area and the Oceana/Malay peninsula area. We would be assigned eight channels to the Japan Beam and four channels to the other beam. These coverages are shown in Figures 3 and 4. The 16-20 watt SSPA's are used in these beams.

The C-Band design has been simplified to reduce costs and improve flexibility. The global uplink enables every user in the C-Band system to connect to every other user. Keep in mind that the C-Band downlink in the US is the only connection between the US and the K-Band payload and therefore more than half the transponders will have to be cross-strapped.

The Ku-Band payload makes use of the same eighteen 72MHz transponders found in the Atlantic design. Here uplinking is accomplished by three beams. One is global for the Pacific territories shown in Figure 5, while the other two in Figure 6 are separated enough geographically that frequency reuse is possible. Notice also that like C-Band, Ku-Band coverage is highly selective. The global uplink frequency band used is 14.0-14.5GHz V Pol, while the spot uplinks are 14.0-14.5GHz H Pol. The downlink frequency band used is 12.25 to 12.75GHz. In that band, 12.25 to 12.5GHz is reserved for national or sub-regional transmission, while 12.5-12.75 is be used for international, regional and national communications. For the global downlink, 12.25-12.75 H Pol is used, and for the spots, 12.25-12.75GHz V Pol.

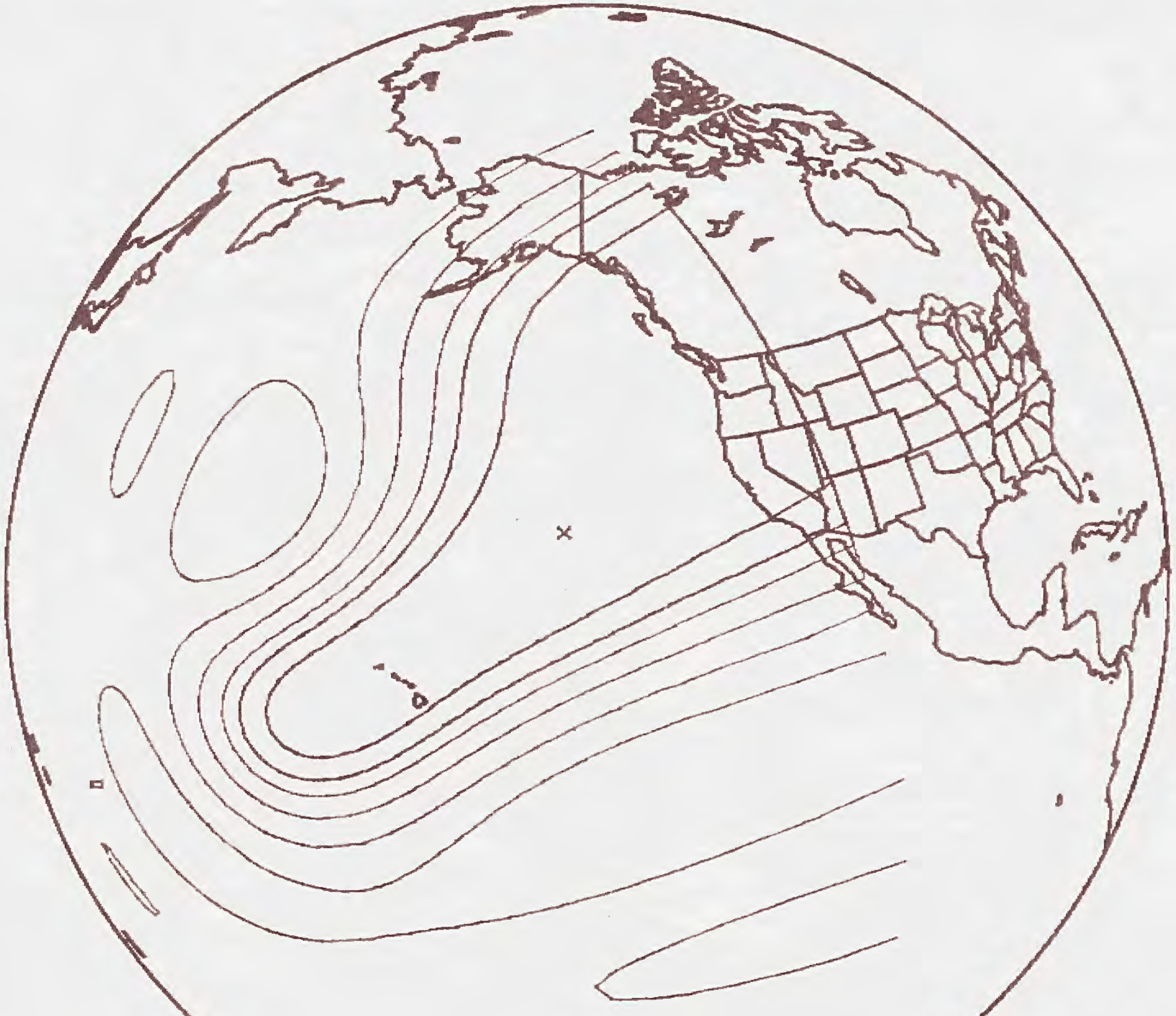
Ku-Band downlink coverages are in three beams. The global downlink covers the areas shown in Figure 6 (same as uplink figure). The two spot beams are the Japan/China/Korea/Taiwan Beam and the Oceana Beam. Because of the predicted high losses in the Malay peninsula rain zone, we are not planning Ku-Band service into that area. Rather that could be accomplished with cross-strapping. We might be interested in a small spot into Singapore but that is not yet decided. The downlink spot coverages are depicted in Figures 7 and 8.

Figure 1.



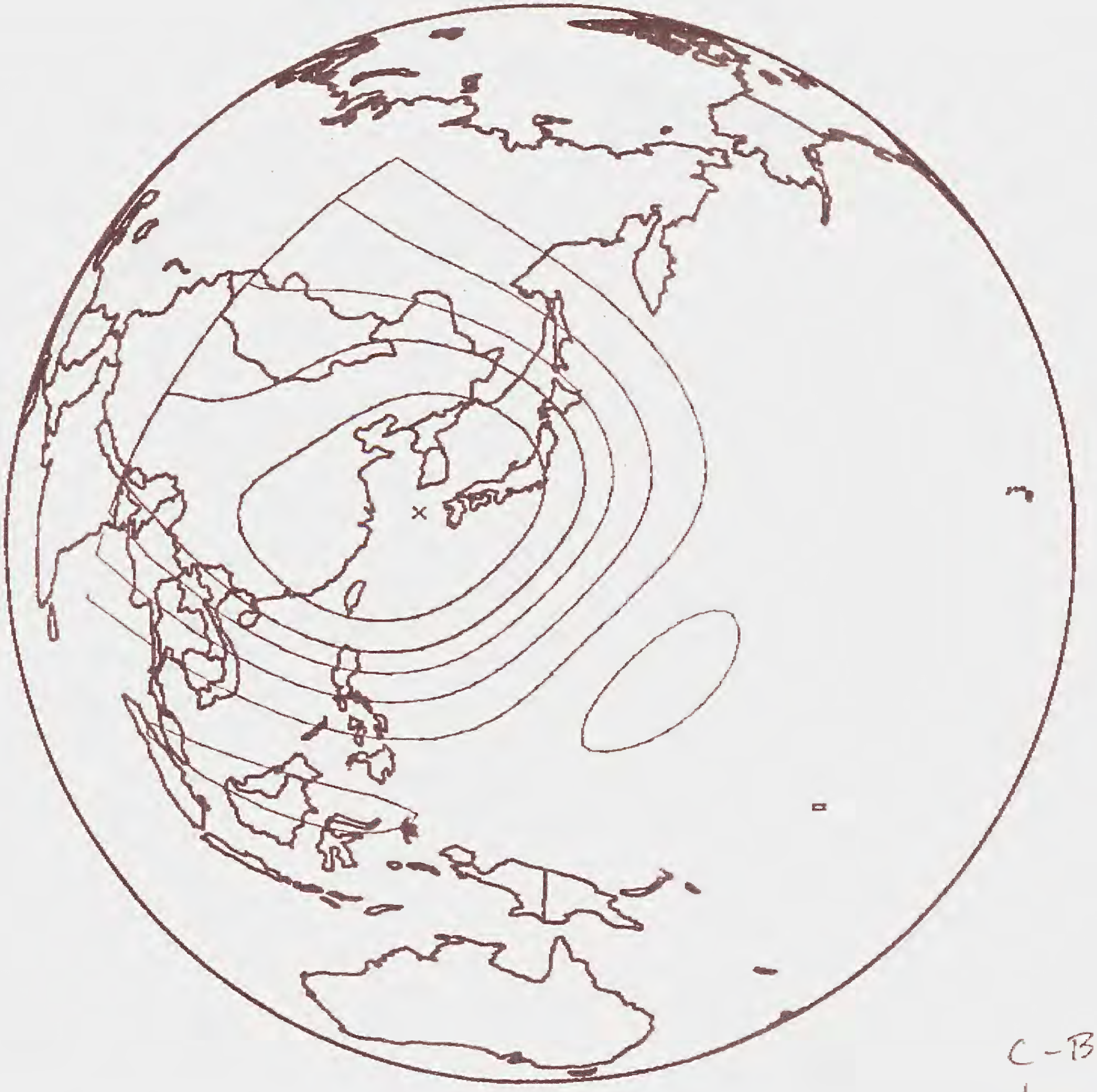
C - Band
Uplink
Comparison - All Chs.

Figure 2



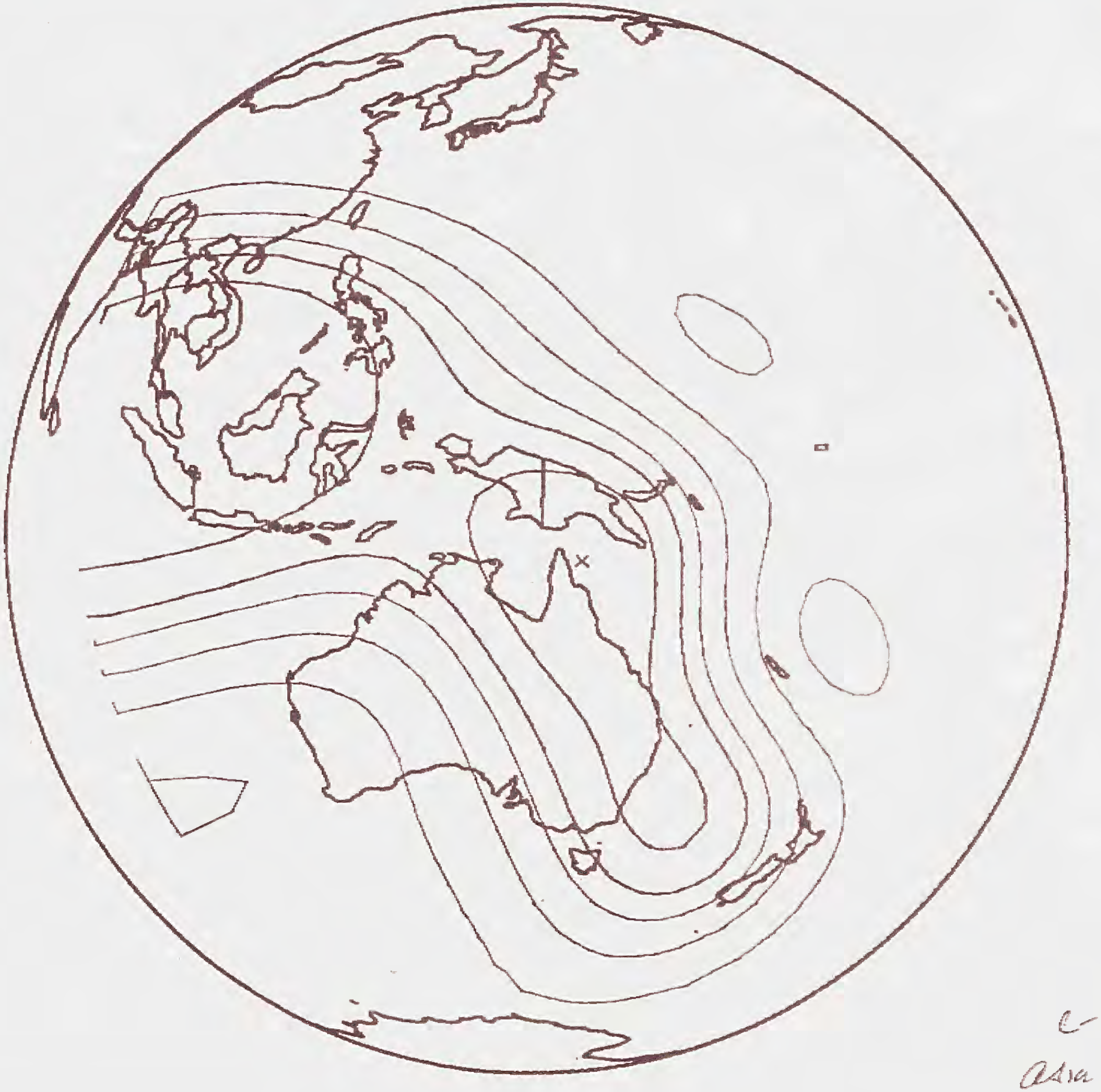
C-Band DOWN
US only

Figure 3



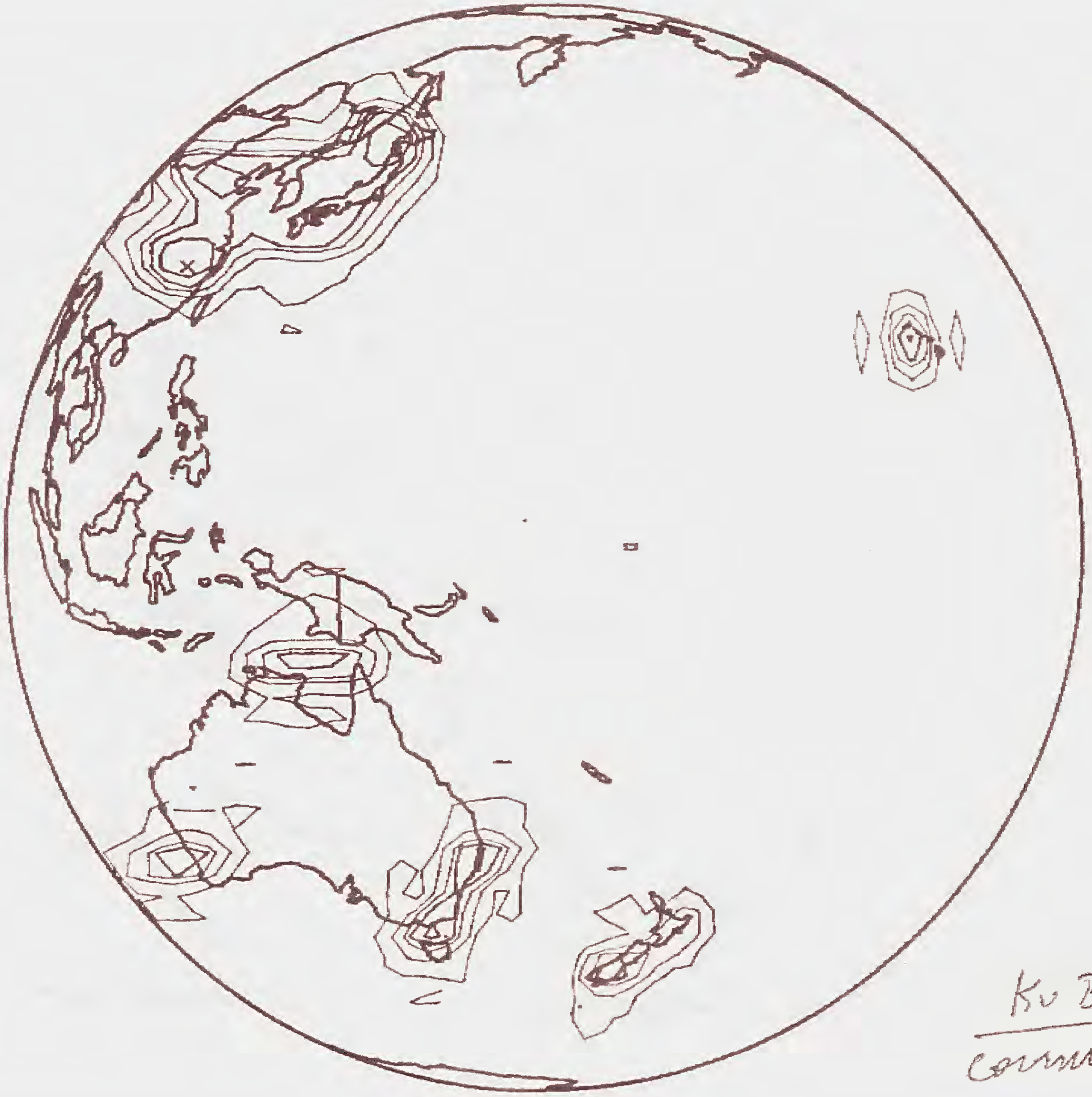
C-Band Down
Japan/Ch/Korea

Figure 4



C-Band Down
Asia-Oceania-Aus

Figure 5



Ku Band

Common Uplink

vp

Figure 6

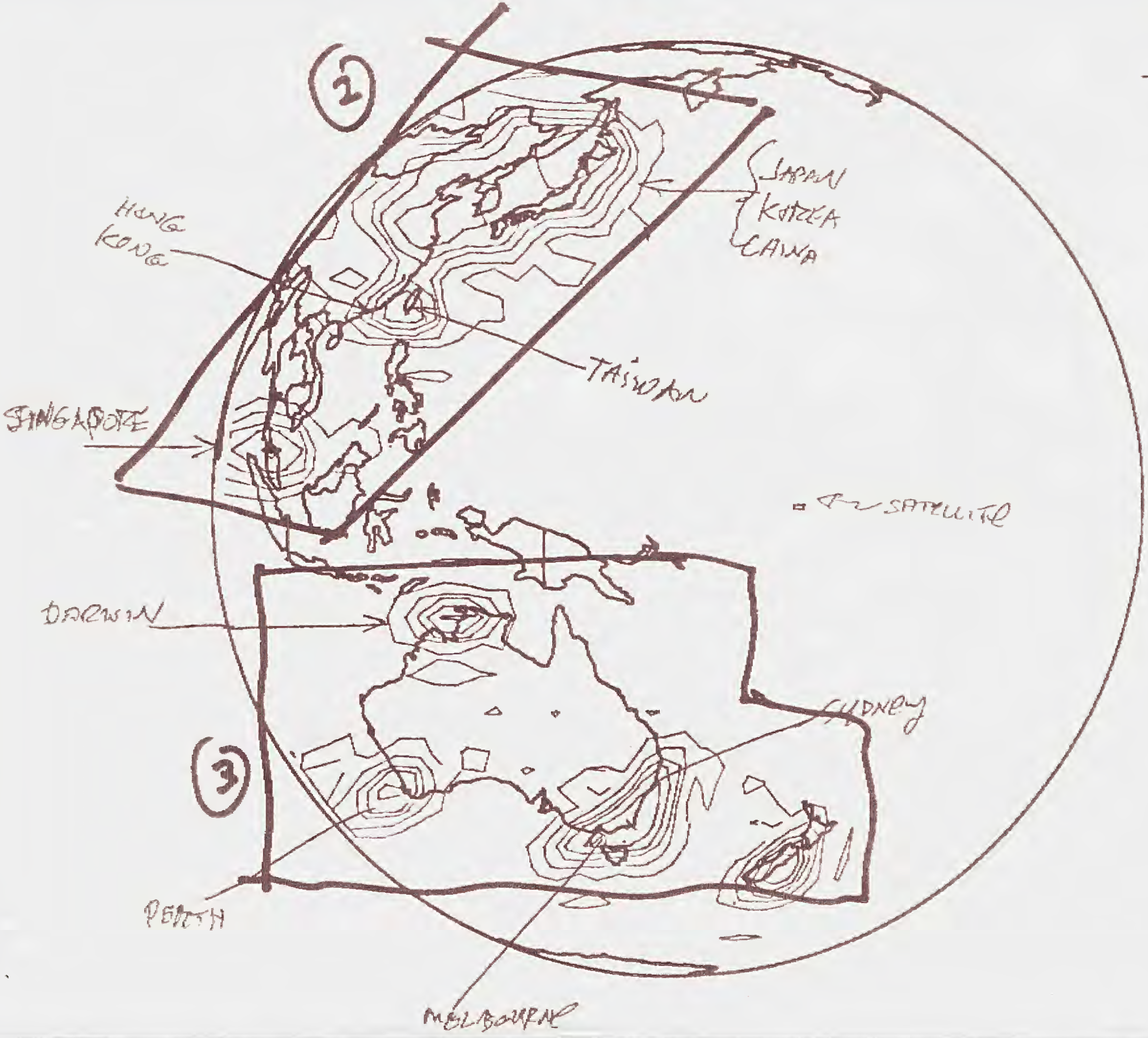

②
JAPAN
KOREA
CHINA
HONG KONG
TAIWAN
SINGAPORE
SATELLITE
DARWIN
③
SYDNEY
PERTH
MELBOURNE

Figure 7

K- Band Down
Australia +
Singapore

Figure 8

K Band Down

Japan/China/Korea
Taiwan/HK/Sing

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

11o89

In the Matter of)
)
Petition for Rule Making to Modify) RM 7562
Commission Policies Established in)
CC Docket No. 84-1299 Relating to)
Separate Satellite Systems,)
Including the Prohibition on)
Carrying Traffic Interconnected)
With the Public Switched Message)
Network)

ORDER EXTENDING COMMENT PERIOD

Adopted: December 20, 1990 Released: December 21, 1990

By the Chief, International Facilities Division:

1. On December 3, 1990 the Commission issued a public notice of a petition for rulemaking in the above-captioned matter filed by Pan American Satellite (PAS). On December 5, 1990, the Commission issued a "corrected" public notice which specified that interested parties have 30 days within which to respond.

2. On December 18, 1990, Columbia Communications Corporation (Columbia) filed a motion requesting an extension of time until January 31, 1991 for the submission of comments in the above-referenced petition for rulemaking. Columbia states that the issues raised in PAS's petition are of fundamental importance to the U.S. separate international satellite industry and that interested parties need more than 30 days within which to gather relevant data and to prepare their responses. In addition, Columbia believes that an extension is merited since the principles of many interested parties will be unavailable for consultation during the two weeks immediately preceding the current filing date due to the Christmas and New Year holidays. Columbia also notes that a grant of the requested extension of time would clear up the confusion that has arisen as to whether the current deadline is 30 days from December 3, 1990 or December 5, 1990.

3. Extensions of time are not routinely granted and the proximity of a filing date to a holiday is generally not a sufficient reason for an extension. See 47 C.F.R. §1.46(a). In this case, we agree with Columbia that the issues involved are of such magnitude that the current deadline might not afford interested parties sufficient time. The issues presented in PAS's petition are not only of importance to the separate satellite industry, but affect the future of the entire international satellite industry. The fact

that the Christmas and New Year holidays coincide with the current filing deadline further lessens the likelihood that interested parties could adequately address the issues presented. We therefore find good cause to grant the requested extension of time.

4. Accordingly, IT IS ORDERED, pursuant to the authority set forth in Section 1.46(b) of the Commission's Rules and Regulations, 47 C.F.R. §1.46(b), that all interested parties will have until January 31, 1991 to file comments and until February 15, 1991 to file reply comments in the above-captioned matter.

FEDERAL COMMUNICATIONS COMMISSION

George S. Li
Chief, International Facilities Division
Common Carrier Bureau

ALPHA LYRACOM
SPACE COMMUNICATIONS

FACSIMILE MESSAGE SHEET

Fax: 203/622-9163

Date: 12/19

TO: Tom Whitehead

FROM: Elizabeth Dickins

Fax No: 703/847-8804

Number of pages to follow 1.

Delivery instructions:

PLEASE DELIVER IMMEDIATELY ☒

CONFIDENTIAL [ ]

NORMAL PROCESSING [ ]

OTHER

!Important!

MESSAGE:

Okay, this is it. Time to do something. Please review the following skeleton outline and comment on the points so I know what you would like to say, then I will write it into a speech. ASAP

Thanks

If transmission is incomplete, please call 203/622-6664.

PAN AMERICAN SATELLITE • ONE PICKWICK PLAZA • GREENWICH, CONNECTICUT 06830 • TELEPHONE 203/622/6664 • FAX 203/622/9163

ALPHA LYRACOM

December 1990

"Satellite Solutions for Asia"

I.Introduction

II.Introduction of Competition in Asia
Private Systems as a solution

- A.Benefits of Competition
  - i. Lower cost of telecommunications
  - ii. Creation of innovative services

- B. Global Changes
  - i. Europe
  - ii. Latin America
  - iii.Australia/ New Zealand
  - iv. Japan

- C. Regulatory Changes
  - i. Intelsat
  - ii. PTTs

III.Pan American Satellite

- A.PAS-1
  - i. Growth from 1988 to present from 1 country to to almost 70 countries
  - ii. Service Offerings
    - a. Domestic/ International
    - b. Bulk Lease
    - C. Full service

- B. Expansion
  - i. PAS-2
    1993, AOR
  - ii. PAS-3
    1993, POR
  - iii.PAS-4
    1994/5, IOR

- C.Significance of Expansion
  - i. Global Coverage
  - ii. First private global system
  - iii.By-products of competition

IV.Conclusion

FACSIMILE COVER SHEET

CLAY WHITEHEAD ASSOCIATES
1320 OLD CHAIN BRIDGE ROAD
McLEAN, VIRGINIA 22101
FAX: (703) 847-8804
VOICE: (703) 847-8787

TO: Fred Landman

COMPANY: Alpha Lyracom Space Communications

FAX #: 1-203-622-9163

DATE: December 12, 1990 **TIME:** 10:17 am

FROM: Clay T. Whitehead

Pages following this cover sheet: 1 **pages.**

COMMENTS:

Fred: Here is the current print-out. The numbers are 72 MHz uplinks. We need to have multiple paths into each downlink beam and out of each uplink beam, but the total frequency usage in either uplink or downlink cannot exceed the available 12 channels.

Pacific Satellite Uplink Count

Satellite P1			DOWNLINK BEAM			Total Uplinks	
	Ku	C	C	Ku	C		
UPLINK BEAM	North	Asia	Equat	South	US	C	Ku
North Ku	6						6
North C		3	1	1	1	6	
Equat. C	2		2	1	1	6	
South Ku	2	1	1	2	2		8
South C						0	
U.S. C	2	4	2	2		10	
U.S. Ku							0
Total uplinks	12	8	6	6	4		

Paths out of an uplink beam

Paths into a downlink beam

Satellite P2			DOWNLINK BEAM			Total Uplinks	
	Ku	C	C	Ku	C		
UPLINK BEAM	North	Asia	Equat	South	US	C	Ku
North Ku	6						6
North C		3	1	1	1	6	
Equat. C	2		2	1	1	6	
South Ku	2	1	1	2	2		8
South C						0	
U.S. C	2	4	2	2		10	
U.S. Ku							0
Total uplinks	12	8	6	6	4		

"North C" = Asia

Combined P1 & P2			DOWNLINK BEAM			Total Uplinks	
	Ku	C	C	Ku	C		
UPLINK BEAM	North	Asia	Equat	South	US	C	Ku
North Ku	12	0	0	0	0		12
North C	0	6	2	2	2	12	
Equat. C	4	0	4	2	2	12	
South Ku	4	2	2	4	4		16
South C	0	0	0	0	0	0	
U.S. C	4	8	4	4	0	20	
U.S. Ku	0	0	0	0	0		0
Total uplinks	24	16	12	12	8		

cannot exceed 12 at any one time.

ALPHA LYRACOM
SPACE COMMUNICATIONS

VIA FACSIMILE 011-813-481-1809

December 12, 1990

Mr. Eitaro Mohri
Manager News Exchange & Satellite
Operations
Foreign News Department - NHK
2-2-1, Jinnan, Shibuya-Ku
Tokyo, Japan

Dear Mr. Mohri:

I apologize for not being present during your most recent visit to our offices. Unfortunately, I had a long standing obligation to speak at a conference in London on the days you were in New York.

I understand from Jack Albert, that while NHK is not in a position to pursue an ownership interest in our satellite venture, you have expressed an interest in securing future capacity on our global system as it develops. He also relayed your kind offer of assisting in introducing us to major Investor Groups in Japan. We would very much appreciate your assistance in this regard.

We currently are planning an extended visit to Japan in the second half of January. We hope to accomplish three things during this visit.

1. Meet with potential strategic investors to discuss our program and the opportunities it presents. For example, we are currently committed to meet with NISSHO IWAI on January 18th as a result of a meeting with their New York office. Donaldson Lufkin & Jenrette, the investment banker for Alpha Lyracom, has also had a number of preliminary conversations with Japanese trading companies through its Tokyo office. I would appreciate your guidance in identifying the potential strategic investors in Japan who would offer the most synergies with our program. Attached is the Executive Summary of the Offering Memorandum, translated into Japanese.

PAN AMERICAN SATELLITE · ONE PICKWICK PLAZA · GREENWICH, CONNECTICUT 06830 · TELEPHONE 203/622/6664 · FAX 203/622/9163

2. Meet with policy markers at the Ministry of Communications and other agencies of the Government of Japan who would be involved in licensing operation of services to Alpha Lyracom Pacific and Indian Ocean Satellites.

3. Meeting with potential users to review our plans for their future requirements and services we will be offering. We would very much like to review this directly with NHK for broadcast applications, as well as other non-broadcast communication users.

I appreciate any assistance you could give us in the above three areas. Please let me know as soon as practical, since the scheduled trip is rapidly approaching.

I look forward to meeting with you in New York and in Tokyo early next year.

Sincerely,

Frederick A. Landman
President

FAL:mf

cc: Jack Albert

TRW

TRW Space & Technology Group

Executive Offices
One Space Park
Redondo Beach, CA 90278
213.812.4616

Daniel S. Goldin
Vice President &
General Manager

6 December 1990

Alpha Lyracom
Pan American Satellite
One Pickwick Plaza
Greenwich, CT 06830

Attention: Mr. Rene Anselmo

Subject: Draft Memorandum of Understanding

Reference: Alpha Lyracom/TRW meeting on
1 December 1990

Gentlemen:

Attached herewith for your review is the draft memorandum of understanding (MOU) reflecting agreements reached in referenced meeting. Please provide me with your comments and I will incorporate them in a formal document for signature.

Thank you again for allowing us the opportunity to become your strategic partner. I look forward to a mutually beneficial relationship.

Sincerely,

Daniel Goldin

D. S. Goldin

TABLE 1: TRW/PANAMSAT PAYMENT SCHEDULES

	YEAR										
PANAMSAT PAYMENT TO TRW (4 SATELLITE BUY)	1	2	3	4	5	6	7	8	9	10	TOTAL
SIGN-UP	2										2
80% PROGRESS PAYMENT (1st 2 SATELLITES)	24	35	26								86
20% ORBITAL INCENTIVE				4	4	4	4	4	4		22
INTEREST ON ORBITAL				2	2	2	1	1	0		8
TOTAL 1st 2 SATELLITES	26	35	26	6	5	5	5	4	4	0	116
80% PROGRESS PAYMENT (2nd 2 SATELLITES)		26	35	26							86
20% ORBITAL INCENTIVE					4	4	4	4	4	4	22
INTEREST ON ORBITAL					2	2	2	1	1	0	8
TOTAL 2nd 2 SATELLITES	0	26	35	26	6	5	5	5	4	4	116
TOTAL PANAMSAT PAYMENT TO TRW	26	62	62	32	11	11	10	9	8	4	235
TRW PAYMENT TO PANAMSAT FOR EQUITY											
FIRST 2 SATELLITES	24	9									29
SECOND 2 SATELLITES		24	3								28
TOTAL TRW PAYMENT TO PANAMSAT	24	28	3	0	0	0	0	0	0	0	55
NET PANAMSAT PAYMENT TO TRW	2	34	59	32	11	11	10	9	8	4	180

NOTE 1: ALL TRW PAYMENTS TO PANAMSAT WILL BE OFFSET BY PANAMSAT PROGRESS PAYMENT TO TRW

NOTE 2: TRW RECEIPT OF PANAMSAT CASH DISTRIBUTION/DIVIDENDS NOT INCLUDED

11. Panamsat will pay TRW $2 million upon contract signing. With the exception of this $2 million, TRW will not receive any payment from Panamsat in the first year.

12. Except for adjustment necessary to reflect the amount and timing of long lead part procurement, Table 1 defines the payment schedules

13. TRW will pay Panamsat $55 million for equity interest which allows TRW to receive 15% of the total company "cash flow available for distribution." DLJ is putting together the details of the financial offer.

14. Rene Anselmo will use $20 million to $25 million from the equity contribution to satisfy potential tax liabilities and operating costs. The exact amount and timing has yet to be determined. This matter requires resolution prior to closing of the financial arrangement between the two companies.

15. TRW will prepare the material for a joint Panamsat/TRW press conference, subject to Panamsat concurrence. The cost of the press conference and other related public relations activities will be shared between the two companies.

16. TRW will determine what limitations, if any, it will have in its working relationship with IAI relative to the Panamsat satellite construction.

17. TRW to explore possibilities of involving Matra, MBB, Dornier, and Hitachi in the construction of the Panamsat satellites.

18. TRW will assist Panamsat in its dealings with the FCC to obtain the necessary orbital slots.

19. TRW will prepare and submit the satellite specification, statement of work, and purchase contract for Panamsat review within one week. Negotiation on these documents must be completed prior to contract signing.

20. TRW will provide data compression technology study and tradeoff for possible performance improvement.

21. TRW will coordinate with U.S. government agencies (e.g., NASA) to explore possibilities of using Panamsat satellites to satisfy other government or commercial purpose (e.g., Lighting Mapper sensors).

22. TRW will submit a draft memorandum of understanding summarizing the negotiation by 5 December 1990.

23. The target contract signoff is 20 December 1990, subject to TRW Board approval.

DRAFT MEMORANDUM OF UNDERSTANDING

This draft memorandum of understanding documents agreements reached between Alpha Lyracom/Panamsat (hereinafter "Panamsat") and TRW on 1 December 1990 concerning a prospective sales of TRW satellites to Panamsat and the TRW participation in Panamsat equity interest.

1. The contract is for the sales of four TRW satellites to Panamsat.

2. The unit price of satellite is $55 million, including satellite deliveries and launch services, but excludes special links. The basis of this price agreement is the technical specification discussed between Panamsat and TRW on 17 November 1990.

3. Panamsat will start payment on the first two satellites plus price of long lead parts necessary to build the third and fourth satellites (at $10M each). TRW will propose the amount and timing of long lead part payments, with termination liabilities included.

4. Panamsat will give TRW go-ahead for the third and fourth satellites, and direction for payload configuration (Pacific vs. Atlantic) for the fourth satellite within 12 months of contract award.

5. Delivery (launch ready) of the first two satellites is 36 months after contract award. The second two satellites are scheduled for launch 12 months thereafter.

6. TRW will coordinate with IAI to determine if Panamsat can commit one additional launch to Long March in order to realize added quantity discount. This commitment is required in three months.

7. All contracts between Panamsat and TRW must be written in "consumer English" per Rene Anselmo direction.

8. TRW will receive 80% progress payment of the satellites prior to the corresponding satellite deliveries. The payment schedule of this 80% is 30%, 40%, and 30% for the first, second, and third years, respectively.

9. With the exception of the first year of contract performance, progress payments will be billed and paid monthly.

10. The remaining 20% of the satellite price will be paid as in orbital incentive, payable monthly, equal amounts at 10% interest during the first six years after launch. Failure of the TRW satellite(s) to perform will reduce the incentive payments to TRW in accordance with a warranty payback algorithm to be developed by TRW subject to Panamsat approval. The algorithm will include the 2 to 1 relative worth of Ku to C band transponders.

FACSIMILE COVER SHEET

CLAY WHITEHEAD ASSOCIATES
1320 OLD CHAIN BRIDGE ROAD
McLEAN, VIRGINIA 22101
FAX: (703) 847-8804
VOICE: (703) 847-8787

✓

TO: Mr. Douglas Goldschmidt

COMPANY: Alpha Lyracom Space Communications, Inc.

FAX #: 1-203-622-9163

DATE: December 6, 1990 **TIME:** 2:18 pm

FROM: Clay T. Whitehead

Pages following this cover sheet: 2 **pages.**

COMMENTS:

Doug: Did you reply, or did you want me to do it?

1/2

SBC (E) 7921

24 Oct 90

To : Dr Douglas Goldschmidt
Vice President Regulatory Affairs
Pan American Satellite Corp.
Fax : 005-1-203-622-9163

From : Liew Ter Kwang/Singapore Broadcasting Corporation
Fax : (65) 2552544

Dear Dr Goldschmidt

It gave me great pleasure to have met with you during the recent Satellite Communications Users Conference at Las Vegas.

You have indicated that PANAMSAT will launch a new private satellite in the Pacific Ocean region to serve the Pacific-Rim and Asia.

In this connection, I shall be obliged if you will provide me with more information on this new PANAMSAT satellite, including :-

(i) The planned launching date

(ii) The expected EIRP

(iii) The approximate sizes of the receiving antennae required for receiving the transmitted TV signals for cable TV operations as well as for direct-to-home viewing.

(iv) The approximate annual charges for leasing one full transponder (36MHz) for the delivery of TV programmes.

(v) Any other available information that will be useful for carrying out feasibility studies on the use of this satellite for satellite broadcasting.

SINGAPORE BROADCASTING CORPORATION
Caldecott Hill, Andrew Road, Singapore 1129; Farrer Road P.O. Box 50, Singapore 9128.
Tel: 2560401 Telex: RS 39265 SBCGEN Telefax: 253 8808 Telegrams & Cables: BROADCAST, Singapore

2/2

Kindly forward any printed documents to the following address :-

Mr Liew Ter Kwang
1 Senior Executive Engineer (Planning & Development)
Singapore Broadcasting Corporation
Caldecott Hill, Andrew Road
Singapore 1129

Thank you for your immediate reply.

Best regards

Yours sincerely

LIEW TER KWANG
1 SENIOR EXECUTIVE ENGINEER (PLANNING & DEVELOPMENT)
SINGAPORE BROADCASTING CORPORATION

/g

SINGAPORE BROADCASTING CORPORATION
Caldecott Hill, Andrew Road, Singapore 1129; Farrer Road P.O. Box 60, Singapore 9128.
Tel: 2560401 Telex: RS 39265 SBCGEN Telefax: 253 8808 Telegrams & Cables: BROADCAST, Singapore

Clay Whitehead Associates

1320 Old Chain Bridge Road, McLean, Virginia 22101
Phone: (703) 847-8787
Fax: (703) 847-8804

Clay T. Whitehead
President

December 6, 1990

Mr. Louis A. Bransford
President
Public Service Satellite Consortium
Suite 220
600 Maryland Avenue, S.W.
Washington, D.C. 20024

Dear Lou:

I keep thinking I will find the opening to meet with you on the PanAmSat Pacific project, but so far I have been too busy on administrative and financial matters. I expect to go to Japan after the PTC conference in Honolulu in January. Maybe after that we will have enough of a plan to call on your experience and expertise in the area.

Sincerely,

Tom

PUBLIC SERVICE SATELLITE CONSORTIUM
600 Maryland Avenue, SW
Suite 220
Washington, DC 20024
202-863-0890

4 September, 1990

Clay Whitehead
Clay Whitehead Associates
1320 Old Chain Bridge Road,
McLean,
Virginia, 22101

Dear Tom:

It was good to talk with you about your PanAmSat Pacific responsibilities and the possibility that PSSC could be of help in furthering your plans for the area.

You may not be fully aware of the extent to which PSSC has played a major role, through the years, in the Pacific Basin. The area is one in which there are many complex problems and working in it requires a deep understanding of the extremely varied and distinct cultures.

Generally speaking, PSSC's competence stems from our staff and consultant experiences in developed and developing nations, in international regulatory matters and the UN system, and in our demonstrated ability to interpret large and complex technological systems to non-technologists and users. No small part stems from the fact that, as an internationally-known research organization, we have ready access to sources of information in many parts of the world and are part of a network that includes not only information-gatherers, but policy-makers and policy-advisors to decision-makers. Our track record reveals numerous studies we have successfully conducted on user applications, feasibility, efficacy and market research.

* We are obviously aware that final implementation of PanAmSat's plans for the Pacific will require knowledge of, and contacts with, governments, intergovernmental and nongovernmental organizations, and, for the benefit of the developing and dependent nations in the area, bilateral and multilateral funding and assistance agencies. PSSC knows the territory and PanAmSat will also benefit from PSSC's ability to perceive new and non-traditional uses for the technology you seek to deploy.

Objectivity, and long-term familiarity, are characteristics which define the role of the PSSC in dealing with technological turbulence and change. We are structured to operate in a manner with which many countries and agencies feel comfortable; often more so than they are with strictly commercial operations.

The familiarity stems, in part, from frequent foreign radio, TV and telecommunications visitors to our offices on trips organized by the USIA, the USTTI, the World Bank, and others. It stems from long periods of field work in many parts of the world. Our participation in activities such as these and in many international meetings and conferences has resulted in close ties to many people and organizations throughout the world certain to become involved with either regulatory or purchasing decisions, including some where the U.S. position is not always admired on many issues. However, our people have earned respect by virtue of their objectivity and by maintaining close personal ties over a long period of time despite an often adversarial political climate.

To be more specific, our staff people have worked in well over forty countries and have high-level contacts in them plus many more through people in the UN system. (One staff member represented the UN at the HF WARC and at SPACE ORB, two critical ITU meetings which determined frequency allocations and "parking slots" for satellites.) These contacts include PTT officials, Ambassadors to the UN, UN officials, ITU staff and officials in Geneva and elsewhere, and, not least, several key foundations who are globally active and who often serve as telecommunications advisors to decision-makers. We are also known to international funding agencies. My own very recent work for the UN in Cuba and Chile dealing with telecommunications developments throughout Latin America and the Caribbean, adds to this dimension.

Implementing and marketing PanAmSat in the face of the increasingly competitive telecommunications ambience in the Pacific will require not only timely and accurate information about what is ongoing in an increasingly competitive commercial arena, but also of what is ongoing in the regulatory arena. And, of the plans of governments and funding agencies. It also requires that people clearly understand your service and its value to them in terms of appropriate applications and cost-benefits.

Reflecting my own personal bias, I believe that PanAmSat cannot ignore the needs of the small Island nations and some of the larger underdeveloped countries. With the exception of the really prosperous Pacific Rim countries, when one talks about the Pacific Basin one must also include those nations in Latin America that are Pacific Rim nations and hardly prosperous, the USSR as a Pacific presence and, as well, the many Island countries in the Pacific Basin and the nations of Southeast Asia, some of whom are underdeveloped, some rapidly developing. Most of these countries are in great need of improved telecommunications and are dependent, to meet their needs, on the largess of technical assistance agencies, development banks and foundations. Our knowledge of international funding agencies should prove useful in dealing with less prosperous countries.

The smaller or less affluent countries are politically important to other nations on the Rim, sometimes by virtue of their former colonial status, sometimes by virtue of their natural resources or their military/strategic location, sometimes because large numbers of their citizens live in the former colonizer countries, and also because their votes in various regulatory arenas do count. They are often courted for just such purposes and, thus, cannot be ignored.

Not too long ago, in conjunction with one of our studies, we had occasion to sort out some of the players, as providers of service, users of service, and advisors to both, in the Pacific area. As an example of the complexity and pace of the current situation, let me offer these for your consideration. They represent both competition and a customer-base. Satellite and telecommunications players (actual or potential) include INTELSAT; PEACESAT; PACSTAR; ORION; AsiaSat; AUSSAT; the Australian OTC; the planned JAPSAT; the South Pacific Telecommunications Development Program; The Asia Pacific Telecommunity; ALASCOM; INMARSAT; MARISAT; GOES; NOA; AIRINC; PALAPA; the Micronesian Telecommunications Corporation; HAWTEL; Cable and Wireless; RCA; KDD; Volunteers in Technical Assistance (VITA) and PACSAT, and the transPacific cables. We have closely examined many of the above on various occasions and for different clients.

And, since we last looked at these, TONGASAT and the TDRSS C-band transponders have entered the picture. You may be aware that we conducted market research on TDRSS when it was expected that INTELSAT would be awarded the transponders.

New Zealand TV has also recently introduced a new program distribution service for the Pacific Rim countries.

Providers (or would-be providers of services - and there is a considerable overlap between some who will provide the hardware and some who will provide software services which includes some of the above) include the University of the South Pacific; MUCIA; the Micronesian Institute; the College of Micronesia; NUTN; Syracuse; Cornell; the University of Hawaii and the Research Corporation of the University of Hawaii; various Australian colleges such as LaTrobe, MacQuarie and Canberra; the Australian Radio, TV & Film Institute; the BBC's Educational Broadcasting Services Trust (and a revitalized Committee for International Tele-Education - CITE - under British direction); the recently-announced Canadian effort for international educational broadcasting; California State at Chico and other U.S. universities; the Foundation for the People's of the South Pacific; various colleges in the Pacific (Guam and Saipan, for example); Xavier High School on Truk; the Global Pacific University; the MARIMED Foundation; the Asia/Pacific Broadcasting Union and ASIAVISION; Armed Forces Radio and Television Service; Channels 7, 9, and 10, Australia; the Hawaiian Interactive Television System (HITS); the Pacific Regional Educational Program (PREP); the Pacific Postsecondary Educational Council (PPEC); INTEL-ED and others, such as the local radio and television stations.

There are still others. The Friedrich-Ebert and Naumann Foundations; the ITU, UNDP, UNESCO, FAO and other UN agencies; PACBROAD, the ASIAVISION News Exchange, PINA, PIBA and the AIBD; the SPC Audio-Visual Training Institute; the ITU Technical Training Institute; the World Bank; JHPIEGO; the Pacific Basin Development Council; the Pacific Islands Development Association; the United Micronesian Development Association; the Marshall Islands Development Authority and the Marshalls Community Action Agency; The South Pacific Commission; The South Pacific Bureau for Economic Cooperation; the Asian Association of Open Universities; the Fulbright Program; the MOA Foundation of Japan which has recently opened an office in Honolulu and wants to undertake technical assistance - and cultural - activities in the Islands and other Japanese institutions in the U.S. and elsewhere such as Washington International University in Virginia that will open its doors in 1992.

The role of the German Technical Assistance Agency (which will probably be providing support to PACBROAD now that

UNESCO and the IPDC have pulled out and which is doing other things in the Islands as well) cannot be ignored. The Japanese provided the new shortwave station in the Marshall Islands; the Chinese are active in the Marshalls, through the Macao Zhuhai Development Corporation and, increasingly, elsewhere.

There has been a proliferation of <u>private</u> telecommunications channels and networks (some operated by individuals, some by Private Voluntary Organizations - PVOs, of which there are many more than named above) which are used to bypass the existing, costly and generally inefficient telecommunications networks in the area.

A major new development has been the establishment of a Pacific Island Broadcasting Association (PIBA). Representing, as it does, the broadcasting stations - and geared, as it will be, to news and program exchanges through the Pacific News Training Exchange (PACNEWS) - PIBA, when fully operational, could become a politically significant force - and voice - in the area under study. (Its Executive Director is, by the way, a member of the Tongan Royal Family and involved with TONGASAT.)

The listing above was put together based on personal knowledge of most of the entities and their needs stemming from our work in the Pacific area. The staff and consultant team we would put together on PanAmSat's behalf has, at a rough estimate, many aggregated person/years of direct working experience in countries in the Pacific Basin.

These experiences include contacts not only with managerial, administrative and technical personnel in telecommunications agencies and broadcasting systems, but with the political leadership of many countries and, in the case of the Island countries, contacts among the traditional tribal and religious leaders whose system is separate from the political system, but in most instances of equal power and, in some instances, of greater power. You should also be aware that, in addition to my own native Spanish language capabilities, we have both a Russian and a Japanese language speaker on staff.

We have found in the past that there are significant value-added benefits in the unobtrusive approach that a nonprofit research organization like PSSC can take in contrast to the ready identification of a U.S. commercial organization at the conferences, meetings and behind-the-scenes areas where these matters are discussed and policies tested and often formulated.

* The methodology that PSSC proposes to employ on behalf of PanAmSat would include library research, analytical studies, descriptive and attitudinal research using questionnaires, and personal and telephone interviews with key domestic and international figures. And, quite importantly, attendance at some select international conferences, scheduled for the near future, at which matters such as the introduction of new technologies and services are sure to be discussed by and amongst worldwide figures and their advisors who operate on a policy-making level. The deliverables would be periodic reports with recommendations for your consideration including guidelines for marketing and promoting PanAmSat to the Pacific Basin.

The marketing effort also requires, and we feel this is of critical importance, disseminating information about PanAmSat's plans and value to potential users, policy-makers and funding sources in a timely manner and in the face of competitive efforts. And, it requires a high level of understanding of the needs of potential users. In virtually all of the tasks which follow, dissemination of information is seen as a component as important as is the collection of data.

* Specifically, we would suggest the following tasks. The process is an iterative one; we would evaluate it on an ongoing basis and modify it accordingly to reflect changes and new information.

1) Review technical and system-capability information that relates to the PanAmSat mission for marketing and other presentation uses.

2) Examine competitive delivery systems. Identify and compile information on any similar plans for use by potential competitors.

3) Identify potential users, starting with those mentioned above, to whom PanAmSat might be marketed. As well as Rim and Basin countries, we would examine users within the United Nations system and its agencies, and the private voluntary and nongovernmental organizations who are concerned with the worldwide transfer of information in areas ranging from field personnel security to education and disaster warning, relief and assistance.

Several unconventional sources come immediately to mind: The verbatim records of the UN Trusteeship Council will be examined as will other UN data at agencies such as the United Nations Development Programme, the United Nations Disaster Relief Organization, the Food and Agriculture Organization and the World Health Organization.

In addition, there are annual reports, newsletters, and occasional papers published by organizations such as the Asia Foundation, Pacific Islands Association, The Pacific Basin Development Council, the Foundation for the Peoples of the South Pacific, and by groups such as the Pacific Islands News Association, PACBROAD, AMIC, the Asia Pacific Broadcasting Union, the Friedrich-Ebert and Naumann Foundations, The South Pacific Commission, The South Pacific Bureau for Economic Cooperation, and others. And, of course, the newspapers and magazines of the area.

4) Collect information on selected international meetings upcoming in the next months. It is a certainty that matters such as those with which you must be concerned will be discussed at these meetings, position papers will be floated, policy makers and their advisors will be present.

There are several meetings where it might be profitable for PanAmSat to be represented. One meeting of particular value might well be the 4-9 December "ITU Telecom '90" in Zimbabwe. It is seen as important despite its venue because of the ITU personnel who will be present as well as representation on the highest level from INMARSAT and INTELSAT, and high-level representatives of Japan, Indonesia, the USSR and the World Bank.

Some other meetings PanAmSat should consider include: the 12-14 September Annual Conference of the International Institute of Communications (IIC) in Dublin; the 6-12 October Annual Conference of the International Aeronautical Federation (IAF) and the International Institute of Space Law (IISL) in Dresden; the Global Development and Integration Conference (INTERCOMM 90) in Vancouver, 23-26 October; the 4-10 November Caracas meeting of the International Council for Distance Education; the 14-16 November IDATE conference in Montpelier on "Key technologies, experiences and new systems;" the 13-16 January, 1991, PTC conference in Honolulu, "Accessing the Global Network: Weaving Technology and Trade in the Pacific;" the 24-28 March Washington Expo '91;" the 6-9 May Society for International Development's "20th World Conference" in Amsterdam.

(It may still be possible to deliver a paper or distribute materials at several of these.)

Attend meetings of the UN's Committee on the Peaceful Uses of Outer Space and its Legal and Scientific and Technical Subcommittees. (It is highly probable that we can orchestrate a situation at which a paper or other promotional materials can be distributed to delegates.)

Attend meetings of the UN's Committee on Information where the same situation would prevail as in the above.

5) Present the PanAmSat system to bilateral and multilateral funding and development sources which might be willing to provide loans or grants now or in the long-range for hardware and software needed by client countries and others. Among these would be funding sources within the UN system such as UNESCO's International Programme for the Development of Communications; the United Nations Development Programme; the ITU's Technical Assistance Bureau and other sources; the World Bank and other Development Banks; USAID; the Canadian International Development Agency; the Commonwealth Fund; the Swedish International Development Agency; the German Technical Assistance Agency and various foundations, both in the U.S. and overseas, such as the Friedrich-Ebert, the Friedrich-Naumann, the Kellogg and Rockefeller Foundations that have an interest in the developing world.

6) To ensure that information collected is truly representative of a regional perspective and that conclusions drawn are valid and of use to PanAmSat, PanAmSat might also want to consider the creation of an Advisory Board which PSSC would organize and administer on its behalf.

This Advisory Board will be comprised of recognized specialists and other sources resident in the Pacific Region and will complement PSSC's standing International Advisory Board. The Project Advisory Board will meet or communicate electronically with the project team, collectively and individually, as warranted by specific tasks.

We would undertake other tasks as may arise and we agree upon within the framework of the contractual arrangement we would enter into. I hope the suggestions I have outlined for your consideration demonstrate both our interest and our expertise in the market research needed for the adoption of telecommunications and satellite technology in the Pacific Basin.

If you share my view that there are ways in which we can assist the successful implementation of PanAmSat's plans for the Pacific, I would hope we might discuss this in the near future. Some of the meetings at which we feel you would profit from representation are upcoming soon.

I look forward to hearing from you.

Sincerely,

Lou

Louis A. Bransford
President

FACSIMILE COVER SHEET

CLAY WHITEHEAD ASSOCIATES
1320 OLD CHAIN BRIDGE ROAD
McLEAN, VIRGINIA 22101
FAX: (703) 847-8804
VOICE: (703) 847-8787

TO: Fred Landman
COMPANY: Alpha Lyracom Space Communications
FAX #: 1-203-622-9163
DATE: November 5, 1990 **TIME:** 4:08 pm

FROM: Clay T. Whitehead

Pages following this cover sheet: 6 **pages.**

COMMENTS:

Fred: Here is a different slant on a press release and a new VSAT projection. Let me know ASAP what you think of the PAS-3 projections so I can get it to DLJ.

✓ file

ALPHA LYRACOM ANNOUNCES
NEW SATELLITES FOR ASIA AND PACIFIC

Greenwich, Connecticut, USA, November 5, 1990

Alpha Lyracom Space Communications announced today that it will extend its international communications operations and services into Asia and the Pacific Ocean region by building and launching two new communications satellites to be located over the Pacific Ocean.

The two Pacific satellites will join Alpha Lyracom's two satellites over the Atlantic Ocean to provide communications coverage of two-thirds of the globe. Alpha Lyracom's satellite network carries international telephone and data circuits for common carriers, corporate and governmental networks and television signals for cable and broadcasting. The company also leases bulk satellite capacity to a number of nations for use their own domestic communications networks.

Although the company has been in operation only two years, it has grown rapidly, reaching over sixty countries and hundreds of corporate and governmental customers.

Alpha Lyracom's first satellite, located over the Atlantic Ocean, provides these services linking more than sixty countries in North America, Europe, Latin America and the Caribbean. The Pacific satellites will enable it to provide service linking the U.S., Canada, Russia, Japan, Korea, China, Taiwan, Hong Kong, Singapore, Thailand, Malaysia, Australia and other countries in the Pacific and east Asia. Alpha Lyracom's first satellite was launched in 1988 and a second Atlantic satellite is scheduled to be launched in 1993.

Alpha Lyracom is the first company to provide international satellite circuits in competition with Intelsat. Intelsat is an multinational governmental consortium that operates satellites for the international communications carriers. Although there has been competition among private satellite companies within the U.S., only recently has satellite technology and regulatory policy developed to make possible international satellite competition.

Alpha Lyracom said that it has filed applications with the U.S. Federal Communications Commission for authority to build, launch and operate the two international communications satellites at 192 and 194 degrees West Longitude over the middle of the Pacific Ocean. Alpha Lyracom currently operates its first satellite at 45 degrees West Longitude and plans to locate the second Atlantic satellite at 39.5 degrees.

Alpha Lyracom's first satellite, built by General Electric, was launched in June 1988 by an Ariane rocket. Alpha Lyracom provides a wide range of international satellite communications services including wide-band digital circuits, very small antenna satellite hub (VSAT) networks, data broadcasting services, business television and teleconferencing networks, and full and part-time television relays. The company's sales range from satellite capacity only to full end-to-end networks that include all ground facilities.

# # #

ALPHA LYRACOM
SPACE COMMUNICATIONS

FACSIMILE MESSAGE SHEET

Fax: 203/622-9163

FROM: Fred Landman

Date: 11/5 No of Pages 3

TO: Tom Whitehead

Fax No. 703-847-8804

IF TRANSMISSION IS INCOMPLETE, PLEASE CALL 203/622-6664.

For your information

Richard J. Rowe & associates pty. ltd. (Incorp. in NSW)

Communications and Public Affairs Consultants

November 5, 1990

Mr Fred Landman
Alpha Lyracom Space Communications, Inc.
One Pickwick Plaza
Suite 270
GREENWICH CT. 06830 USA

FAX : 0011-1-203-622 9163

Dear Mr Landman

With reference to previous contact between us, as suggested by Mr Stewart White, I write to advise of two developments in the restructure of Australian telecommunications project which have an effect on your organization's potential interest in this matter.

Firstly, and I believe very short-sightedly, the Australian Government has decided not to authorise the change to the configuration of the AUSSAT Series B satellites which would have allowed footprint coverage of the majority of the Pacific Rim region. I believe that this decision was driven by conservative financial advice within the Government and is one which we will have cause to regret over the longer term.

In any event, the decision has been taken and it is now too late in the satellite construction program for it to be reversed. As I recall, it was this wider regional footprint capability which attracted your interest and therefore I assume that, with it no longer present, your interest has waned.

Secondly, I might also mention that the U.S. company, Contel Cellular Inc., with which I was directly associated, has now merged with GTE Corporation and, as a result, is no longer separately pursuing interests in Australia. This has brought to an end my involvement.

These developments are regrettable. I thought the overall project had real possibilities and that Contel was well positioned to take advantage of the inevitable opportunities which will arise.

Level 1, 87 The Esplanade,
Mooloolaba Qld 4557

All correspondence to:
P.O.Box 105, Mooloolaba. Qld 4557

Telephone: (074) 44 6599
Facsimile: (074) 44 6990

Possibly, we will run into one another in another context in the future.

Yours sincerely, + kind regards

Ted Rowe.

R.J. ROWE

DOC-CONTEL
    ALPHA.2

ALPHA LYRACOM
SPACE COMMUNICATIONS

FACSIMILE MESSAGE SHEET

Fax: 203/622-9163

FROM: TOM CARROUX

Date: 11-02-90 No of Pages 3

TO: CLAY T. WHITEHEAD

Fax No. (703) 847-8804

IF TRANSMISSION IS INCOMPLETE, PLEASE CALL 203/622-6664.

PAN AMERICAN SATELLITE · ONE PICKWICK PLAZA · GREENWICH, CONNECTICUT 06830 · TELEPHONE 203/622/6664 · FAX 203/622/9163

DATA PROJECTIONS
ALSC PACIFIC OCEAN MARKET

YEARS	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
ALSC POR IDS CIRCUITS												
5% Total Intelsat IDS	424	466	560	672	806	967	1,161	1,393	1,671	2,005	2,407	2,888
10% Total Intelsat IDS	848	933	1,119	1,343	1,612	1,934	2,321	2,785	3,342	4,011	4,813	5,776
15% Total Intelsat IDS	1,272	1,399	1,679	2,015	2,418	2,901	3,482	4,178	5,014	6,016	7,220	8,663
POR CIRCUIT MIX												
5% Total IDS												
64kbps	153	168	201	141	169	203	244	292	351	421	505	606
128kbps	148	163	196	275	330	397	476	571	685	822	987	1,184
512kbps	85	93	112	175	210	251	302	362	435	521	626	751
T-1	38	42	50	81	97	116	139	167	201	241	289	347
Total	424	466	560	672	806	967	1,161	1,393	1,671	2,005	2,407	2,888
10% Total IDS												
64kbps	305	336	403	282	338	406	487	585	702	842	1,011	1,213
128kbps	297	326	392	551	661	793	952	1,142	1,370	1,644	1,973	2,368
512kbps	170	187	224	349	419	503	603	724	869	1,043	1,251	1,502
T-1	76	84	101	161	193	232	279	334	401	481	578	693
Total	848	933	1,119	1,343	1,612	1,934	2,321	2,785	3,342	4,011	4,813	5,776
15% Total IDS												
64kbps	458	504	604	423	508	609	731	877	1,053	1,263	1,516	1,819
128kbps	445	490	588	826	991	1,190	1,427	1,713	2,056	2,467	2,960	3,552
512kbps	254	280	336	524	629	754	905	1,086	1,304	1,564	1,877	2,253
T-1	114	126	151	242	290	348	418	501	602	722	866	1,040
Total	1,272	1,399	1,679	2,015	2,418	2,901	3,482	4,178	5,014	6,016	7,220	8,663

DATA PROJECTIONS
ALSC PACIFIC OCEAN MARKET

ALSC POR IDS NET REVENUE NO AMORTIZATION - 64kbps Equivalent Pricing YEARS	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
5% Total IDS												
64kbps	$7,925	$8,682	$10,374	$7,234	$8,647	$10,338	$12,359	$14,778	$17,674	$21,137	$25,284	$30,243
128kbps	$7,432	$8,138	$9,722	$13,608	$16,261	$19,434	$23,230	$27,767	$33,197	$39,697	$47,469	$56,761
512kbps	$2,719	$2,969	$3,537	$5,481	$6,531	$7,788	$9,285	$11,069	$13,205	$15,752	$18,790	$22,420
T-1	$646	$706	$842	$1,339	$1,596	$1,903	$2,270	$2,709	$3,233	$3,858	$4,603	$5,496
Total	$18,722	$20,495	$24,476	$27,662	$33,035	$39,462	$47,143	$56,323	$67,309	$80,444	$96,145	$114,921
10% Total IDS												
64kbps	$15,850	$17,365	$20,749	$14,468	$17,294	$20,675	$24,718	$29,556	$35,348	$42,274	$50,567	$60,487
128kbps	$14,864	$16,275	$19,444	$27,217	$32,521	$38,867	$46,460	$55,535	$66,395	$79,394	$94,938	$113,523
512kbps	$5,437	$5,938	$7,074	$10,963	$13,063	$15,575	$18,569	$22,138	$26,410	$31,504	$37,579	$44,840
T-1	$1,293	$1,413	$1,684	$2,677	$3,192	$3,807	$4,540	$5,418	$6,466	$7,715	$9,206	$10,992
Total	$37,444	$40,991	$48,952	$55,325	$66,070	$78,924	$94,287	$112,647	$134,618	$160,888	$192,291	$229,841
15% Total IDS												
64kbps	$23,775	$26,047	$31,123	$21,702	$25,941	$31,013	$37,077	$44,334	$53,022	$63,411	$75,851	$90,730
128kbps	$22,296	$24,413	$29,166	$40,825	$48,782	$58,301	$69,690	$83,302	$99,592	$119,092	$142,407	$170,284
512kbps	$8,156	$8,907	$10,612	$16,444	$19,594	$23,363	$27,854	$33,207	$39,614	$47,256	$56,369	$67,260
T-1	$1,939	$2,119	$2,527	$4,016	$4,787	$5,710	$6,810	$8,127	$9,698	$11,573	$13,810	$16,488
Total	$56,166	$61,486	$73,427	$82,987	$99,104	$118,386	$141,430	$168,970	$201,927	$241,331	$288,436	$344,762

ASSUMPTIONS
1994-1995 circuit growth rate = 10%
1996-2005 circuit growth rate = 20%
POR circuit pricing mirrors that of South America.
Pacific circuit usage ratios = average of Western and Eastern Europe ratios.
1994-1996: 36% = 64Kbps, 35% = 128Kbps, 20% = 512Kbps, 9% = T-1.
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CAP EX:
Each additional circuit requires $14,000 capital expenditure ($7,500 = modem, $1,500 = UC/DC rack, $5,000 = multiplexer).

ALPHA LYRACOM
SPACE COMMUNICATIONS

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DATA PROJECTIONS
ALSC PACIFIC OCEAN MARKET

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American Enterprise Institute for Public Policy Research

AEI

Fax number: (202) 862-7178

Transmission Memorandum

Telecopy to the following number: 703-847-8804

The following document is for:

Name: Mr. Clay T. Whitehead

Firm:

The document is from:

Name: Dr. Chang-Pin Lin

Phone number: 202-862-5805

This transmission memorandum plus 1 pages

Date: Nov. 2, 1990.

Time:

Note:

1150 17th Street, N.W., Washington, D.C. 20036, 202/862 5800

INSTITUTE FOR NATIONAL POLICY RESEARCH

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WITH
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(or Ku)

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國際合作處 研究員

李河清

Ho-Ching Lee Liu

PROGRAM DIRECTOR

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NATIONAL SCIENCE COUNCIL
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REPUBLIC OF CHINA

GOODYEAR

JERRY C. K. LIANG PH. D.
PRESIDENT
GOODYEAR TAIWAN LIMITED

4TH FLOOR TAI-FONG BUILDING
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TAIPEI, TAIWAN.
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2F, 510, SEC. 4, JEN-AI RD.
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Peter C. Kuo

PRESIDENT

TEL: (W) 701-9165 (H) 921-2683
FAX: 701-5082

Dr. Stephen S. F. Chen

Deputy Representative
Coordination Council for North American Affairs
Office in U.S.A.

4201 Wisconsin Ave., N.W.
Washington, D.C. 20016

Tel. (202) 895-1800

VIA FACSIMILE 609/490-6266

November 2, 1990

Mr. Gregory F. Brown
Manager, Communication Satellites, Marketing
GE Astro Space
P. O. Box 800
Princeton, NJ 08543-0800

Dear Greg:

The following are our thoughts on the terms we will need to move forward quickly on a satellite decision.

1. SECOND SATELLITE - We need a firm fixed price for a second satellite with Pacific coverage. The payload is essentially identical to the Atlantic, except that the beam shaping network is configured for the Pacific.

2. IN-ORBIT INCENTIVES - The in-orbit incentives will be 15 million dollars (NPV) per satellite, payable over 12 years at a 10% interest rate on the unpaid balance.

3. PROGRESS PAYMENTS - The progress payments will be structured per attached.

4. BRIDGE FINANCING - Until such time as ALSC's bank financing is in place, GECC will be available for bridge financing at market rates acceptable to ALSC.

5. TRANSPONDER CAPACITY COMMITMENT DIVISION(S) GE - Corporation will commit to lease a minimum of 4 million dollars per year of satellite service on each satellite delivered under this contract.

6. THIRD SATELLITE - The third satellite will be added to the contract. The award to GE Astro will be subject to GE Astro ability to deliver the appropriate spacecraft under terms and conditions acceptable to ALSC.

Sincerely,

AUTOMATIC COVER SHEET

DATE: NOV- 1-90 THU 12:04

TO:

FAX #: 7038478804

FROM: RUBIN, BEDNAREK & ASSOC.

FAX #: 2022969383

02 PAGES WERE SENT

(INCLUDING THIS COVER PAGE)

Pan American Satellite
Rubin, Bednarek and Associates, Inc.

TECIINICAL MEMORANDUM

Date: **November 1, 1990**

To: **Tom Whitehead**
Fm: **Philip Rubin**

Sb: **Uplinks for Pacific**

We have not discussed the uplinks for the Pacific Ocean satellite. While you drew the desired downlink beam coverages, I do not have any uplink coverages to plot out, nor connectivity. Could you please forward those as soon as possible.

LAW OFFICES
GOLDBERG & SPECTOR
1229 Nineteenth Street, N.W.
Washington, D.C. 20036

Telephone:
(202) 429-4900
Telecopier:
(202) 429-4912

FAX TRANSMISSION COVER SHEET

TO: F.A. LANDMAN/C.T. WHITEHEAD

FROM: HENRY GOLDBERG

DATE: 11/1

TELECOPIER NO:

NUMBER OF PAGES INCLUDING COVER: 2

If you have any questions or do not receive all pages, please call (202) 429-4900.

NOTES:

In case you missed this item.

Page 4

FINANCIAL TIMES THURSDAY NOVEMBER 1 1990

Hong Kong acts to rationalise TV broadcasts policy

By John Elliott in Hong Kong

HONG KONG yesterday began to rationalise its satellite and cable television broadcasting policies when it announced licence arrangements which came down in favour of the Hutchison Whampoa group, headed by Mr Li Ka-shing, one of the colony's top businessmen.

But the plans failed to meet the demands of Hong Kong Cable Communications, a consortium which won Hong Kong's first cable television franchise in July last year. The largest shareholder in this consortium is Wharf Holdings, founded by Sir Yue-Kong Pao, an arch rival of Mr Li.

The government said it would license companies to use Hong Kong as a base for transmitting satellite broadcasts, subject to certain restrictions.

It is also to set up a separate licensing scheme for installation of satellite master antenna television systems (SMATV) in the colony.

This means that Hutchison can proceed with plans to start beaming television programmes within the next 12 to 14 months from Hong Kong across Asia and the Middle East, via a six-month old communications satellite called Asiasat in which it is a leading shareholder.

The future of the cable television venture hangs in the balance because the consortium argues that the satellite operations breach assurances it was given by the government about exclusivity last year.

The consortium has been riven by personality clashes, misunderstandings and other rows since it won the franchise. It is months behind schedule, despite pressure from the government to speed up operations and sign franchise licences.

Sir Y.K. Pao, 71, has come out of semi-retirement to lobby government officials on behalf of the consortium. He is not likely to accept yesterday's decision with equanimity, and the shareholders are to expected to hold a board meeting tomorrow.

They may decide to fight the government's decision. But if they accept it, there will be a major restructuring. Wharf and another big shareholder, US West, which is one of the American Baby Bells, are expected to increase their shareholdings of around 25-27 per cent to nearly 50 per cent. This would enable other shareholders, notably a local company called Sun Hung Kai Properties, to reduce their involvement.

The government has tried to protect the interests of both the consortium and existing television stations by decreeing that the satellite broadcasters should not rely principally on Hong Kong advertising and should not charge viewer subscriptions in Hong Kong for six years. In addition, satellite broadcasting in Cantonese, Hong Kong's main Chinese language, is banned for three years.

Mr Richard Li, 23-year old son of Mr Li Ka-shing, who heads the satellite operation, said last night that the restrictions would not upset his plans because the broadcasting would be primarily aimed at Hong Kong's top English-speaking viewers who made up about 1 to 2 per cent of the colony's viewing public. This would only bring in about 4 per cent of the venture's expected international advertising revenue.

DOCUMENTS WITHHELD FROM PRODUCTION
ATTORNEY CLIENT PRIVILEGE

112

Pan American Satellite
Rubin, Bednarek and Associates, Inc.

TECHNICAL MEMORANDUM

Date: **October 29, 1990**

To: **Tom Whitehead**
Fm: **Philip Rubin**

Sb: **Your Memo**

Your memo on Pacific Satellite Analysis

1. Your action

2. Analysis of California for the six slots: attached

3. If you agree, I would think Jeff could do this with Larry Trask's assistance since it entails the gathering of information from other applications and printed media and does not require any engineering skills.

cc: Jeff Olsen

SATELLITE LOOK ANGLE TABLE

PREPARED FOR.......: ALSC
SITE NAME..........: MOUNT WILSON
SITE LATITUDE......: 34,13,26
SITE LONGITUDE.....: 118,03,44

LONGITUDE	SATELLITE	AZMUTH	ELEVATION
39.5	PAS3	96.50	0.75
43.0	PAS2	98.54	3.63
45.0	PAS1	99.72	5.29
192.0	PAP1	260.81	4.54
194.0	PAP2	261.99	2.89

OPTIMUM FOUNDATION CENTER LINE: 179.24

SATELLITE LOOK ANGLE TABLE

PREPARED FOR.......: ALSC
SITE NAME..........: EL CAJON
SITE LATITUDE......: 32,48,00
SITE LONGITUDE.....: 116,58,00

LONGITUDE	SATELLITE	AZMUTH	ELEVATION
39.5	PAS3	96.87	1.81
43.0	PAS2	98.85	4.75
45.0	PAS1	100.00	6.44
192.0	PAP1	261.76	3.86
194.0	PAP2	262.89	2.18

OPTIMUM FOUNDATION CENTER LINE: 179.88

SATELLITE LOOK ANGLE TABLE

PREPARED FOR.......: ALSC
SITE NAME..........: RIVERSIDE
SITE LATITUDE......: 33,59,00
SITE LONGITUDE.....: 117,22,00

LONGITUDE	SATELLITE	AZMUTH	ELEVATION
39.5	PAS3	96.85	1.34
43.0	PAS2	98.89	4.24
45.0	PAS1	100.07	5.89
192.0	PAP1	261.27	4.01
194.0	PAP2	262.43	2.36

OPTIMUM FOUNDATION CENTER LINE: 179.64

SATELLITE LOOK ANGLE TABLE

PREPARED FOR.......: ALSC
SITE NAME..........: BARSTOW (MOJAVE)
SITE LATITUDE......: 34,54,00
SITE LONGITUDE.....: 117,01,00

LONGITUDE	SATELLITE	AZMUTH	ELEVATION
39.5	PAS3	97.22	1.51
43.0	PAS2	99.31	4.38
45.0	PAS1	100.52	6.02
192.0	PAP1	261.27	3.59
194.0	PAP2	262.47	1.95

OPTIMUM FOUNDATION CENTER LINE: 179.84

SATELLITE LOOK ANGLE TABLE

PREPARED FOR.......: ALSC
SITE NAME..........: LOS ANGELES
SITE LATITUDE......: 34,04,00
SITE LONGITUDE.....: 118,15,00

LONGITUDE	SATELLITE	AZMUTH	ELEVATION
39.5	PAS3	96.36	0.60
43.0	PAS2	98.39	3.49
45.0	PAS1	99.57	5.15
192.0	PAP1	260.73	4.73
194.0	PAP2	261.90	3.08

OPTIMUM FOUNDATION CENTER LINE: 179.13

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                    SATELLITE LOOK ANGLE TABLE
                    --------------------------

PREPARED FOR.......: ALSC
SITE NAME..........: NEEDLES
SITE LATITUDE......: 34,51,00
SITE LONGITUDE.....: 114,37,00

     LONGITUDE        SATELLITE              AZMUTH            ELEVATION
     ---------        ---------              ------            ---------
       39.5          PAS3                     98.64              3.48
       43.0          PAS2                    100.75              6.35
       45.0          PAS1                    101.99              7.99
      192.0          PAP1                    262.71              1.63
      194.0          PAP2                    263.89             -0.00

OPTIMUM FOUNDATION CENTER LINE: 181.26
```

SATELLITE LOOK ANGLE TABLE

PREPARED FOR.......: ALSC
SITE NAME..........: SAN FRANCISCO
SITE LATITUDE......: 37,47,00
SITE LONGITUDE.....: 122,25,00

LONGITUDE	SATELLITE	AZMUTH	ELEVATION
39.5	PAS3	94.35	-3.09
43.0	PAS2	96.53	-0.35
45.0	PAS1	97.79	1.22
192.0	PAP1	257.15	7.38
194.0	PAP2	258.47	5.80

OPTIMUM FOUNDATION CENTER LINE: 176.41

SATELLITE LOOK ANGLE TABLE

PREPARED FOR.......: ALSC
SITE NAME..........: SAN DIEGO
SITE LATITUDE......: 32,43,00
SITE LONGITUDE.....: 117,09,00

LONGITUDE	SATELLITE	AZMUTH	ELEVATION
39.5	PAS3	96.75	1.67
43.0	PAS2	98.72	4.61
45.0	PAS1	99.87	6.30
192.0	PAP1	261.67	4.02
194.0	PAP2	262.80	2.34

OPTIMUM FOUNDATION CENTER LINE: 179.78

AUTOMATIC COVER SHEET

DATE: OCT-29-90 MON 16:55

TO:

FAX #: 7038478804

FROM: RUBIN, BEDNAREK & ASSOC.

FAX #: 2022969383

03 PAGES WERE SENT

(INCLUDING THIS COVER PAGE)

Pan American Satellite
Rubin, Bednarek and Associates, Inc.

TECHNICAL MEMORANDUM

Date: **October 29, 1990**

To: **Fred Landman/Tom Whitehead**
Fm: **Philip Rubin**

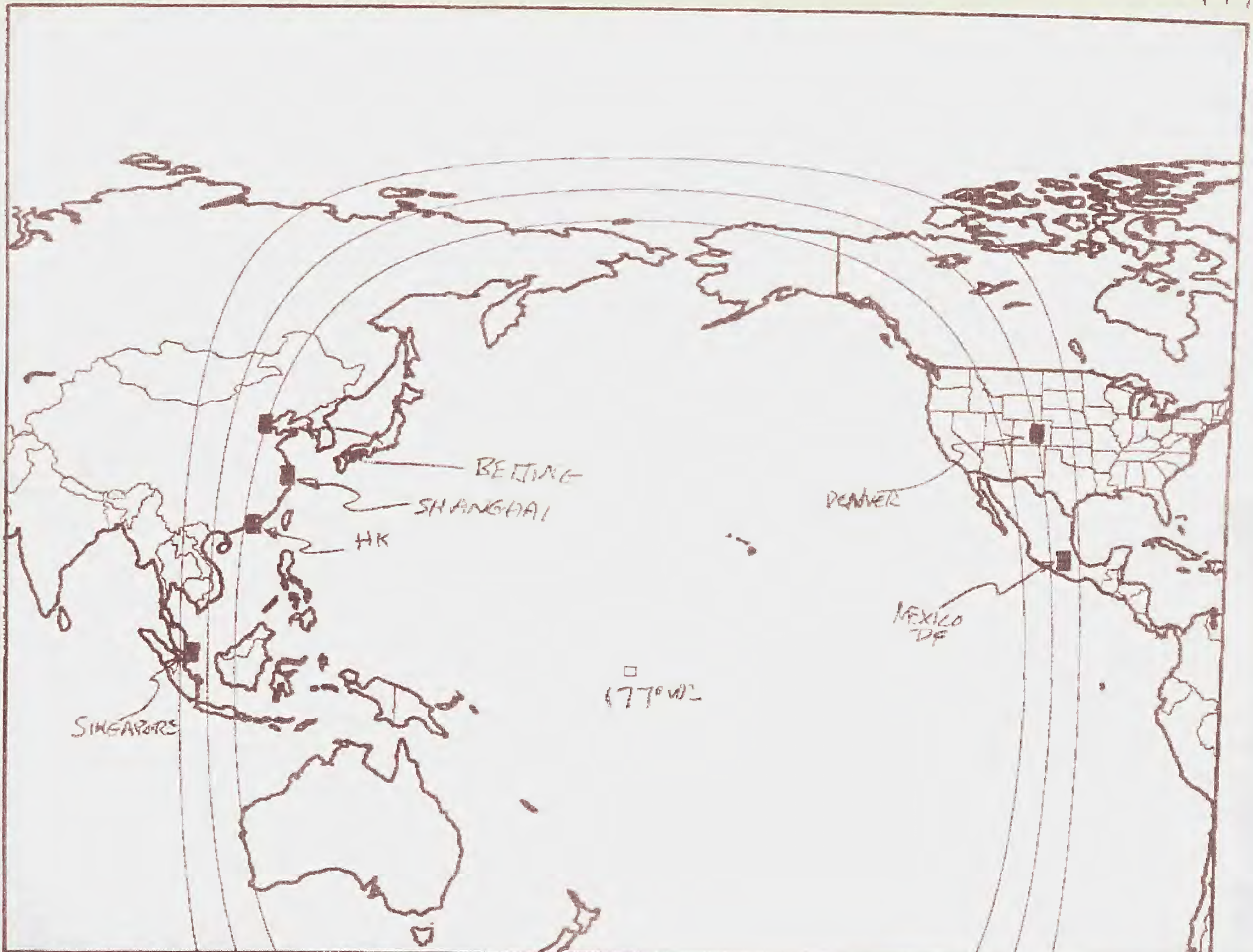
Sb: **Recent Activity by Pacstar**

The recent activity by Pacstar undermines the 192º and 194ºWL approach we had previously discussed. The next available slot I could find is at 177ºWL and is a Ku-Band slot which can be coordinated without difficulty.

Although the coverage of Eastern Asia is not as good, the coverage of the America's is improved. On the attached map I have outlined a number of cities which can see the satellite. Except for Singapore and Mexico City, all look angles are above 10º.

Let me know what you think.

177°



Clay Whitehead Associates

1320 Old Chain Bridge Road, McLean, Virginia 22101 Phone 703-847-8787 Fax 703-847-8804

FACSIMILE MEMORANDUM

To: Mr. Jack Albert ✓

Fax: 1-203-622-9163

From: Clay T. Whitehead Tom

Date: October 15, 1990

Subject: Consolidated Press video requirements

While meeting with Consolidated Press (National Nine Network) in Australia, the following video requirement for PAS-1:

- Video uplink for cricket coverage from Antigua, Guayana, Barbados, Trinidad, Jamaica and perhaps other Caribbean countries for transmission to the U.K.
- More than 200 hours during March, April and May, 1991.

They would like to know details about single-hop vs. double-hop, location of U.K. earth station, rates, etc. I said I would have someone get in touch. The contact is:

Mr. Lynton Taylor
Mr. Bruce Robertson
Consolidated Press Holdings Ltd.
54 Park Street
Sydney NSW 2000
AUSTRALIA

FAX: 011-61-2-267-2150

Bruce Robertson is their Chief Engineeer. Lynton Taylor is higher up in their business strategy area and seemed to be the more knowledgeable about their needs; I would suggest initially contacting him.

cc: Fred Landman ✓

Clay Whitehead Associates

1320 Old Chain Bridge Road, McLean, Virginia 22101 Phone 703-847-8787 Fax 703-847-8804

FACSIMILE MEMORANDUM

To: Mr. Philip Rubin

Fax: 1-202-296-9383

From: Clay T. Whitehead

Date: October 5, 1990

Subject: Ku-band terrestrial interference

To remind us both, you were going to check on Ku-band terrestrial usage in Japan, and if possible elsewhere, that might make the Ku-band satellite frequencies difficult to use in the Pacific region. You also are going to see what you can find on rain attenuation in the POR countries of interest.

cc: ✓ Henry Goldberg, ✓ Fred Landman 10/8/90

WORLDWIDE MEDIA GROUP INC.
551 WESTOVER ROAD
STAMFORD, CT 06902
—
TEL 203 356-0299
FAX 203-359-8381

September 24, 1990

Dr. Clay T. Whitehead
President
Whitehead Associates
1320 Old Chain Bridge Road
McClean, VA 22101

Dear Tom:

Enclosed is the background materials on TongaSat. If anything in here is interesting, I hope you will include me in your deliberations.

Kind regards and best wishes.

Sincerely,

John M. Eger
President

Enclosure

TONGASAT

Investment Proposal

NOTES TO TONGASAT INVESTMENT PROPOSAL

US$3 MILLION FOR 25% TONGASAT CAPITAL STOCK

1. The total investment can be phased, with US$1 million infusion at the beginning of each year, commencing late 1990

2. US$3 million over end-1990 to end-1993 is expected to be spent in roughly equal proportions:

1990 to end-1991	$800,000
1991 to end-1992	$1,000,000
1992 to end-1993	$1,200,000

3. TONGASAT expenses during those three years are concentrated in IFRB technical coordination with other countries, promotion of participation by other countries in financing the International Ownership Body (IOB), establishing Signatories to the IOB, marketing of regional system services to end user organizations and carriers in all potential participating countries, negotiating multilateral agreements of the IOB with other countries, etc.

4. Since no return on investment can be realized until the first satellite(s) is/are in operation, no revenue is anticipated until calendar year 1994

5. All assumptions in the TONGASAT INVESTMENT PROPOSALS are conservative, because:

- Load factor can be expected to increase to 90%
- The number of satellites will probably grow from 2 to 4
- Lease charges per transponder will exceed US$1.5 m, by virtue of the fact that partially leased transponders (for voice, data, FAX, etc.) will create greater income than whole transponder leases (for TV, large users,etc)
- Significant additional revenues will result if decided to construct hybrid satellites, instead of C-band only

7. This is a long term investment. When the number of satellites increases from 2 to 3 or 4, to satisfy growth of traffic demand in Asia-Pacific, the rate of return will increase rapidly

8. The investor will have one seat on the Board of Directors

9. TONGASAT's sole franchise has been approved by the Cabinet

10. TONGASAT is 100% privately owned and is a Tongan corporation

11. Major risk factor is raising the $400-$600M system financing

TONGASAT INVESTMENT PROPOSAL: US$3 MILLION FOR 25%

1. TONGASAT will be the Signatory of the Kingdom of Tonga to an ownership body. This body will own and operate the TONGASAT INTERNATIONAL ASIA-PACIFIC REGIONAL COMMUNICATIONS SATELLITE SYSTEM, after it is launched in 1993/1994.

2. TONGASAT will contribute the IFRB registered orbital satellite positions, in lieu of cash. Other owner partners will contribute cash or launch services or satellites to that body.

3. It is expected that TONGASAT can substantiate a share equivalent to 10% of the ownership body.

4. **Under the assumptions illustrated below, with 3 C-band satellites** the ROI on an investment into TONGASAT is:

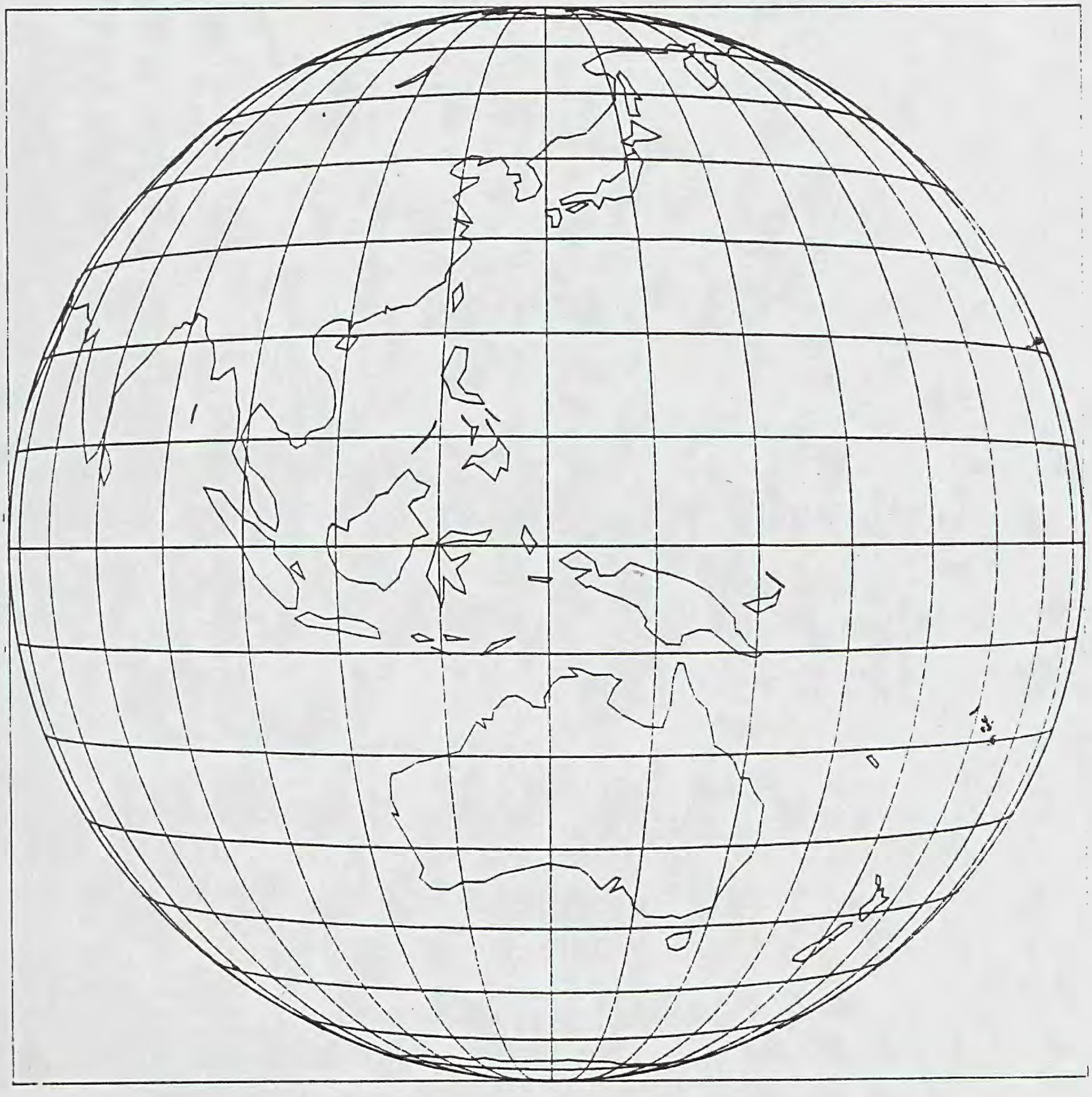
No. of satellites:	3	(Probably 4 justified by 1995/1996)
Load factor:	75%	(revenue derived as percentage of total capacity of the satellites)
Lease value per transponder:	US$1.5M	(in 1990 USD -- very competitive rate)
Total annual lease revenue:	$81.0M	(54 out of a total 72 transponders)
Ownership body operating expense:	$4.0M	(includes TT&C and G&A expenses)
Minimum net annual revenue:	$77.0M	(accrues to Signatories, after debt service, if any, is first deducted)
TONGASAT annual gross revenue:	$7.7M	
TONGASAT annual operating expense:	$1.0M	
TONGASAT 50% share with Government:	$3.35M	(Government franchise provides for a 50/50 split of net revenues)

25% equity distribution before tax: US$837,500 per annum
= 27.9% ROI per annum

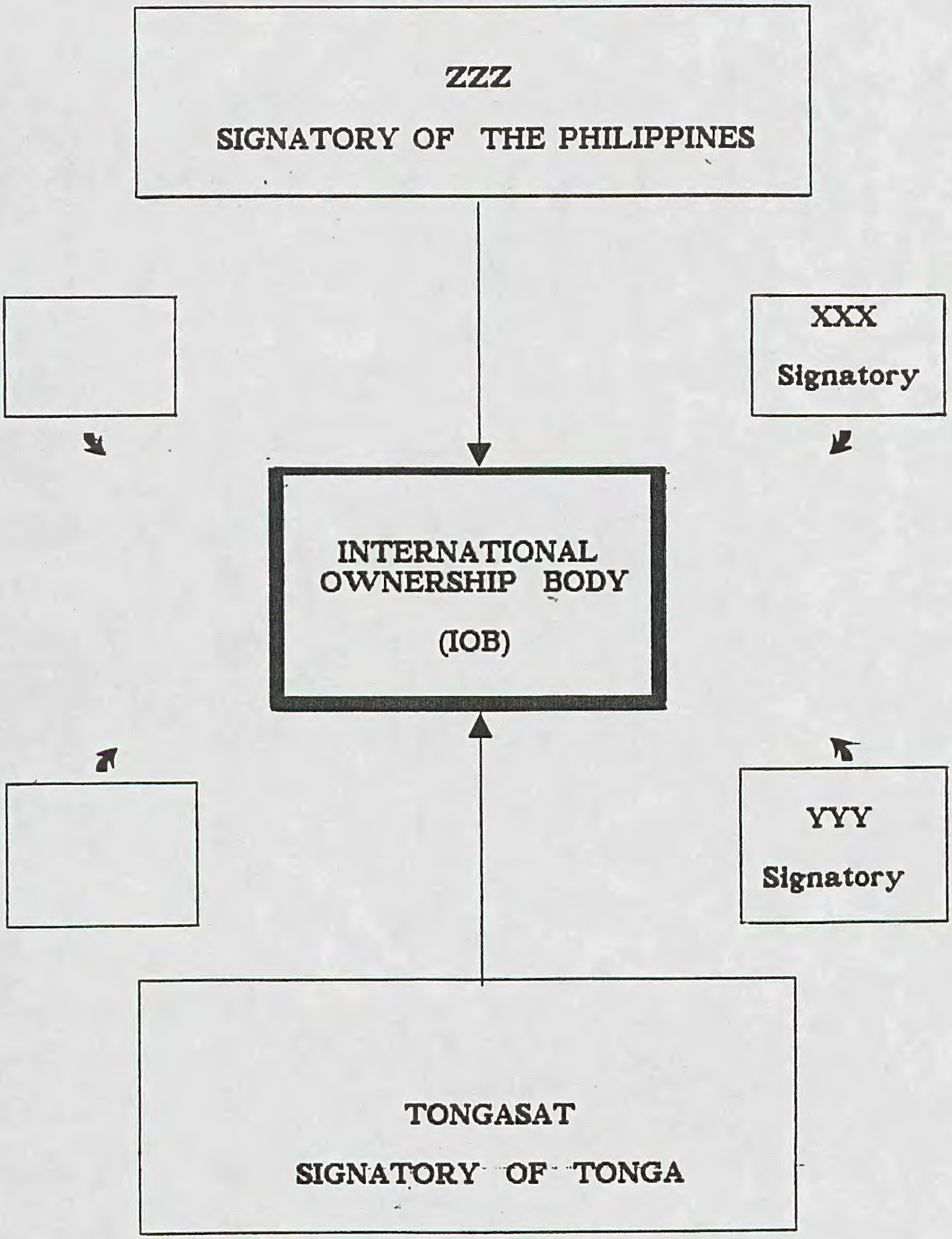
25% equity distribution after 15% tax: US$711,875 per annum
= 23.7 % ROI per annum

NOTE: IT IS EXPECTED BY TONGASAT THAT A TAX HOLIDAY CAN BE OBTAINED FROM THE GOVERNMENT OF TONGA -- THUS THE BEFORE TAX NET RETURN ON INVESTMENT MAY APPLY

asia - pacific



THE EARTH AS SEEN BY THE TONGASAT SATELLITE AT 130 DEGREES EAST LONGITUDE


ZZZ
SIGNATORY OF THE PHILIPPINES
XXX
Signatory
INTERNATIONAL OWNERSHIP BODY
(IOB)
YYY
Signatory
TONGASAT
SIGNATORY OF TONGA

IMPLEMENTATION SCHEDULE

1987 - 1990 -- REGISTRATION OF SATELLITE POSITIONS WITH IFRB

1990 -- TONGASAT COMPLETES REGISTRATION OF ALL SATELLITE POSITIONS AND COMMENCES COORDINATION PROCEDURES WITH OTHER COUNTRIES

1990 - 1991 -- COUNTRIES INVITED TO INVEST AND/OR APPOINT SIGNATORIES

LATE 1991 - EARLY 1992 -- INTERNATIONAL OWNERSHIP BODY (IOB) FORMED AND INITIAL INSTALLMENT OF TOTAL SYSTEM FINANCING

-- SATELLITE AND LAUNCH SERVICES CONTRACTS SIGNED BY TONGASAT ON BEHALF OF IOB

1992 - 1993 -- ADDITIONAL SIGNATORIES SIGN IOB AGREEMENTS AND MAKE ADDITIONAL INSTALLMENTS OF SYSTEM FINANCING

1993 -- CONSTRUCTION OF TT & C COMPLEX AND LAUNCH OF 1 OR 2 SATELLITES

LATE 1993 - 1994 -- COMMENCE OPERATIONAL SERVICES

1995 - 1998 -- LAUNCH OF ADDITIONAL SATELLITES AND EXPANSION OF SERVICES

INTERNATIONAL OWNERSHIP BODY (I O B)
FINANCIAL/INSTITUTIONAL ASPECTS

-- ANY ENTITY CAN PARTICIPATE IN FINANCING OF IOB TOTAL SYSTEM

-- PREFER 5 TO 10 INVESTORS FOR ENTIRE $400 - $600 MILLION IOB SYSTEM -- REAP ROI OF 14% - 26%

-- EACH COUNTRY MAY APPOINT SIGNATORY
  - EITHER INVESTOR IN IOB
  - OR NON-INVESTING CARRIER'S CARRIER OR GROUP OF CARRIERS
  - OR EACH END USER AUTHORIZED TO DEAL DIRECTLY WITH IOB
  - OR GOVERNMENT ENTITY

-- TONGASAT UNDER CONTRACT AS INITIAL SYSTEM MANAGER

-- ANY INVESTING SIGNATORY COULD PROVIDE TT & C

LEGAL/REGULATORY ASPECTS

-- TONGA HAS RIGHT TO USE EACH SATELLITE POSITION PROVIDED SATELLITE LAUNCHED BY 1999 INTO EACH POSITION

-- IN ACCORDANCE WITH RADIO REGULATIONS, ALL LEGAL MATTERS FINISHED, EXCEPT FOR TECHNICAL COORDINATION WITH OTHER COUNTRIES

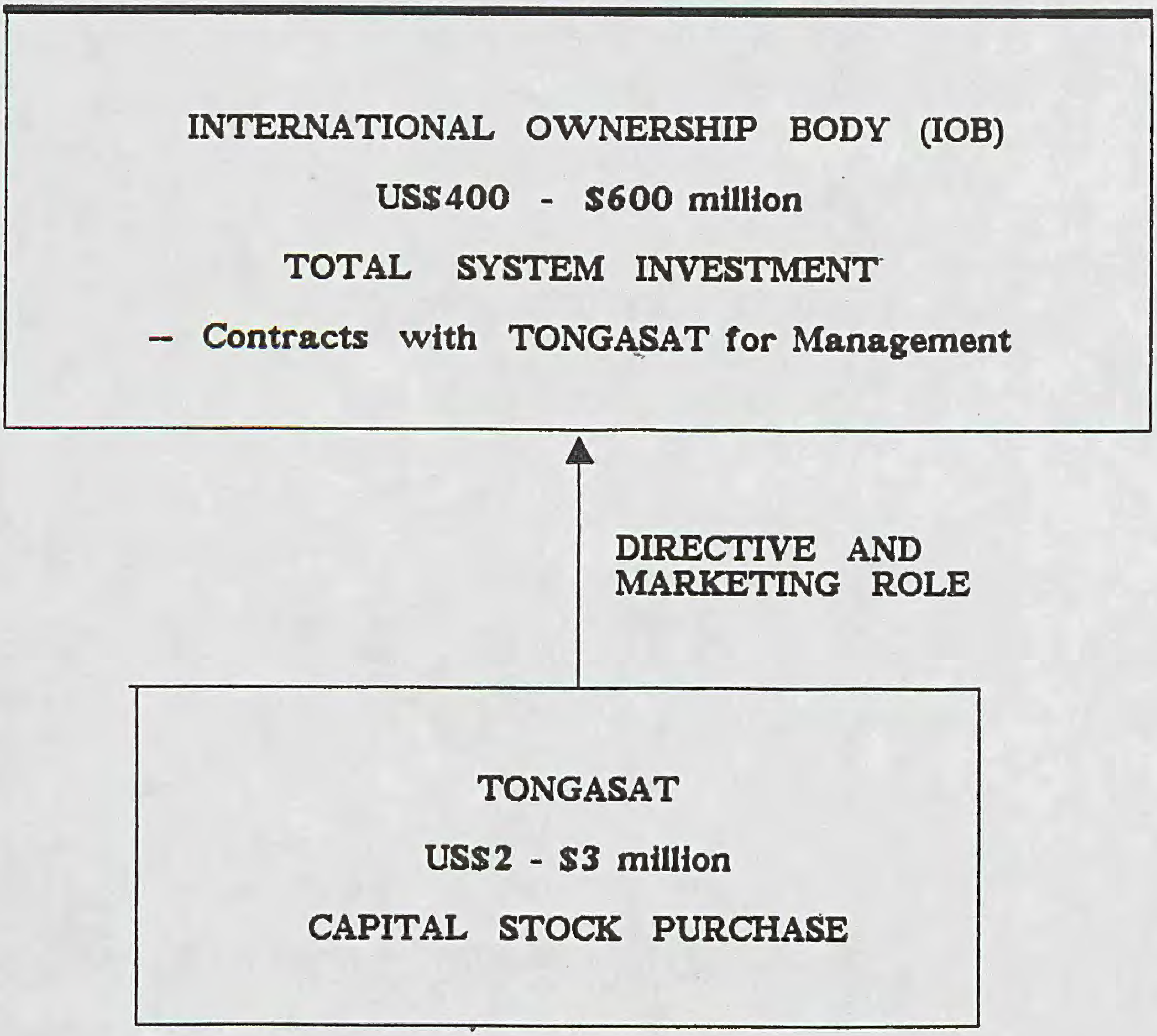
-- COORDINATION WITH INTELSAT RE ECONOMIC HARM WILL TAKE PLACE AFTER IOB FORMALLY FORMED IN LATE 1991

-- EACH COUNTRY MAY PERMIT CARRIER ACCESS OR APPOINT SIGNATORY (EXCLUSIVE)

-- NO FCC INVOLVEMENT

IOB = INTERNATIONAL OWNERSHIP BODY

TONGASAT 25% OWNERSHIP CONFERS DIRECTIVE ROLE



INTERNATIONAL OWNERSHIP BODY (IOB)

US$400 - $600 million

TOTAL SYSTEM INVESTMENT

– Contracts with TONGASAT for Management

DIRECTIVE AND
MARKETING ROLE

TONGASAT

US$2 - $3 million

CAPITAL STOCK PURCHASE

TONGASAT INVESTMENT

-- THE FORECAST RETURN ON INVESTMENT (ROI) DOES NOT INCLUDE:

1. ANY INCOME TONGASAT MAY DERIVE AS SIGNATORY OF THE KINGDOM OF TONGA
2. ANY INCOME FROM A CONTRACT FOR MANAGEMENT SERVICES FOR THE INTERNATIONAL OWNERSHIP BODY (IOB)

TONGASAT ASIA-PACIFIC REGIONAL COMMUNICATIONS SATELLITE SYSTEM

INTERNATIONAL OWNERSHIP BODY ROI CALCULATIONS

I. FOR A SYSTEM CONSISTING OF ALL C-BAND SATELLITES

---

2 C-BAND SATELLITES WITH 24 TRANSPONDERS EACH		3 C-BAND SATELLITES WITH 24 TRANSPONDERS EACH	
Total system investment:		Total system investment:	
LOW	HIGH	LOW	HIGH
$350M	$400M	$475M	$525M
Case 1: 75% load factor = 36 transponders		Case 1: 75% load factor =54 transponders	
Revenue annual	$54M		$81M
Operating expenses	-4M		-4M
Net annual revenue	$50M		$77M
ROI 14.3%	ROI 12.5%	ROI 16.2%	ROI 14.7%
Case 2: 90% load factor		Case 2: 90% load factor	
Revenue annual	$64.8M		$97.2M
Operating expenses	-4.0M		-4.0M
Net annual revenue	$60.8M		$93.2M
ROI 17.4%	ROI 15.2%	ROI 19.6%	ROI 17.8%

NOTES:

1. Total system investment includes satellites, launch services, TT&C facilities, insurance and G&A expenses of international ownership body during 3 years before commencing operations in orbit

2. The investment will be phased, with progress payments on the hardware contracts for satellites and TT&C facilities and on launch services contracts. Approximately 30% per year during 30-36 month construction period, in average quarterly payments, plus 10% performance bonuses upon successful launch

3. 1st satellite launched 30 months and 2nd satellite 36 months subsequent to contract dates for satellites and launch services

TONGASAT ASIA-PACIFIC REGIONAL COMMUNICATIONS SATELLITE SYSTEM

INTERNATIONAL OWNERSHIP BODY ROI CALCULATIONS

II. FOR A SYSTEM CONSISTING OF HYBRID C/Ku-BAND SATELLITES

---

2 C/Ku-BAND SATELLITES EACH WITH 24 TRANSPONDERS C-BAND 12 TRANSPONDERS K-BAND	3 C/Ku-BAND SATELLITES EACH WITH 24 TRANSPONDERS C-BAND 12 TRANSPONDERS K-BAND
Total system investment: LOW HIGH $450M $500M	Total system investment: LOW HIGH $600M $650M
Case 1: 75% load factor = 36 C-band and 18 Ku-band	Case 1: 75% load factor = 54 C-band and 27 Ku-band
Revenue: C-band @ $1.5M Ku-band @ $2.0M	Revenue: C-band @ $1.5M Ku-band @ $2.0M
Revenue annual $90M Operating expenses -4M	$135M -4M
Net annual revenue $86M	$131M
ROI 19.1% ROI 17.2%	ROI 20.2% ROI 18.7%
Case 2: 90% load factor	Case 2: 90% load factor
Revenue annual $108.0M Operating expenses -4.0M	$162.0M -4.0M
Net annual revenue $104.0M	$158.0M
ROI 23.1% ROI 20.8%	ROI 26.3% ROI 24.3%

NOTES:

4. Average transponder lease revenues of $1.5M for C-band and $2.0M for Ku-band are 1990 US$ competitive rates, because of the high power made available in the coverage beams of the satellites -- which enables the users to use small earth stations. Bulk users may pay less for entire transponders, but partial transponder leases will result in greater aggregated revenues

SATELLITE ORBITAL POSITIONS REGISTERED WITH THE IFRB

IN THE ORBITAL ARC EAST OF 118.0 EAST AND WEST OF 170.0 WEST

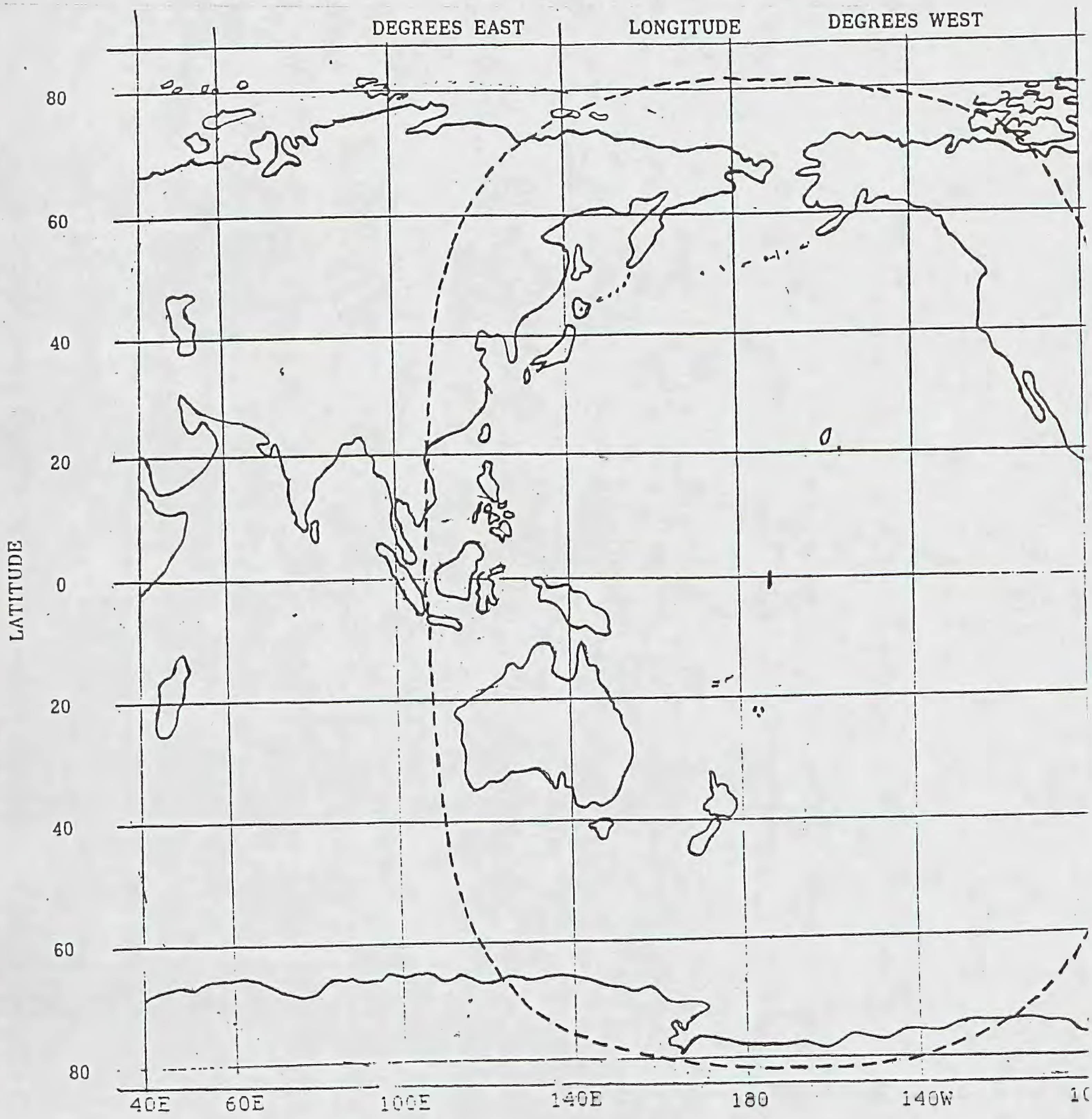
(IN C-BAND AND Ku-BAND FREQUENCIES)

118.0 EAST LONGITUDE	INDONESIA	C-BAND
121.5/121.6 E	TONGASAT	C & C/Ku HYBRID
122.0 E	UK (ASIASAT)	C
124.0 E	JAPAN	Ku-BAND
125.0 E	PRC	C
128.0 E	JAPAN	Ku
128.0 E	USSR	C
130.0/131.0 E	TONGASAT	C & C/Ku HYBRID
132.0 E	JAPAN	C
134.0 E	TONGASAT	C & C/Ku HYBRID
135.0 E	JAPAN	C
136.0 E	JAPAN	C
138.0 E	TONGASAT	C & C/Ku HYBRID
140.0 E	USSR	Ku & C
142.5 E	TONGASAT	C & C/Ku HYBRID
145.0 E	USSR	C
147.5/148.0 E	TONGASAT	C/Ku HYBRID & C
150.0 E	JAPAN	Ku & C
151.0 E	TONGASAT	C
154.0 E	JAPAN	C
154.0 E	TONGASAT	C
154.0 E	JAPAN	Ku
156.0 E	AUSTRALIA	Ku
157.0 E	TONGASAT	C
158.0 E	JAPAN	Ku
160.0 E	AUSTRALIA	Ku
160.0 E	TONGASAT	C
162.0 E	JAPAN	Ku
164.0 E	AUSTRALIA	Ku
164.0 E	TONGASAT	C
167.0 E	USSR	Ku
167.45E	PAPUA NEW GUINEA	C/Ku HYBRID
170.0 E	USA	Ku
170.75E	TONGASAT	C
174.0 E	USA (INTELSAT)	C/Ku HYBRID
176.5 E	USA (MARISAT)	C
177.0 E	USA (INTELSAT)	C/Ku HYBRID
177.5 E	UK (INMARSAT)	C
178.0 E	FRANCE (MARECS)	C
179.5 E	UK (INMARSAT)	C
180.0 E	USA (INTELSAT)	C/Ku HYBRID
178.0 WEST LONGITUDE	USA	C
177.0 W	USA (INTELSAT)	C/Ku HYBRID
175.0 W	PAPUA NEW GUINEA	C/Ku HYBRID
172.5 W	TONGASAT	C
171.0 W	USA	C
170.0 W	USSR	C

TONGASAT SATELLITE ORBITAL POSITION AT 172.5° WEST LONGITUDE

THE DOTTED LINE CONTOUR BOUNDS THE GEOGRAPHICAL TERRITORY OF EARTH THAT CAN BE ILLUMINATED BY THE MULTIPLE SATELLITE SPOT COVER BEAMS

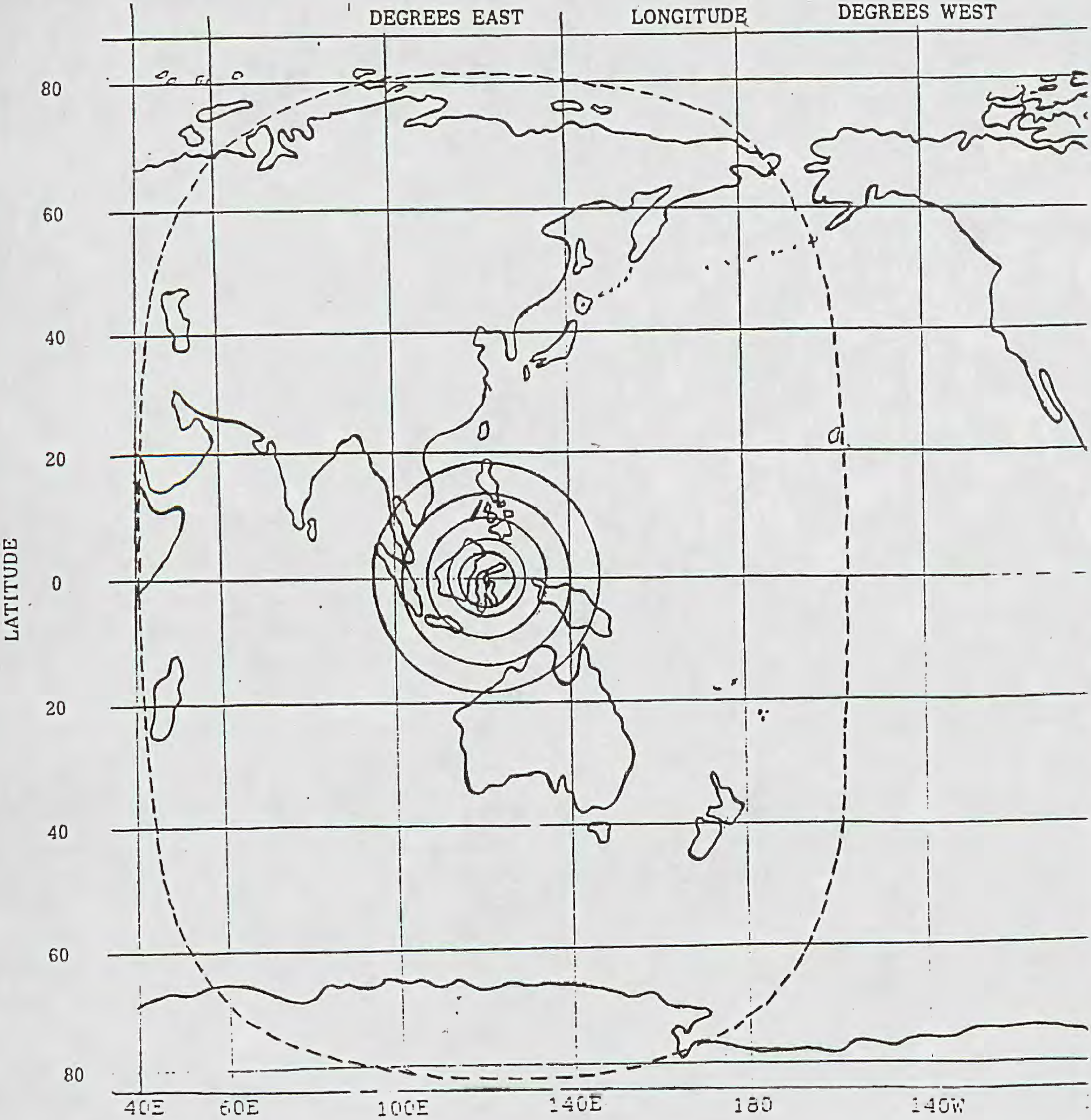
THIS IS THE EXTREME EAST ORBITAL POSITION THAT CAN BE USED. OTHER ORBITAL POSITIONS BETWEEN 121.5° E AND 164.0° E ARE FAVORED FOR THE TONGASAT ASIA-PACIFIC REGIONAL COMMUNICATIONS SATELLITE SYSTEM



TONGASAT SATELLITE ORBITAL POSITION AT 121.5° EAST LONGITUDE

THE DOTTED LINE CONTOUR BOUNDS THE GEOGRAPHICAL TERRITORY OF EARTH THAT CAN BE ILLUMINATED BY THE SATELLITE COVERAGE BEAMS

WHILE CONNECTING TRAFFIC THROUGH HAWAII, THIS SATELLITE CAN REACH AS FAR WEST AS SAUDI ARABIA AND EAST AFRICA



TONGASAT INVITATION TO CONSIDER COLLABORATION ON AN ASIA-PACIFIC REGIONAL COMMUNICATIONS SATELLITE SYSTEM

EXECUTIVE SUMMARY

I. INTRODUCTION

WITH RAPIDLY GROWING TRADE, AIR TRAFFIC AND TOURISM, THE ASIA-PACIFIC REGION OF THE WORLD IS EXPERIENCING ENORMOUS INCREASES IN THE NEED FOR TELECOMMUNICATIONS.

IT IS ANTICIPATED THAT THE INTERNATIONAL TELECOMMUNICATIONS SATELLITE ORGANIZATION, INTELSAT, THE SATELLITE OPERATOR WHICH CURRENTLY PROVIDES NEARLY ALL INTERNATIONAL SATELLITE TELECOMMUNICATIONS TRAFFIC IN THE ASIA-PACIFIC REGION, MAY NOT BE ABLE TO SATISFY THIS INCREASE IN DEMAND FOR TELECOMMUNICATIONS CAPACITY IN THE 1990'S.

THEREFORE, MOST FORESIGHTED TELECOMMUNICATIONS PLANNERS IN THE ASIA-PACIFIC REGION ARE BEGINNING TO BELIEVE THAT ANOTHER SATELLITE SYSTEM IS NEEDED, CAPABLE OF SERVING THE WHOLE AREA, FROM PAKISTAN AND INDIA IN THE WEST TO THE UNITED STATES IN THE EAST; AND FROM CHINA, KOREA, THE USSR AND JAPAN IN THE NORTH, TO AUSTRALIA AND NEW ZEALAND IN THE SOUTH. ALL COUNTRIES IN BETWEEN THESE EXTREMES WILL OF COURSE ALSO BE SERVED.

THE TONGASAT ASIA-PACIFIC REGIONAL COMMUNICATIONS SATELLITE SYSTEM IS DESIGNED TO PROVIDE EITHER DOMESTIC OR INTERNATIONAL CAPACITY IN ACCORANCE WITH THE NEED OF EACH INDIVIDUAL COUNTRY.

THE GOVERNMENT OF THE KINGDOM OF TONGA, AN INDEPENDENT, SMALL, NEUTRAL SOUTH PACIFIC ISLAND COUNTRY WITH A POPULATION OF ABOUT 100,000, POSSESSES THAT ASSET OF GREATEST VALUE TO ORGANIZATIONS WISHING TO USE OR FINANCE A SATELLITE COMMUNICATIONS NETWORK IN THE ASIA-PACIFIC REGION.

TO LAUNCH AND OPERATE A SATELLITE COMMUNICATIONS SYSTEM, THE OWNER OR OPERATOR ENTITY MUST HAVE THE RIGHT TO THE USE OF SYNCHRONOUS EQUATORIAL ORBITAL SLOTS, WHICH CAN BE REGISTERED ONLY BY SOVEREIGN NATIONS, (SUCH AS THE FCC DOES ON BEHALF OF THE UNITED STATES). TONGASAT HAS THE SOLE RIGHT TO THE USE OF THE SEVERAL ORBIT POSITIONS OF THE KINGDOM OF TONGA OF THE TYPE REQUIRED FOR OPERATING SYNCHRONOUS COMMUNICATIONS SATELLITES.

SUCH ORBITAL POSITIONS IN THE ARC OF INTEREST OVER THE PACIFIC OCEAN REGION ARE NOW VERY SCARCE, SINCE ALL HAVE BEEN REGISTERED IN THAT PART OF THE ORBITAL ARC BY TONGA, THE USSR, THE UNITED STATES, JAPAN AND CHINA.

IN THAT PARTICULAR PORTION OF THE ORBITAL ARC OF MOST VALUE TO A COMMUNICATIONS SATELLITE SYSTEM, DESIGNED TO SERVE MOST OF THE ASIAN COUNTRIES, IN ADDITION TO THE PACIFIC AND ASEAN COUNTRIES, AND STILL REACH THE UNITED STATES, TONGA HAS REGISTERED AND THEREFORE CONTROLS THE LAST SUCH REMAINING POSITIONS.

THUS TONGA POSSESSES THE ASSET MOST CRITICAL TO THE ESTABLISHMENT OF AN ASIA-PACIFIC REGIONAL COMMUNICATIONS SATELLITE SYSTEM -- NAMELY THE ORBITAL ARC POSITIONS VITAL TO ECONOMIC SUCCESS.

II. IMPLEMENTATION SCHEDULE

TONGA ENVISIONS THE SATELLITE SYSTEM TO BE LAUNCHED DURING 1993 TO 1995, IN ORDER TO COMMENCE SATISFYING THE ENORMOUS INCREASE IN DEMAND FOR COMMUNICATIONS SATELLITE CAPACITY, FORESEEN BY FORECASTERS FOR THE LATTER HALF OF THE 1990'S, FOR BOTH DOMESTIC AND INTERNATIONAL TELECOMMUNICATIONS IN THE ASIA-PACIFIC REGION.

DOMESTIC USE BY CERTAIN COUNTRIES MAY START EARLIER, PERHAPS BY TONGASAT LAUNCHING ONE SATELLITE FOR THAT PURPOSE AT THE REQUEST OF SUCH COUNTRIES, PERHAPS LATE 1992 OR 1993.

CONSTRUCTION OF THE SATELLITES WILL NEED TO BEGIN APPROXIMATELY TWO TO TWO-AND-ONE-HALF YEARS BEFORE THE FIRST LAUNCH IS REQUIRED.

THEREFORE, THE INITIAL REGIONAL INTERNATIONAL USER GROUP WILL NEED TO FORMULATE ITS REQUIREMENTS DURING 1990-1991, SO THAT SATELLITE AND LAUNCH VEHICLE SPECIFICATIONS CAN BE ISSUED BY TONGASAT BY THE BEGINNING OF 1992. IT IS ANTICIPATED THAT SATELLITE AND LAUNCHER SPECIFICATIONS, FOR A GROUP OF COUNTRIES WISHING TO COMMENCE WITH DOMESTIC TRANSPONDER CAPACITY, CAN BE RELEASED TOWARD THE END OF 1990.

THOSE OF TONGA'S SATELLITE ORBITAL POSITIONS THAT ARE MOST IDEAL FOR SERVING THE ASIA-PACIFIC REGION CAN ACCOMMODATE A TOTAL OF MORE THAN HALF A DOZEN SATELLITES, ALL OF WHICH CAN REACH HAWAII, TO PROVIDE DIRECT USA-ASIA-PACIFIC TELECOMMUNICATIONS FACILITIES TO INTERCONNECT THAT VERY IMPORTANT MARKET AND TRADE COUNTRY.

NATIONS WITHIN THE PACIFIC AREA. I.E., ONLY SELECTED AREAS ARE ILLUMINATED BY THE SATELLITE BEAMS OF PACSTAR, SO THAT THE TRADE AREA IS AGAIN CONSTRICTED, COMPARED TO THAT OF TONGASAT.

THE OVERSEAS TELECOMMUNICATIONS COMMISSION (AUSTRALIA), [OTC(A)], HAS SPONSORED A SATELLITE COMMUNICATIONS SYSTEM FOR CERTAIN SOUTH PACIFIC ISLAND NATIONS. THAT SYSTEM IS CONFINED BY DESIGN AND PARTICIPATION TO A SMALL GEOGRAPHICAL COVERAGE AREA AND REQUIRES EARTH STATIONS FAR LARGER THAN THOSE INTENDED FOR USE WITH THE TONGASAT ASIA-PACIFIC REGIONAL COMMUNICATIONS SATELLITE SYSTEM, BECAUSE IT USES INTELSAT SATELLITE CAPACITY.

NASA TDRS WILL LEASE SOME C-BAND TRANSPONDER CAPACITY TO A US COMMERCIAL ENTITY. THE COVERAGE IS, HOWEVER, VERY SELECTIVE AND CANNOT SERVE AN ASIA-PACIFIC AREA REGIONAL COMMUNICATIONS SYSTEM. IN ADDITION, THE PACIFIC OCEAN TDRS SATELLITE IS LOCATED TOO FAR EAST IN ORBIT TO BE OF VALUE FOR DOMESTIC SYSTEMS IN MOST ASIAN AND ASEAN COUNTRIES IT MAY COVER, IN ACCORDANCE WITH ITS IFRB AUTHORIZATION.

IV. FINANCIAL AND OWNERSHIP CONSIDERATIONS

THE TOTAL COST OF PROCUREMENT AND LAUNCHING OF THE TONGASAT REGIONAL SYSTEM IS OF COURSE DEPENDENT ON THE TYPE AND NUMBER OF SATELLITES SELECTED. THE COST RANGE IS ESTIMATED TO BE FROM US$300 MILLION CONSISTING OF A 2-SATELLITE SYSTEM OF RELATIVELY SIMPLE SATELLITES WITH LIMITED CAPACITY, TO ABOUT US$500 MILLION OR MORE FOR A 3- OR 4-SATELLITE SYSTEM OF A RELATIVELY COMPLEX NATURE. (EARTH STATIONS IN EACH COUNTRY ARE OF COURSE AN INVESTMENT MADE BY EITHER THE AUTHORIZED CARRIER OR EACH CUSTOMER IN THAT COUNTRY.)

IT IS THEREFORE THE AIM OF THE GOVERNMENT OF TONGA AND TONGASAT TO WORK TOGETHER WITH ALL NATIONS WILLING TO PARTICIPATE, IN ORDER TO TAKE ADVANTAGE OF THE ECONOMY OF SCALE, SO NECESSARY TO FINANCE AND MAKE COMMERCIALLY ATTRACTIVE A REGIONAL SATELLITE SYSTEM. WORKING ALONE, MOST COUNTRIES IN THE REGION ARE NOT ABLE TO ECONOMICALLY JUSTIFY THEIR OWN DOMESTIC SATELLITE SYSTEM. IN THE ASIA-PACIFIC REGION UNDER CONSIDERATION HERE, ONLY INDIA, THE PRC, JAPAN, THE UNITED STATES, INDONESIA AND AUSTRALIA CURRENTLY OPERATE DOMESTIC COMMUNICATIONS SATELLITES.

THE GOVERNMENT OF TONGA AND TONGASAT ARE PREPARED TO LET A GROUP OF FINANCIERS OWN AND OPERATE THE SATELLITE SYSTEM, WITH TONGASAT HOLDING A MINORITY SHARE.

THIS GROUP CAN BE PRIVATE OR GOVERNMENTAL, OR MIXED PRIVATE AND GOVERNMENTAL. TONGASAT'S CONTRIBUTION WILL BE THE SATELLITE ORBITAL LOCATIONS. THE KINGDOM OF TONGA ALSO ANTICIPATES BEING A USER OF AT LEAST TWO SATELLITE TRANSPONDERS.

TYPICAL PRIVATE FINANCIERS OF THE REGIONAL SYSTEM MAY INCLUDE AUTHORIZED COMMUNICATIONS PROVIDERS, TELEPHONE COMPANIES,

TELEVISION AND RADIO NETWORKS, GOVERNMENT FRANCHISED COMMUNICATIONS CARRIERS, CARRIERS' CARRIERS, SATELLITE MANUFACTURERS, EARTH STATION AND LAUNCH VEHICLE MANUFACTURERS, BANKS, VENTURE CAPITALISTS, MULTI-NATIONAL AND TRADING COMPANIES, ADDED VALUE NETWORKS, DISCOUNT TELEPHONE CARRIERS, ETC.

IT IS ANTICIPATED THAT TONGASAT WILL LAUNCH ONLY ONE OR TWO SMALLER, LESS EXPENSIVE SATELLITES TO BEGIN WITH. IN THIS MANNER, ONE OR MORE COUNTRIES ARE WELCOME TO START SERVING THEIR DOMESTIC NEEDS, USING TONGA'S ORBITAL LOCATIONS. IT WOULD BE EXPECTED THAT AS THE REGIONAL NEEDS GROW, AND IN PARTICULAR AS INTERNATIONAL TRAFFIC NEEDS BEGIN TO BE SERVED, THOSE COUNTRIES COULD PROVIDE INTERNATIONAL LINKS TO THEIR DOMESTIC USERS, **EMPLOYING THE SAME CUSTOMER PREMISE OR COMMUNITY EARTH STATIONS FOR BOTH DOMESTIC AND INTERNATIONAL TRAFFIC.** THUS, THE TONGASAT SYSTEM BECOMES VERY ECONOMICAL TO SUCH USERS IN ALL PARTICIPATING COUNTRIES.

WHETHER THE FINANCIERS ARE PRIVATE OR GOVERNMENTAL ENTITIES, DEBT OR EQUITY FINANCING IS OPEN FOR CONSIDERATION BY TONGA AND TONGASAT. EQUITY COULD BE HELD EITHER IN TONGASAT, OR IN AN OWNERSHIP ORGANIZATION, PARTLY OWNED BY TONGASAT. PLEASE SEE "INSTITUTIONAL ARRANGEMENTS" BELOW.

THE FINANCIERS COULD RETAIN OWNERSHIP CONTROL OF THE SATELLITES AND THE TRACKING AND MASTER CONTROL EARTH STATION FACILITIES AS COLLATERAL.

TONGA ENVISIONS THE USE OF MUCH LESS EXPENSIVE EARTH STATIONS THAN THOSE CURRENTLY USED WITH INTELSAT. THEY COULD BE PLACED ON CUSTOMER PREMISES OR IN COMMUNITY CENTERS, IN RURAL AS WELL AS IN URBAN AREAS. IN ADDITION TO LESS EXPENSIVE EARTH STATION FACILITIES, ENORMOUS COST SAVINGS WILL RESULT FROM THE ABSENCE OF PAYING FOR COSTLY LAND-LINES TO CONNECT TO DISTANT EARTH STATIONS. BOTH ASPECTS WILL BENEFIT THE END-USERS OF THE REGIONAL SYSTEM IN ALL PARTICIPATING COUNTRIES.

PARTICIPATION BY COUNTRIES, USERS AND FINANCIERS

TONGA EXPECTS THAT SOME NATIONS WILL SOON INDICATE AN INTEREST IN PARTICIPATING, INITIALLY BY LEASING OR PURCHASING SATELLITE CAPACITY FOR DOMESTIC PURPOSES. AS EXPLAINED ABOVE, SMALLER, LESS EXPENSIVE SATELLITES CAN SATISFY THESE INITIAL DOMESTIC NEEDS. THEREFORE, FINANCING WILL EASILY BE OBTAINABLE.

TO OBTAIN THE EQUITY OR DEBT FINANCING REQUIRED TO CONSTRUCT AND OPERATE THE EVENTUAL TONGA SPONSORED ASIA-PACIFIC REGIONAL COMMUNICATIONS SATELLITE SYSTEM, THE GOVERNMENT OF TONGA NEEDS THE COOPERATION OF THE GOVERNMENTS OF THOSE COUNTRIES THAT WILL PARTICIPATE. THIS IS SIMPLY BECAUSE THE GOVERNMENTS OF SOME

COUNTRIES NEED TO PERMIT THEIR USERS TO HAVE DIRECT ACCESS TO THE SATELLITE SYSTEM FOR DOMESTIC AND/OR INTERNATIONAL COMMUNICATIONS. MOST COUNTRIES REGULATE ACCESS, PARTICULARLY ACCESS TO INTERNATIONAL LINKS.

AT LEAST, GOVERNMENTS WHICH REGULATE ACCESS MAY WISH TO AUTHORIZE TELECOMMUNICATIONS CARRIERS, SUCH AS TELEPHONE COMPANIES AND RECORD CARRIERS, TO SET UP COMMUNITY AND CUSTOMER PREMISE EARTH STATIONS IN THEIR COUNTRIES TO SERVE THEIR CUSTOMERS WITH DIRECT ACCESS TO THE TONGASAT SATELLITES. THE UNITED STATES AND JAPAN, FOR EXAMPLE, ALREADY PERMIT DIRECT ACCESS BY AUTHORIZED COMMON CARRIERS OR CARRIERS' CARRIERS TO INTERNATIONAL TELECOMMUNICATIONS FACILITIES. THE UNITED STATES ALSO PERMITS CUSTOMER PREMISE EARTH STATIONS OWNED BY THE CUSTOMERS TO DIRECTLY ACCESS SATELLITE SYSTEMS. IT IS EXPECTED THAT OTHER COUNTRIES IN THE ASIA-PACIFIC AREA WILL PURSUE THE OFFERING TO THEIR DOMESTIC USERS OF SUCH COST-EFFECTIVE COMMUNICATIONS SERVICES, BY-PASSING TERRESTRIAL SYSTEMS AND ACCESSING THE TONGASAT SATELLITES DIRECTLY.

ONCE TONGA HAVE SECURED GOVERNMENTAL PERMISSION OF THE PROSPECTIVE PARTICIPANT COUNTRIES WHICH REGULATE OR RESTRICT INTERNATIONAL ACCESS FOR THEIR INDUSTRIES TO BECOME USERS OF THE SYSTEM, FINANCIERS OF THOSE COUNTRIES WILL BE INVITED TO PARTICIPATE IN EQUITY OWNERSHIP OF THE SYSTEM. COMMUNICATIONS SATELLITE SYSTEMS CAN BE VERY LUCRATIVE AND SAFE INVESTMENTS FOR FINANCIERS, AS EXEMPLIFIED BY INTELSAT AND EUTELSAT AND THE MANY US DOMESTIC SYSTEMS.

THANKS TO THE VERY LARGE COVERAGE AREA OF THE TONGASAT SATELLITES THERE IS A WHOLE HOST OF NATIONS THAT COULD LET THEIR INDUSTRIAL AND GOVENRMENTAL USERS BENEFIT FINANCIALLY BY PARTAKING IN THE REGIONAL SYSTEM. THE ECONOMICS OF USING THE ASIA-PACIFIC REGIONAL SYSTEM, ESPECIALLY WHEN DIRECT ACCESS TO TONGASAT SATELLITES FROM CUSTOMER PREMISE OR COMMUNITY EARTH STATIONS IS PERMITTED BY THE GOVERNMENT, IS EXCELLENT. THIS ELIMINATES THE COSTLY LAND-LINE CONNECTIONS NEEDED TO ACCESS DISTANT EARTH STATIONS. THUS IT IS EXPECTED THAT MANY COUNTRIES WILL BE ATTRACTED TO LET THEIR INDUSTRIES USE THE TONGASAT REGIONAL SYSTEM, SINCE THEIR DOMESTIC USERS WILL AUTOMATICALLY BE ABLE TO COST-EFFCTIVELY CORRESPOND WITH SUCH A LARGE TRADE AREA.

THE GOVERNMENT OF THE KINGDOM OF TONGA IS UNDERTAKING WRITTEN INVITATIONS TO OTHER GOVERNMENTS WITHIN THE TONGASAT COVERAGE AREA, TO CONSIDER PARTICIPATION. THE OBJECTIVE OF SUCH GOVERNMENTAL INVITATIONS IS TO ALERT THE RESPECTIVE GOVERNMENTS, **AND THEIR INTERESTED INDUSTRIES AND EXPORT ORIENTED TRADING COMPANIES,** TO THE PLANS OF TONGA AND TONGASAT, AND TO ENABLE THEM TO EXPRESS AN EARLY INTEREST IN PARTICIPATION. IN ADDITION, THE GOVERNMENTS WILL HOPEFULLY ALSO INDICATE THEIR INTEREST IN COOPERATING, POSSIBLY BY ALLOWING CUSTOMER PREMISE OR COMMUNITY EARTH STATION DIRECT ACCESS. FOLLOW-UP CORRESPONDENCE, AND PERHAPS **A CONFERENCE IN TONGA TOWARD THE END OF 1990 OR EARLY IN 1991,** ARE PLANNED TO PROMOTE INFORMATION EXCHANGE AMONG PROSPECTIVE USERS AND TO CONSIDER ORGANIZATIONAL AND FINANCIAL

ASPECTS.

TO SUCH A CONFERENCE, MANY DIFFERENT CLASSES OF ENTITIES WILL BE INVITED. IN ADDITON TO GOVERNMENTAL PARTICIPATION, TELEPHONE AND OTHER COMMUNICATIONS CARRIERS, THE ASIA-PACIFICC WIDE FINANCIAL COMMUNITY AND WORLD-WIDE LAUNCH VEHICLE, EARTH STATION AND SATELLITE MANUFACTURERS WILL BE INVITED TO CONSIDER FORMS OF ORGANIZATION, OWNERSHIP, DEBT FINANCING, ETC.

FACTORS OF IMPORTANCE AND PERTINENT BACKGROUND

I. EXPECTED PARTICIPANT AND USER ENTITIES

GOVERNMENTS MAY THEMSELVES WISH TO BECOME END-USERS OF THE SYSTEM. GOVERNMENTAL AGENCIES OR MINISTRIES THAT CONCERN THEMSELVES WITH TRADE AND INDUSTRY, TOURISM AND TELECOMMUNICATIONS IN EACH COUNTRY MAY FIND IT ADVANTAGEOUS TO STIMULATE INDUSTRIAL AND GOVERNMENT AGENCY INTEREST IN CONSIDERING POSSIBLE PARTICIPATION IN THE REGIONAL SATELLITE SYSTEM.

GOVERNMENT FRANCHISED OR GOVERNMENT OWNED TELECOMMUNICATIONS PROVIDERS ARE OF COURSE POTENTIAL USERS AS WELL AS POTENTIAL ORGANIZATIONAL OWNERSHIP PARICIPANTS. IN PARTICULAR, THE COMMUNICATIONS CARRIERS IN THOSE COUNTRIES THAT HAVE PRIVATE ENTITIES RESPONSIBLE FOR THE ACTUAL NETWORKS, TEND TO BE COMPETITIVE AND LOOK AFTER THE NEEDS OF THE END-USERS. THEY THEREFORE ARE ANXIOUS TO PROVIDE COST-EFFECTIVE AND ADEQUATE COMMUNICATIONS FACILITIES. IN SOME COUNTRIES, THERE ARE SEVERAL, SUCH AS IN THE USA AND THE PHILIPPINES. IN OTHERS, THERE IS ONLY ONE, SUCH AS TELECOMS IN SINGAPORE. IN SOME, THE DOMESTIC CARRIER(S) IS/ARE DIFFERENT FROM ONE OR MORE INTERNATIONAL CARRIER(S). THIS MAKES IT RATHER COMPLEX, SINCE THE SITUATION VARIES BY COUNTRY.

IT IS ANTICIPATED THAT THE GOVERNMENT OF EACH PATICIPATING COUNTRY WOULD WISH TO DESIGNATE A NEW OR EXISTING PRIVATE OR GOVERNMENTAL ENTITY AS ITS SIGNATORY TO AN OWNER ORGANIZAION OF THE ASIA-PACIFIC SYSTEM. (SEE INSTITUTIONAL ARRANGEMENTS BELOW.) SUCH A NATIONAL SIGNATORY CAN OF COURSE BE COMPOSED OF SEVERAL CARRIERS OR INDUSTRIAL OR GOVERNMENTAL PARITICIPANTS. THE SIGNATORY OF THE KINGDOM OF TONGA WILL BE TONGASAT.

II. COUNTRIES INVITED TO PARTICIPATE

THE GOVERNMENT OF TONGA AND/OR TONGASAT WILL ENSURE THAT INVITATIONS TO CONSIDER PARTICIPATION WILL BE SENT TO THE PROPER GOVERNMENT INSTANCES AND POTENTIAL USERS OF THE FOLLOWING COUNTRIES: NORTH KOREA, BURMA, PAKISTAN, SAUDI, IRAN, BRUNEI, VIETNAM, LAOS AND THE PRC.

INVITATIONS ARE UNDER CONSIDERATION BY THE OFFICE OF FOREIGN AFFAIRS OF THE KINGDOM OF TONGA, FOR DISPATCH TO: SOUTH KOREA, SINGAPORE, MALAYSIA, INDIA, USSR, BANGLADESH, SRI LANKA, THE USA, AFGHANISTAN, NEPAL, CAMBODIA, PERHAPS FRANCE AND THE UK FOR VARIOUS FRENCH AND UK PACIFIC ISLANDS, MACAO, FIJI, VANUATU, WESTERN SAMOA, NAURU, TUVALU, KIRIBATI, MARSHALL ISLANDS, NIUE, COOK ISLANDS, FEDERATED STATES OF MICRONESIA, SAIPAN, SOLOMON ISLANDS, PALAU, NEW ZEALAND, AUSTRALIA, PNG, INDONESIA AND THE PHILIPPINES.

III. TECHNICAL, OPERATIONAL, ECONOMIC AND OTHER FACTORS OF IMPORTANCE TO FINANCIERS, USERS AND GOVERNMENTS:

BECAUSE OF THE INHERENT ADVANTAGES IN PARTICIPATION IN THE TONGASAT REGIONAL SYSTEM, ESPECIALLY IN THE FORM OF THE COST SAVINGS TO END-USERS, GOVERNMENT AND PRIVATE OPERATING AGENCIES MAY WISH TO CONSIDER POSSIBLE COLLABORATION WITH THE KINGDOM OF TONGA AND TONGASAT IN THE ESTABLISHMENT OF AN ASIA-PACIFIC REGIONAL COMMUNICATIONS SATELLITE SYSTEM.

THE ASIA-PACIFIC REGIONAL COMMUNICATIONS SATELLITE SYSTEM IS DESIGNED TO PROVIDE DOMESTIC AS WELL AS INTERNATIONAL SATELLITE COMMUNICATIONS LINKS, ENABLING ALL COUNTRIES TO USE MUCH SMALLER AND LESS EXPENSIVE EARTH STATIONS THAN THOSE CURRENTLY REQUIRED FOR THE INTERNATIONAL LINKS USING INTELSAT SATELLITES.

THE COVERAGE OF THE SATELLITES EXTENDS FROM HAWAII AND TAHITI IN THE EAST TO AS FAR WEST AS IRAN AND SAUDI ARABIA. ALL COUNTRIES FROM KOREA, JAPAN AND THE PEOPLES REPUBLIC OF CHINA AND THE USSR IN THE NORTH, TO AUSTRALIA AND NEW ZEALAND IN THE SOUTH ARE ABLE TO COMMUNICATE WITH EACH OTHER THROUGH THE PLANNED SATELLITE SYSTEM. NEEDLESS TO SAY, ALL PACIFIC ISLAND COUNTRIES AS WELL AS THE ASEAN COUNTRIES ARE ABLE TO SECURE COMMUNICATIONS LINKS WITH ALL OTHER NATIONS WITHIN THE COVERAGE AREA, INCLUDING INDIA, BURMA, PAKISTAN, TAIWAN, HONGKONG, SINGAPORE,ETC.

THE TIME TABLE FORESEES LAUNCHING OF THE SATELLITES DURING 1993 TO 1995. INITIAL LAUNCHES MAY TAKE PLACE EARLIER, IF CERTAIN COUNTRIES AGREE TO BEGIN TO USE THE SATELLITES FOR DOMESTIC

SERVICES AS EARLY AS LATE 1992. SOME NATIONS MAY WISH TO UTILIZE THE REGIONAL SYSTEM ONY FOR DOMESTIC COMMUNICATIONS. OTHERS MAY NEED LESS EXPENSIVE, RELIABLE LINKS WITH SEVERAL NATIONS WITHIN THE COVERAGE AREA, THAN THEY NOW CAN PROVIDE THEIR USERS THROUGH INTELSAT. SOME COUNTRIES MAY INSTITUTE BOTH.

THE REASONS FOR PROMOTING AN ASIA-PACIFIC REGIONAL SATELLITE SYSTEM ARE MANY. ONE OF THE FOREMOST IS THAT MANY NATIONS IN THE COVERAGE AREA HAVE REQUIREMENTS FOR RURAL OR INTER-ISLAND TELECOMMUNICATIONS LINKS THAT CANNOT ECONOMICALLY AND EASILY BE IMPLEMENTED WITHOUT POWERFUL COMMUNICATIONS SATELLITES, WHICH ENABLE SMALL AND INEXPENSIVE EARTH STATIONS TO BE USED, EITHER FOR DOMESTIC OR FOR INTERNATIONAL PURPOSES. MOST POWERFUL OF ALL REASONS IS PERHAPS THAT A UNITED APPROACH OF SEVERAL COUNTRIES WILL TAKE ADVANTAGE OF TH ECONOMY OF SCALE SO NECESSARY TO MAKE VIABLE A COMMUNICATIONS SYSTEM COSTING HUNDREDS OF MILLIONS OF US DOLLARS. NOT LEAST IS THE REASON THAT, INTELSAT, WHICH ADMIRABLY PROVIDES SERVICE TO MOST OF THE WORLD'S NATIONS, IS NOT ABLE TO PROVIDE ENOUGH SATELLITE CAPACITY TO SERVE THE GROWING NEEDS OF THE ASIA-PACIFIC REGION IN THE LATE 1990'S, PARTICULARLY NOT TO THE COMMERCIAL AND GOVERNMENTAL USERS IN EACH COUNTRY THROUGHOUT THE ASIA-PACIFIC REGION, WHO WISH TO EMPLOY THEIR OWN SMALLER CUSTOMER PREMISE OR COMMUNITY EARTH STATIONS. THIS IS BECAUSE INTELSAT SATELLITES WERE NOT OPTIMIZED FOR, AND ARE THEREFORE NOT ECONOMICAL FOR, USE WITH SUCH SMALL EARTH STATIONS. FINALLY, THE ECONOMIC ADVANTAGE OF ELIMINATING IN MOST INSTANCES THE EXPENSIVE LAND-LINE CONNECTIONS TO REACH DISTANT EARTH STATIONS IS VERY IMPORTANT IN SOME COUNTRIES. IN PARTICULAR, FOR USERS WITH HIGH DATE RATE DIGITAL DATA TRANSMISSION REQUIREMENTS, TERRESTRIAL MICROWAVE OR RADIO RELAY FACILITIES ARE OFTEN EITHER NOT CAPABLE OF SUCH TRANSMISSIONS OR THEY ARE NON-EXISTENT.

THE KINGDOM OF TONGA HAS DURING THE LAST TWO YEARS COMPLETED A VIGOROUS PROJECT OF REGISTERING WITH THE INTERNATIONAL FREQUENCY REGISTRATION BOARD (IFRB) OF THE INTERNATIONAL TELECOMMUNICATIONS UNION (ITU) IN GENEVA A SERIES OF SATELLITE ORBITAL LOCATIONS IN THE GEOSYNCHRONOUS EQUATORIAL ORBIT. TONGA NOW POSSESSES ALL OF THE MOST ECONOMICALLY VIABLE SATELLITE ORBITAL POSITIONS IN THAT PART OF THE ORBIT WHICH IS OF INTEREST TO THE ASIA-PACIFIC REGION, WHICH CAN REACH HAWAII TO PERMIT ASIA-USA-PACIFIC TRAFFIC. THE REMAINING ORBITAL POSITIONS IN THAT ARC ARE HELD BY THE USSR, THE UNITED STATES, THE PRC AND JAPAN.

FRIENDLY ISLANDS SATELLITE COMMUNICATIONS, LTD. (TONGASAT) IS A PRIVATE TONGAN CMPANY. IT IS THE EXCLUSIVE AGENT OF THE KINGDOM OF TONGA FOR DEALING WITH AND MAKING ARANGEMENTS FOR ORGANIZATIONS TO LAUNCH INTO AND/OR OPERATE ONE OF MORE SATELLITES IN ORBITAL POSITIONS REGISTERED WITH THE IFRB ON BEHALF OF TONGA. AS SUCH, TONGASAT HAS REGISTERED ITS SATELLITE POSITIONS THROUGH THE GOVERNMENT OF THE KINGDOM OF TONGA.

COUNTRIES WITH NEEDS TO IMPROVE RURAL OR INTER-ISLAND COMMUNICATIONS MAY WISH TO USE THE ASIA-PACIFIC SATELLITES TO SATISFY DOMESTIC REQUIREMENTS, BY PERMITTING SMALL AND INEXPENSIVE EARTH STATIONS TO COMMUNICATE DIRECTLY WITH EACH

OTHER. SUCH EARTH STATIONS CAN BE PLACED ON TOP OF BUILDINGS, IN PARKING LOTS, IN FACTORIES, ON GOVERNMENT AND INDUSTRIAL BUILDINGS, EVEN IN DOWNTOWN AREAS, ETC. THE POWER OF THE TONGASAT SATELLITES MAKES THIS POSSIBLE WITH EARTH STATION DISHES AS SMALL AS 3 TO 5 METERS IN DIAMETER. NATIONWIDE AND REGIONAL TV PROGRAM DISTRIBUTION IS EASILY AND ECONOMICALLY IMPLEMENTED WITH RECEIVE ONLY TV DISHES AS 1 TO 3 METERS IN DIAMETER.

OTHER COUNTRIES MAY WISH TO OFFER TO ITS USERS BOTH DOMESTIC AND INTERNATIONAL REGIONAL SERVICES. PARTICIPATING NATIONS WILL BE ABLE TO OFFER ITS INDUSTRIAL, BANKING, FINANCING, MULTI-NATIONAL, TOURISM AND TRADING COMPANIES AND GOVERNMENT USERS ECONOMIC ADVANTAGES OVER THEIR CURRENT INTERNATIONAL COMMUNICATIONS LINKS. THIS IS BECAUSE TONGASAT SATELLITES WILL OCCUPY ORBITAL POSITIONS THAT RESULT IN VERY HIGH ELEVATION ANGLES AS SEEN BY THE EARTH STATIONS, ESPECIALLY IN THE MIDDLE OF THE ASIA-PACIFIC REGION. SINCE SMALLER EARTH STATIONS CAN BE EMPLOYED THAN THOSE OF EXISTING STATIONS USING INTELSAT SATELLITES REQUIRE, THE TWO FACTORS TOGETHER TRANSLATE INTO EASY AND ECONOMIC PLACEMENT OF SMALL EARTH SATIONS IN URBAN AS WELL AS RURAL AREAS. FURTHERMORE, SINCE NO TERRESTRIAL LINKS ARE NEEDED TO REACH DISTANT SATELLITE EARTH STATIONS, SAVINGS OF SOMETIMES GREAT MAGNITUDE ARE INTRODUCED TO THE USERS. THEY NO LONGER NEED TO PAY FOR THE TERRESTRIAL LINES USUALLY NECESSARY TO REACH THE LARGE EARTH STATIONS INTERCONNECTED VIA INTELSAT OR OTHER REGIONAL SYSTEMS.

THE SPEED OF IMPLEMENTATION OF DOMESTIC OR RURAL INTERNATIONAL TELECOMMUNICATIONS FACILITES IS ALSO OF IMPORTANCE TO SOME FO THE COUNTRIES IN THE ASIA-PACIFIC REGION. IT IS VERY COSTLY AND TIME-CONSUMING. THE TIME REQUIRED TO IMPLEMENT SATELLITE COMMUNICATIONS IS USUALLY SHORTER, WITH THE ADDITIONAL BENEFIT THAT FOR INSTANCE TV AND RADIO PROGRAM DISTRIBUTION CAN REACH EVERY EARTH STATION INSTALLED, IMMEDIATELY. NO NEED TO WAIT FOR EXTENSIONS OF TERRESTRIAL FACILITIES FROM A CABLE LANDING POINT OR FROM THE TERMINATION OF A MICROWAVE LINK. AS AN EXAMPLE, THE PHILIPPINES IS ABOUT TO EMBARK ON A NATION-WIDE UPGRADING OF ITS RURAL TELEPHONE SYSTEM, AND HAS CHOSEN TO DO SO BY PLACING HUNDREDS OF SMALL EARTH STATIONS IN RURAL VILLAGES AND TOWNS, TO BE INTERCONNECTED INSTANTLY VIA SATELLITE CAPACITY.

ANOTHER ADVANTAGE TO JOINING THE ASIA-PACIFIC REGIONAL COMMUNICATIONS SATELLITE SYSTEM PLANNED BY TONGA IS THAT ANY NATION'S USERS CAN EMPLOY THE SAME SMALL, INEXPNSIVE EARTH STATIONS FOR INTERNATIONAL AS WELL AS DOMESTIC COMMUNICATIONS. WITH THE ABILITY OF REACHING AS FAR EAST AS THE UNITED STATES AND AS FAR WEST AS THE ARABIAN GULF, AN ENORMOUSLY VAST TRADE AREA BECKONS FOR THE INDUSTRIAL AND GOVERNMENT USERS OF EACH COUNTRY. THE ASIA-PACIFIC REGION IS SET FOR AN EXPLOSIVE INCREASE IN TRADE AND AIR TRANSPORTATION AND THEREWITH A CONCOMMITANT INCREASED NEED FOR ALL FORMS OF INFRASTRACTURE.

THE MOST IMPORTANT INFRASTRUCTURE ANY COUNTRY CAN PROVIDE TO ITS POPULATION, IN ORDER TO COMPETE IN TOURISM AND TRADING IN THE 21ST CENTURY, ARE COST-EFFECTIVE AND ADEQUATE DOMESTIC AND

INTERNATIONAL TELECOMMUNICATIONS FACILITIES. WITH TONGASAT'S ASIA-PACIFIC REGIONAL COMMUNICATIONS SATELLITE SYSTEM, EACH COMMUNITY IN EVERY COUNTRY COULD COMMUNICATE WITH ANY OTHER COMMUNITY, WITHIN THE ENTIRE COVERAGE AREA. LARGE INDUSTRIAL AND GOVERNMENT USERS WILL PROBABLY INSTALL THEIR OWN CUSTOMER PREMISE EARTH STATIONS, WHEREAS TOWNS AND VILLAGES WILL INSTALL COMMUNITY EARTH STATIONS, FOR TELEPHONE, TELEX, DATA, FAX, TV AND RADIO DISTRIBUTION AND OTHER SERVICES, SOMEWHAT LIKE THE EXPANSION OF TELECOMMUNICATIONS FACILITIES CURRENTLY PLANNED IN THE PHILIPPINES AND IN PROGRESS IN CERTAIN OTHER COUNTRIES.

THE GOVERNMENT OF TONGA AND TONGASAT WELCOME PRIVATE CAPITALIZATION OR DEBT FINANCING OF THE ASIA-PCIFIC REGIONAL COMMUNICATION SATELLITE SYSTEM. PRIVATE OR GOVERNMENT FINANCIERS COULD HOLD AS COLLATERAL THE CONTROLLING OWNERSHIP OF THE SATELLITES AND THE TRACKING FACILITIES.

INSTITUTIONAL ARRANGEMENTS

I. REGULATORY ASPECTS

USER ACCESS IS OF COURSE LEFT FOR EACH COUNTRY TO REGULATE. IN PARTICULAR, FOR INTERNATIONAL LINKS, EACH GOVERNMENT CAN DECIDE WHICH ALTERNATIVE IS BEST OR ITS USERS: EITHER THE RESPECTIVE GOVERNMENTS MAY WISH TO PERMIT ITS USERS OF TH ASIA-PACIFIC REGIONAL SYSTEM TO HAV DIRECT ACCESS TO THE SATELLITES FROM THEIR SMALL CUSTOMER OWNED EARTH STATIONS, OR EACH GOVERNMENT MAY WISH TO PERMIT GOVERNMENT OWNED OR FRANCISED COMMUNIATIONS CARRIER OWNED EARTH STATIONS TO BE INSTALLED ON OR NEAR CUSTOMER PREMISES, OR IN EVERY COMMUNITY, SO THAT LONG DISTANCE, COSTLY LINKS THROUGH THE TERRESTRIAL NETWORKS ARE NOT NECESSARY. TO MAKE THE MAXIMUM ECONOMIC SAVINGS POSSIBLE FOR THE USERS, THE GOVERNMENT MAY WISH TO PERMIT DIRECT ACCESS TO THE SATELLITES BY SUCH CUSTOMER PREMISE OR COMMUNITY EARTH STATIONS, BY-PASSING THE EXISTING TERRESTRIAL NETWORK ENTIRELY, ESPECIALLY IN RURAL AREAS.

IT IS A MATTER OF COURSE THAT THE GOVERNMENT OF EACH COUNTRY CAN DECIDE WHETHER THE PRIVATE SECTOR BE ALLOWED TO PROVIDE A SIGNATORY TO AN OWNERSHIP CONSORTIUM, OR THAT THE SIGNATORY BE A GOVERNMENT AGENCY.

II. OWNERSHIP AND ORGANIZATIONAL ALTERNATIVE

PARTICIPATION IN OWNERSHIP OF THE ASIA-PACIFIC REGIONAL COMMUNICATIONS SATELLITE SYSTEM IS OPEN FOR DISCUSSION AMONG THOSE NATIONS WITHIN THE COVERAGE AREAS OF TH SATELLITES OF THE ASIA-PACIFIC REGION, AND IT IS OPEN TO THEIR INTERESTED FINANCIERS AND USER ENTITIES.

ONE ORGANIZATIONAL ALTERNATIVE CONTEMPLATED IS TO MODEL AGREEMENTS AND INVESTMENTS ON THE INTELSAT AND THE EUTELSAT AGREEMENTS. ANOTHER IS TO LET A SMALLER GROUP OF PRIVATE OR GOVERNMENTAL FINANCING ENTITIES OWN AND OPERATE THE SYSTEM TOGETHER WITH TONGASAT, WHILE THE PARTICIPATING NATIONS' REGULATORY AUHTORITIES HAVE A SAY IN THE TARIFFS CHARGED TO USERS IN THEIR RESPECTIVE COUNTRIES.

THE LATTER ALTERNATIVE WOULD PROVIDE AN ADVANTAGE TO COUNTRIES HAVING NO INTERESTED FINANCIER. IT WOULD PERMIT A SMALLER GROUP OF FINANCIERS FROM SOME OF THE PARTICIPATING COUNTRIES TO REAP A REASONABLE AND ATTRACTIVE RETURN ON INVESTMENT, WHILE EACH AND EVERY PARTICIPATING COUNTRY CAN AVAIL ITS USERS FO THE COMMUNICATIONS SERVICES, WITHOUT THE NECESSITY OF GOVERNMENTAL OR PRIVATE SECTOR INVESTMENT FROM AN ENTITY IN THAT COUNTRY. IN THIS WAY EACH COUNTRY, THAT WISHES FOR ITS USERS TO BE ABLE TO AVAIL THEMSELVES OF THE SERVICES, CAN PARTICIPATE WITHOUT GOVERNMENTAL OR PRIVATE INVESTMENT. INDIVIDUAL USERS IN EACH COUNTRY WOULD NATURALLY NEED TO FIANCE THEIR EARTH STATIONS AND PAY FOR THE SATELLITE CAPACITY THEY USE.

THUS, NO COUNTRY WOULD NEED TO BE LEFT OUT BECAUSE OF FINANCIAL CONSIDERATIONS.

CONCLUSION

TONGA INTENDS FOR THE ASIA-PACIFIC REGIONAL SYSTEM TO BE COMPLEMENTARY TO THE INTELSAT SYSTEM.

THERE ARE PRECEDENTS OF REGIONAL SATELLITE SYSTEMS ESTABLISHED OUTSIDE OF INTELSAT, MOST NOTABLY EUTELSAT, INTERSPUTNIK, ARABSAT, THE INDONESIAN PALAPA SYSTEM AND PANAMSAT. OTHERS ARE IN THE MAKING, SUCH AS AFROSAT IN AFRICA AND VARIOUS ATLANTIC OCEAN REGIONAL SYSTEMS. OF COURSE, COORDINATION WITH INTELSAT CONCERNING ARTICLE XIV (D) ECONOMIC HARM IS NECESSARY BY THOSE NAIONS THAT ARE SIGNATORIES TO THE INTELSAT AGREEMENTS.

IN THIS REGARD, IT DOES NOT APPEAR LIKELY THAT INTELSAT WILL BE IN A POSITION TO SIGNIFICANTLY EXPAND ITS CAPACITY OVER THE ASIA-PACIFIC AREA DURING THE 1990'S. EVEN IF INTELSAT DOES EXPAND INTO ADDITIONAL FREQUENCIES, THE SATELLITES ARE NOT LIKELY TO BE DESIGNED TO SERVE THE SMALL AND LESS COSTLY EARTH STATIONS FORESEEN FOR THE ASIA-PACIFIC REGIONAL SYSTEM.

THE GOVERNMENT OF THE KINGDOM OF TONGA AND TONGASAT WOULD WELCOME YOUR INITIAL COMMENTS AND SUGGESTIONS. AFTER GATHERING THESE, IT MIGHT BECOME APPROPRIATE TO CONVENE A MULTILATERAL CONFERENCE IN TONGA TO DISCUSS FINANCING, OWNERSHIP, ORGANIZATIONAL STRUCTURE, REGULATION BY EACH COUNTRY, TECHNICAL ASPECTS, COST PROJECTIONS, TARIFFS, ETC.

WE WOULD BE GRATEFUL TO KNOW WHICH INSTANCES OF YOUR GOVERNMENT OR WHICH SEGMENTS OF YOUR PRIVATE SECTOR INDUSTRY AND FINANCIAL COMMUNITY MAY WISH TO DISCUSS THIS INVITATION WITH US FURTHER.

CONTACT NAMES AND ADDRESSES

PLEASE RECOMMEND TO INTERESTED USER GROUPS OR OTHER INTERESTED COMMERCIAL PARTIES TO CORRESPOND WITH ANY QUESTIONS TO TONGASAT:

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OR THE GOVERNMENT OF THE KINGDOM OF TONGA:

MR. SIONE KITE, DEPUTY CHIEF SECRETARY AND
DEPUTY SECRETARY TO CABINET
OFFICE OF THE PRIME MINISTER

FAX 676-23888

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IFRB

CIRCULAIRE HEBDOMADAIRE / DATE
WEEKLY CIRCULAR / DATE
CIRCULAR SEMANAL / FECHA 1900/31.10.89

SECTION SPÉCIALE No
SPECIAL SECTION No.
SECCIÓN ESPECIAL N.o **AR11/C/1436** ADD – 1

STATION SPATIALE:
SPACE STATION: USASAT 13M
ESTACIÓN ESPACIAL: McCaw

ou / or / o

STATION(S) TERRIENNE(S):
EARTH STATION(S): –
ESTACIÓN(ES) TERRENA(S):

STATION SPATIALE ASSOCIÉE:
ASSOCIATED SPACE STATION: –
ESTACIÓN ESPACIAL ASOCIADA:

ADMINISTRATION RESPONSABLE:
RESPONSIBLE ADMINISTRATION: USA
ADMINISTRACIÓN RESPONSABLE:

RENSEIGNEMENTS REÇUS PAR LE COMITÉ LE
INFORMATION RECEIVED BY THE BOARD ON 24.04.89
INFORMACIÓN RECIBIDA POR LA JUNTA EL

Ces renseignements ont été reçus par l'IFRB en vertu du RR1074 et sont publiés en application du RR1078. Ils font l'objet de l'une des deux procédures suivantes, indiquées ci-dessous par un X dans la case pertinente.

This information has been received by the IFRB pursuant to RR1074 and is published in accordance with RR1078. It is subject to one of two procedures, indicated below by an X in the relevant box.

Esta información ha sido recibida por la IFRB de conformidad con RR1074 y se publica en virtud de RR1078. Está sujeta a uno de los dos procedimientos siguientes, señalado con una X en la casilla apropiada.

☒

Une demande de coordination a été envoyée conformément au RR1073 aux administrations indiquées ci-dessous. En application du RR1078, le Comité a ajouté, le cas échéant, le symbole des autres administrations (identifiées par *) dont les services sont susceptibles d'être affectés.

Toute administration dont le symbole apparaît dans la présente Section Spéciale accuse immédiatement réception, par télégramme, des données concernant la coordination (RR1082).

A request for coordination has been sent in accordance with RR1073 to the administrations indicated below. In conformity with RR1078, the Board has added, as appropriate, the symbols of any other administrations (identified by *) whose services are likely to be affected.

Any administration whose symbol appears in the present Special Section shall acknowledge receipt of the coordination data immediately by telegram (RR1082).

De conformidad con RR1073, se ha enviado una solicitud de coordinación a las administraciones indicadas más abajo. Conforme a RR1078, la Junta ha añadido adecuadamente el símbolo de las demás administraciones (identificadas por un *) cuyos servicios pueden resultar afectados.

Las administraciones cuyo símbolo aparece en la presente Sección Especial deberán acusar recibo inmediatamente por telegrama de la información referente a la coordinación (RR1082).

DEMANDE DE COORDINATION (RR1060) ADRESSÉE À
REQUEST FOR COORDINATION (RR1060) ADDRESSED TO AUS, J*, PNG, URS*, USA/IT
SOLICITUD DE COORDINACIÓN (RR1060) DIRIGIDA A

DATE LIMITE POUR LA DÉCISION (RR1084):
EXPIRY DATE FOR DECISION (RR1084): 28.02.90
FECHA LÍMITE PARA LA DECISIÓN (RR1084):

☐

Les dispositions du RR1066 s'appliquent à ces assignations qui sont publiées uniquement pour information.

The provisions of RR1066 apply to these assignments, which are published for information only.

Las disposiciones de RR1066 se aplican a estas asignaciones, que se publican a título de información únicamente.

NOTE DE L´IFRB

Cette Section spéciale contient les renseignements requis à l´appendice 3 concernant les "faisceaux actifs" mentionnés dans les Notes 1 et 4 (pages 22 et 23) de la Section spéciale AR11/C/1436, annexée à la Circulaire hebdomadaire N° 1871 en date du 11 avril 1989.

L´Administration des Etats-Unis a fourni les éclaircissements supplémentaires suivants à ce sujet :

"L´orientation du point de visée des onze faisceaux ponctuels d´un degré du réseau USASAT 13M sera fixée avant le lancement. Ces faisceaux ne seront pas orientables par la suite. Toutefois, les directions de pointage seront déterminées à l´issue d´une nouvelle évaluation des besoins et des résultats des efforts de coordination. Les faisceaux ont une "zone de visée équivalente", à savoir la portion de la Terre qui peut "voir" la station spatiale avec un angle de site d´au moins trois degrés.

IFRB NOTE

This Special Section contains the Appendix 3 characteristics relating to the "active beams" mentioned under Notes 1 and 4 (pages 22 and 23) of Special Section AR11/C/1436, annexed to Weekly Circular No. 1871 dated 11 April 1989.

The Administration of the United States has provided the following additional clarification in the matter:

"The boresight orientation of the eleven one-degree spot beams of the USASAT 13M network will be fixed prior to launch. These beams will not be steerable thereafter. However, the pointing directions will be determined following a further evaluation of requirements and the results of coordination efforts. The beams have an "equivalent boresight area" which is that portion of the Earth which has visibility of the space station with an angle of elevation no less than three degrees."

NOTA DE LA IFRB

Esta Sección Especial contiene las características enumeradas en el Apéndice 3 al Reglamento de Radiocomunicaciones relativas a los "haces activos" mencionados en las Notas 1 y 4 (páginas 22 y 23) de la Sección Especial AR11/C/1436, anexa a la Circular semanal N.° 1871 de 11 de abril de 1989.

La Administración de los Estados Unidos ha facilitado las siguientes aclaraciones adicionales sobre el asunto:

"La orientación del eje de puntería de los once haces puntuales de un grado de la red USASAT 13M se fijará antes del lanzamiento. Después, esos haces ya no serán orientables. Sin embargo, las direcciones de puntería se determinarán con arreglo a una nueva evaluación de las necesidades y los resultados de las actividades de coordinación. Los haces tienen una "zona de visibilidad equivalente", que es la parte de la Tierra con visibilidad de la estación espacial con un ángulo de elevación no inferior a tres grados."

ADMINISTRATION NOTIFICATRICE
NOTIFYING ADMINISTRATION
ADMINISTRACION NOTIFICANTE
ETATS-UNIS - UNITED STATES
ESTADOS UNIDOS

Les renseignements reproduits ci dessous sont présentés sous la forme prescrite dans l'appendice 3 au Règlement des radiocommunications (sections A et D)
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ADMINISTRATION OU COMPAGNIE EXPLOITANTE
OPERATING ADMINISTRATION OR COMPANY
ADMINISTRACION O COMPAÑIA EXPLOTADORA

IDENTITE DU RESEAU A SATELLITE
IDENTITY OF SATELLITE NETWORK
IDENTIDAD DE LA RED DE SATELITE
USASAT 13M

STATION SPATIALE D'EMISSION
TRANSMITTING SPACE STATION
ESTACIÓN ESPACIAL TRANSMISORA

REFERENCE A LA CIRCULAIRE HEBDOMADAIRE RELATIVE AU NUMERO 1042
REFERENCE OF WEEKLY CIRCULAR RELATING TO No 1042
REFERENCIA A LA CIRCULAR SEMANAL RELATIVA AL NUMERO 1042

AR11/A/343/1763

NOM ET ADRESSE DE L'ADMINISTRATION
NAME AND ADDRESS OF ADMINISTRATION
NOMBRE Y DIRECCIÓN DE LA ADMINISTRACIÓN
The Secretary of the Federal
Communications Commission
WASHINGTON, D.C. 20554
FEDCOMCOM, WASHINGTON D.C.

NOM DE LA STATION SPATIALE D'EMISSION *NAME OF TRANSMITTING SPACE STATION* NOMBRE DE LA ESTACION ESPACIAL TRANSMISORA	DATE DE MISE EN SERVICE *DATE OF BRINGING INTO USE* FECHA DE PUESTA EN SERVICIO	SATELLITE GEOSTATIONNAIRE / *GEOSTATIONARY SATELLITE* / SATÉLITE GEOSTACIONARIO							
		5 RENSEIGNEMENTS RELATIFS A L'ORBITE/*ORBITAL INFORMATION*/INFORMACIÓN RELATIVA A LA ÓRBITA						RES 4 CAMR-1979 - WARC-1979	HORAIRE MAXIMAL DE FONCTIONNEMENT SUR CHAQUE PORTEUSE (UTC) *MAXIMUM HOURS OF OPERATION ON EACH CARRIER (UTC)* HORARIO MAXIMO DE FUNCIONAMIENTO CON CADA PORTADORA (UTC)
		LONGITUDE NOMINALE *NOMINAL LONGITUDE* LONGITUD NOMINAL	TOLERANCES *TOLERANCES* TOLERANCIAS		ARC DE VISIBILITE *VISIBILITY ARC* ARCO VISIBLE	ARC DE SERVICE *SERVICE ARC* ARCO DE SERVICIO	DIFFERENCE *DIFFERENCE* DIFERENCIA	DUREE DE VALIDITE *PERIOD OF VALIDITY* DURACIÓN DE VALIDEZ	
			LONGITUDE *LONGITUDE* LONGITUD	INCLINAISON *INCLINATION* INCLINACION					
4	3	5 a	5 a	5 a	5 a 1	5 a 2	5 a 3	ans - years - años	
USASAT 13M	01.10.1991	170°E	± 0,1°	± 0,05°	165°E-175°E	165°E-175°E	-	10	00-24

FREQUENCE ASSIGNEE *ASSIGNED FREQUENCY* FRECUENCIA ASIGNADA	BANDE DE FREQUENCES ASSIGNEE *ASSIGNED FREQUENCY BAND* BANDA DE FRECUENCIAS ASIGNADA	ZONE(S) DE SERVICE OU STATION(S) AVEC LAQUELLE (LESQUELLES) LA COMMUNICATION DOIT ETRE ETABLIE *SERVICE AREA(S) OR STATION(S) WITH WHICH COMMUNICATION IS TO BE ESTABLISHED* ZONA(S) DE SERVICIO O ESTACION(ES) CON LA(S) QUE SE ESTABLECERÁ LA COMUNICACION	CLASSE DE STATION ET NATURE DU SERVICE *CLASS OF STATION AND NATURE OF SERVICE* CLASE DE ESTACIÓN Y NATURALEZA DEL SERVICIO	CLASSE D'EMISSION, LARGEUR DE BANDE NECESSAIRE ET NATURE DE LA TRANSMISSION *CLASS OF EMISSION, NECESSARY BANDWIDTH AND DESCRIPTION OF TRANSMISSION* CLASE DE EMISIÓN, ANCHURA DE BANDA NECESARIA Y DESCRIPCIÓN DE LA TRANSMISIÓN	FREQUENCE(S) PORTEUSE(S) *CARRIER FREQUENCY(IES)* FRECUENCIA(S) PORTADORA(S)	CARACTERISTIQUES DE PUISSANCE *POWER CHARACTERISTICS* CARACTERISTICAS DE POTENCIA			CARACTERISTIQUES DE L'ANTENNE *ANTENNA CHARACTERISTICS* CARACTERISTICAS DE LA ANTENA				CARACTERISTIQUES DE MODULATION *MODULATION CARACTERISTICS* CARACTERÍSTICAS DE MODULACIÓN	Note - Nota	FAISCEAU BEAM HAZ
						PUISSANCE DE CRETE *PEAK POWER* POTENCIA DE CRESTA	PUISSANCE TOTALE DE CRETE *TOTAL PEAK POWER* POTENCIA TOTAL DE CRESTA	DENSITE MAXIMALE DE PUISSANCE *MAXIMUM POWER DENSITY* DENSIDAD MÁXIMA DE POTENCIA	DIAGRAMME DE RAYONNEMENT *RADIATION DIAGRAM* DIAGRAMA DE RADIACIÓN	POLARISATION *POLARIZATION* POLARIZACIÓN	PRECISION DE POINTAGE *POINTING ACCURACY* PRECISIÓN DE ORIENTACIÓN	GAIN DANS LA DIRECTION DE L'ORBITE *GAIN IN THE DIRECTION OF THE ORBIT* GANANCIA EN EL SENTIDO DE LA ORBITA			
1	2	6	7	8 a, 8 c	8 b	9 a	9 b	9 b	10 a–10 b	10 c	10 d	10 e	11		
MHz	kHz				MHz	dBW	dBW	dBW/Hz							
12 520 12 560 12 600 12 640 12 680 12 720	36 000	Note 1 Nota	EC CV	36M0F9W			3,8	-64,2	Note 1 Nota	H	± 0,05°	Fig. 2			HSR
				1M50F1W			-9,5	-64,5	Gmax: +44 dB						
				100KF1W			-26,5	-67,5	Fig. 1						
12 520 12 560 12 600 12 640 12 680 12 720										V					VSR

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STATION(S) TERRIENNE(S) D'EMISSION
TRANSMITTING EARTH STATION(S)
ESTACIÓN(ES) TERRENA(S) TRANSMISORA(S)

DATE DE MISE EN SERVICE *DATE OF BRINGING INTO USE* FECHA DE PUESTA EN SERVICIO	NOM DE LA STATION TERRIENNE D'EMISSION *NAME OF TRANSMITTING EARTH STATION* NOMBRE DE LA ESTACIÓN TERRENA TRANSMISORA	PAYS *COUNTRY* PAIS	LONGITUDE ET LATITUDE DE L'EMPLACEMENT DE LA STATION TERRIENNE D'EMISSION *LONGITUDE AND LATITUDE OF TRANSMITTING EARTH STATION SITE* LONGITUD Y LATITUD DE LA UBICACIÓN DE LA ESTACION TERRENA TRANSMISORA	CARACTERISTIQUES DE L'ANTENNE *ANTENNA CHARACTERISTICS* CARACTERISTICAS DE LA ANTENNA			STATION(S) SPATIALE(S) AVEC LAQUELLE (LESQUELLES) LA COMMUNICATION DOIT ETRE ETABLIE *SPACE STATION(S) WITH WHICH COMMUNICATION IS TO BE ESTABLISHED* ESTACION(ES) ESPACIAL(ES) CON LA(S) QUE SE ESTABLECERA LA COMUNICACION	HORAIRE MAXIMAL DE FONCTIONNEMENT SUR CHAQUE PORTEUSE (UTC) *MAXIMUM HOURS OF OPERATION ON EACH CARRIER (UTC)* HORARIO MAXIMO DE FUNCIONAMIENTO CON CADA PORTADORA (UTC)
				ANGLE DE SITE MINIMAL *MINIMUM ANGLE OF ELEVATION* ANGULO MINIMO DE ELEVACIÓN	LIMITES D'AZIMUT *AZIMUTHAL LIMITS* LIMITES DE ACIMUT	ALTITUDE (m) ALTITUD (m)		
3	4 a	4 b	4 c	9 e	9 f	9 h	5	11
	Stations terriennes à caractéristiques typiques Earth stations with typical characteristics Estaciones terrenas con características tipo	USA	A l'intérieur des zones de service Within the service areas Dentro de las zonas de servicio				USASAT 13M (170°E)	00-24

FREQUENCE ASSIGNEE ASSIGNED FREQUENCY FRECUENCIA ASIGNADA	BANDE DE FREQUENCES ASSIGNEE ASSIGNED FREQUENCY BAND BANDA DE FRECUENCIAS ASIGNADA	CLASSE DE STATION ET NATURE DU SERVICE CLASS OF STATION AND NATURE OF SERVICE CLASE DE ESTACION Y NATURALEZA DEL SERVICIO	CLASSE D'EMISSION, LARGEUR DE BANDE NECESSAIRE ET NATURE DE LA TRANSMISSION CLASS OF EMISSION, NECESSARY BANDWIDTH AND DESCRIPTION OF TRANSMISSION CLASE DE EMISION, ANCHURA DE BANDA NECESARIA Y DESCRIPCION DE LA TRANSMISION	FREQUENCE(S) PORTEUSE(S) CARRIER FREQUENCY (IES) FRECUENCIA(S) PORTADORA(S)	PUISSANCE DE CRETE PEAK POWER POTENCIA DE CRESTA	PUISSANCE TOTALE DE CRETE TOTAL PEAK POWER POTENCIA TOTAL DE CRESTA	DENSITE MAXIMALE DE PUISSANCE MAXIMUM POWER DENSITY DENSIDAD MAXIMA DE POTENCIA	GAIN ISOTROPE ISOTROPIC GAIN GANANCIA ISOTROPA	OUVERTURE DU FAISCEAU A DEMI PUISSANCE HALF POWER BEAMWIDTH ABERTURA DEL HAZ DE MEDIA POTENCIA	DIAGRAMME DE RAYONNEMENT RADIATION DIAGRAM DIAGRAMA DE RADIACIÓN	POLARISATION POLARIZATION POLARIZACION	CARACTERISTIQUES DE MODULATION MODULATION CHARACTERISTICS CARACTERISTICAS DE MODULACION	Station - Estación	FAISCEAU BEAM HAZ	Note - Nota
1	2	6	7 a, 7 c	7 b	8 a	8 b	8 b	9 a	9 b	9 c	9 g	10	m		
MHz	KHz					dBW	dBW/Hz	dB							
14 020 14 060 14 100 14 140 14 180 14 220	36 000	TC CV	36M0F9W 1M50F1W 100KF1W			11,0 1,0 -16,0	-57,0 -54,0 -57,0	+50,6	0,50°	Ref. Avis/Rec. CCIR 465-1	H		3	HSR	
14 020 14 060 14 100 14 140 14 180 14 220											V			VSR	

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STATION SPATIALE DE RECEPTION
RECEIVING SPACE STATION
ESTACIÓN ESPACIAL RECEPTORA

NOM DE LA STATION SPATIALE DE RECEPTION *NAME OF RECEIVING SPACE STATION* NOMBRE DE LA ESTACIÓN ESPACIAL RECEPTORA	DATE DE MISE EN SERVICE *DATE OF BRINGING INTO USE* FECHA DE PUESTA EN SERVICIO	SATELLITE GEOSTATIONNAIRE / *GEOSTATIONARY SATELLITE* / SATÉLITE GEOSTACIONARIO							HORAIRE MAXIMAL DE FONCTIONNEMENT SUR CHAQUE PORTEUSE (UTC) *MAXIMUM HOURS OF OPERATION ON EACH CARRIER (UTC)* HORARIO MAXIMO DE FUNCIONAMIENTO CON CADA PORTADORA (UTC)
		5 RENSEIGNEMENTS RELATIFS A L'ORBITE/*ORBITAL INFORMATION*/INFORMACIÓN RELATIVA A LA ÓRBITA						RES 4 CAMR–1979 – WARC–1979	
		LONGITUDE NOMINALE *NOMINAL LONGITUDE* LONGITUD NOMINAL	TOLERANCES *TOLERANCES* TOLERANCIAS		ARC DE VISIBILITE *VISIBILITY ARC* ARCO VISIBLE	ARC DE SERVICE *SERVICE ARC* ARCO DE SERVICIO	DIFFERENCE *DIFFERENCE* DIFERENCIA	DUREE DE VALIDITE *PERIOD OF VALIDITY* DURACIÓN DE VALIDEZ	
			LONGITUDE *LONGITUDE* LONGITUD	INCLINAISON *INCLINATION* INCLINACIÓN					
4	3	5a	5a	5a	5a1	5a2	5a3	ans – years – años	
USASAT 13M	01.10.1991	170°E	± 0,1°	± 0,05°	165°E-175°E	165°E-175°E	-	10	00-24

FREQUENCE ASSIGNEE ASSIGNED FREQUENCY FRECUENCIA ASIGNADA 1	BANDE DE FREQUENCE ASSIGNEE ASSIGNED FREQUENCY BAND BANDA DE FRECUENCIAS ASIGNADA 2	ZONE(S) DE SERVICE OU STATION(S) AVEC LAQUELLE (LESQUELLES) LA COMMUNICATION DOIT ETRE ETABLIE SERVICE AREA(S) OR STATION(S) WITH WHICH COMMUNICATION IS TO BE ESTABLISHED ZONA(S) DE SERVICIO O ESTACION(ES) CON LA(S) QUE SE ESTABLECERA LA COMUNICACION 6	CLASSE DE STATION ET NATURE DU SERVICE CLASS OF STATION AND NATURE OF SERVICE CLASE DE ESTACION Y NATURALEZA DEL SERVICIO 7	CLASSE D'EMISSION, LARGEUR DE BANDE NECESSAIRE ET NATURE DE LA TRANSMISSION CLASS OF EMISSION, NECESSARY BANDWIDTH AND DESCRIPTION OF TRANSMISSION CLASE DE EMISION ANCHURA DE BANDA NECESARIA Y DESCRIPCION DE LA TRANSMISION 8a, 8c	FREQUENCE(S) PORTEUSE(S) CARRIER FREQUENCY(IES) FRECUENCIA(S) PORTADORA(S) 8b	CARACTERISTIQUES DE L'ANTENNE ANTENNA CHARACTERISTICS CARACTERISTICAS DE LA ANTENA				TEMPERATURE DE BRUIT DU SYSTEME DE RECEPTION RECEIVING SYSTEM NOISE TEMPERATURE TEMPERATURA DE RUIDO DEL SISTEMA RECEPTOR 10	Note - Nota	FAISCEAU BEAM HAZ
						DIAGRAMME DE RAYONNEMENT RADIATION DIAGRAM DIAGRAMA DE RADIACION 9a, 9b	POLARISATION POLARIZATION POLARIZACION 9c	PRECISION DE POINTAGE POINTING ACCURACY PRECISION DE ORIENTACIÓN 9d	GAIN DANS LA DIRECTION DE L'ORBITE GAIN IN THE DIRECTION OF THE ORBIT GANANCIA EN EL SENTIDO DE LA ORBITA 9e			
MHz	kHz				MHz					K		
14 020 14 060 14 100 14 140 14 180 14 220	36 000	Note Nota 2	EC CV	36M0F9W 1M50F1W 100KF1W		Note Nota 2 Gmax: +45,3 dB Fig. 4	H	± 0,05°	Fig. 2	1000		HSR
14 020 14 060 14 100 14 140 14 180 14 220							V					VSR

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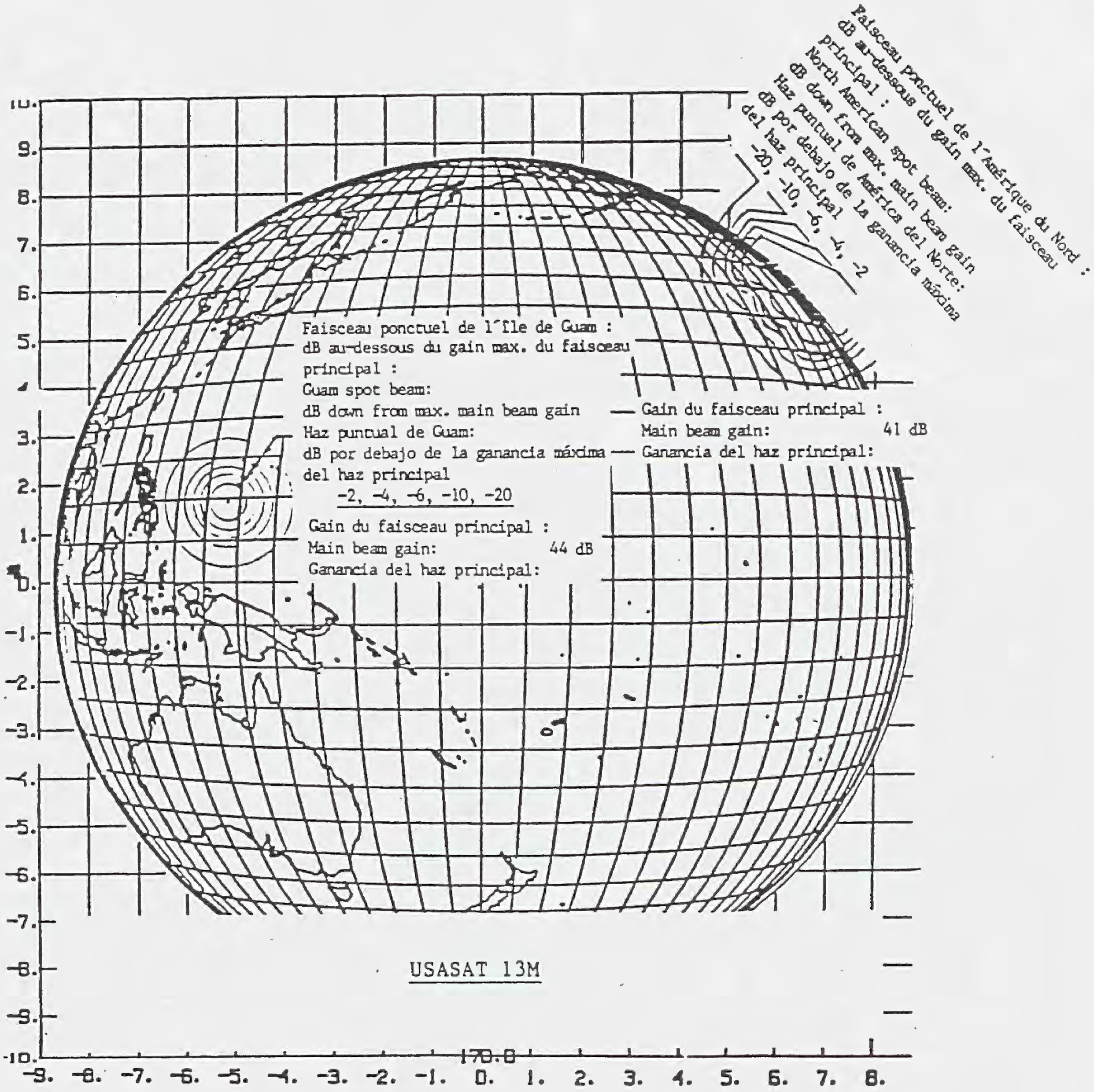
STATION(S) TERRIENNE(S) DE RECEPTION
RECEIVING EARTH STATION(S)
ESTACIÓN(ES) TERRENA(S) RECEPTORA(S)

DATE DE MISE EN SERVICE *DATE OF BRINGING INTO USE* FECHA DE PUESTA EN SERVICIO	NOM DE LA STATION TERRIENNE DE RECEPTION *NAME OF RECEIVING EARTH STATION* NOMBRE DE LA ESTACION TERRENA RECEPTORA	PAYS *COUNTRY* PAIS	LONGITUDE ET LATITUDE DE L'EMPLACEMENT DE LA STATION TERRIENNE DE RECEPTION *LONGITUDE AND LATITUDE OF RECEIVING EARTH STATION SITE* LONGITUD Y LATITUD DE LA UBICACION DE LA ESTACION TERRENA RECEPTORA	CARACTERISTIQUES DE L'ANTENNE *ANTENNA CHARACTERISTICS* CARACTERISTICAS DE LA ANTENA			STATION(S) SPATIALE(S) AVEC LAQUELLE (LESQUELLES) LA COMMUNICATION DOIT ETRE ETABLIE *SPACE STATION(S) WITH WHICH COMMUNICATION IS TO BE ESTABLISHED* ESTACION(ES) ESPACIAL(ES) CON LA(S) QUE SE ESTABLECERA LA COMUNICACION	HORAIRE MAXIMAL DE FONCTIONNEMENT SUR CHAQUE PORTEUSE (UTC) *MAXIMUM HOURS OF OPERATION ON EACH CARRIER (UTC)* HORARIO MAXIMO DE FUNCIONAMIENTO CON CADA PORTADORA (UTC)
				ANGLE DE SITE MINIMAL *MINIMUM ANGLE OF ELEVATION* ANGULO MINIMO DE ELEVACIÓN	LIMITES D'AZIMUT *AZIMUTHAL LIMITS* LIMITES DE ACIMUT	ALTITUDE (m) ALTITUD (m)		
3	4 a	4 b	4 c	8 e	8 f	8 g	5	10
	Stations terriennes à caractéristiques typiques Earth stations with typical characteristics Estaciones terrenas con características tipo	USA	A l'intérieur des zones de service Within the service areas Dentro de las zonas de servicio				USASAT 13M (170°E)	00-24

FREQUENCE ASSIGNEE *ASSIGNED FREQUENCY* FRECUENCIA ASIGNADA	BANDE DE FREQUENCES ASSIGNEE *ASSIGNED FREQUENCY BAND* BANDA DE FRECUENCIAS ASIGNADA	CLASSE DE STATION ET NATURE DU SERVICE *CLASS OF STATION AND NATURE OF SERVICE* CLASE DE ESTACION Y NATURALEZA DEL SERVICIO	CLASSE D'EMISSION, LARGEUR DE BANDE NECESSAIRE ET NATURE DE LA TRANSMISSION *CLASS OF EMISSION, NECESSARY BANDWIDTH AND DESCRIPTION OF TRANSMISSION* CLASE DE EMISION ANCHURA DE BANDA NECESARIA Y DESCRIPCION DE LA TRANSMISION	POLARISATION *POLARIZATION* POLARIZACION	GAIN ISOTROPE *ISOTROPIC GAIN* GANANCIA ISOTROPA	OUVERTURE DU FAISCEAU A DEMI PUISSANCE *HALF POWER BEAMWIDTH* ABERTURA DEL HAZ DE MEDIA POTENCIA	DIAGRAMME DE RAYONNEMENT *RADIATION DIAGRAM* DIAGRAMA DE RADIACION	TEMPERATURE DE BRUIT DU SYSTEME DE RECEPTION *RECEIVING SYSTEM NOISE TEMPERATURE* TEMPERATURA DE RUIDO DEL SISTEMA RECEPTOR	TEMPERATURE EQUIVALENTE DE BRUIT DE LA LIAISON PAR SATELLITE (VALEUR LA PLUS FAIBLE) *LOWEST EQUIVALENT SATELLITE LINK NOISE TEMPERATURE* TEMPERATURA EQUIVALENTE DE RUIDO DEL ENLACE POR SATELITE (LA MAS BAJA)	GAIN DE TRANSMISSION *TRANSMISSION GAIN* GANANCIA DE TRANSMISION	Station - Estación	FAISCEAU BEAM HAZ	Note - Nota
1	2	6	7 a, 7 c	8h	8 a	8 b	8 c	9 a	9 b	9 c	m		
MHz	kHz				dB			K	K	dB			
12 520 12 560 12 600 12 640 12 680 12 720	36 000	TC CV	36M0F9W 1M50F1W 100KF1W	H	+49,3	0,58°	Ref. Avis/Rec. CCIR 465-1	290	560 865	-5,7 -2,4	3	HSR	
12 520 12 560 12 600 12 640 12 680 12 720				V								VSR	

Figure 1
Figura

CONTOURS DE GAIN DE L´ANTENNE D´EMISSION DE LA STATION SPATIALE
SPACE STATION TRANSMITTING ANTENNA GAIN CONTOURS
CONTORNOS DE GANANCIA DE LA ANTENA TRANSMISORA DE LA ESTACION ESPACIAL



Seuls sont représentés le faisceau ponctuel de l´Amérique du Nord (gain max. du faisceau principal : 41 dB) et le faisceau ponctuel de Guam (gain max. du faisceau principal : 44 dB). De plus, onze faisceaux ponctuels de 1° (gain max. du faisceau principal : 44 dB) seront dirigés sur des points de la surface terrestre visibles depuis le satellite (170° de longitude Est), sous un angle de site d´au moins 3° au-dessus de l´horizon, sous réserve de l´accord des administrations.

Only the North American spot beam (41 dB max. main beam gain) and the Guam spot beam (44 dB max. main beam gain) are shown. In addition, eleven 1° spot beams (44 dB max. main beam gain) will be directed to points on the earth, visible from the satellite at 170° East longitude, with an angle of elevation of at least 3° above the horizon, subject to agreement of administrations.

Sólo se indican el haz puntual de América del Norte (ganancia máxima del haz principal: 41 dB) y el haz puntual de Guam (ganancia máxima del haz principal: 44 dB). Además, se dirigiran once haces puntuales de 1° (ganancia máxima del haz principal: 44 dB) hacia puntos de la tierra visibles desde el satélite a 170° de longitud Este, con un ángulo de elevación por encima del horizonte de 3° por lo menos, a condición de obtener el acuerdo de las administraciones.

Figure 1 de la Section spéciale AR11/C/1436 jointe pour référence
Figure 1 of Special Section AR11/C/1436 included for reference
Figura 1 de la Sección Especial AR11/C/1436 incluida por referencia

Figure
2
Figura

GAIN DE L'ANTENNE DE LA STATION SPATIALE DANS LA DIRECTION DE L'ORBITE DES SATELLITES GEOSTATIONNAIRES
GAIN OF THE SPACE STATION ANTENNA IN THE DIRECTION OF THE GEOSTATIONARY SATELLITE ORBIT
GANANCIA DE LA ANTENA DE LA ESTACION ESPACIAL EN EL SENTIDO DE LA ORBITA DE LOS SATELITES GEOESTACIONARIOS

USASAT 13M

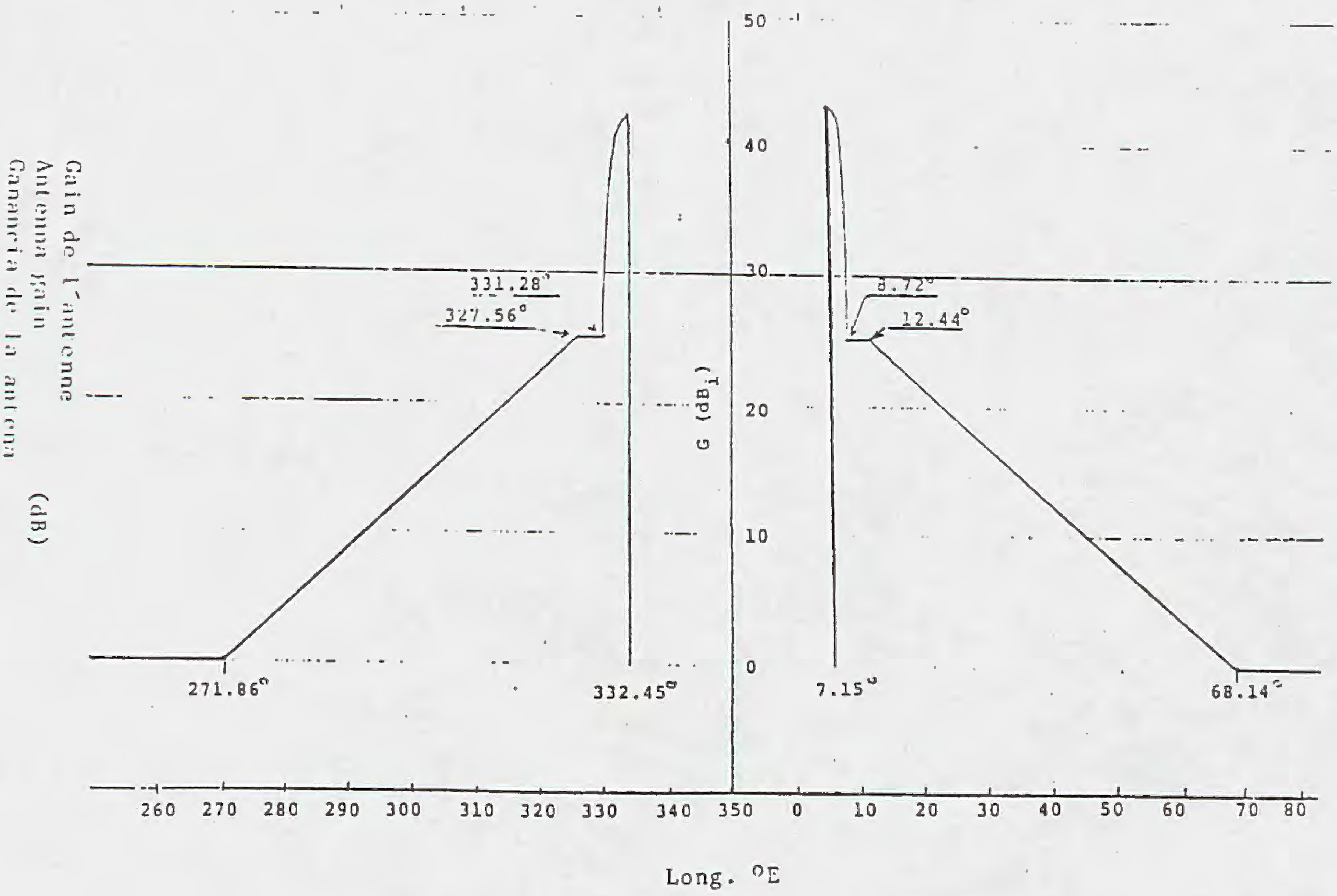
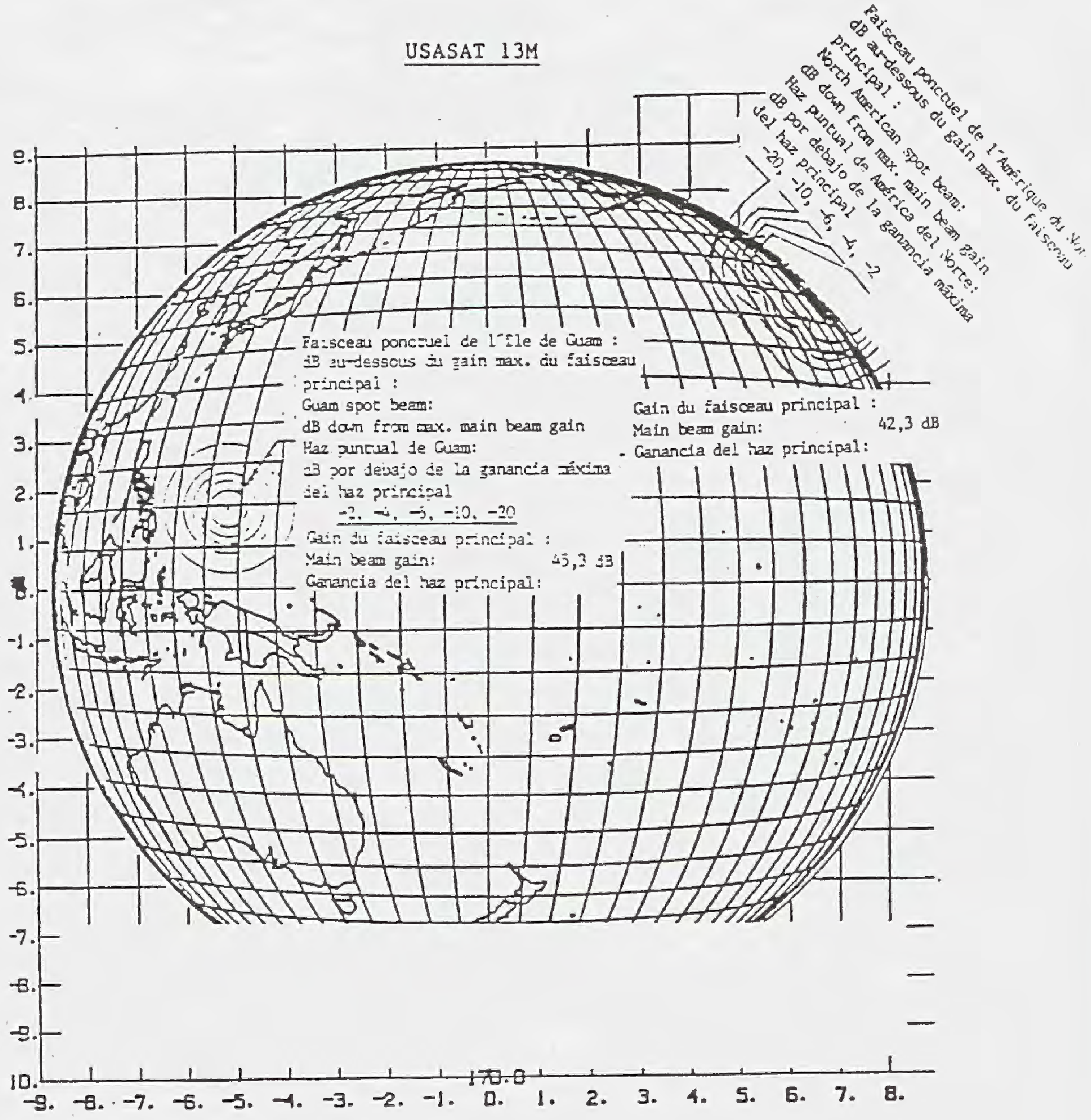


Figure 2 de la Section spéciale AR11/C/1436 jointe pour référence
Figure 2 of Special Section AR11/C/1436 included for reference
Figura 2 de la Sección Especial AR11/C/1436 incluida para referencia

Figure 4 CONTOURS DE GAIN DE L'ANTENNE DE RECEPTION DE LA STATION SPATIALE
SPACE STATION RECEIVING ANTENNA GAIN CONTOURS
Figura CONTORNOS DE GANANCIA DE LA ANTENA RECEPTORA DE LA ESTACION ESPACIAL

USASAT 13M



Seuls sont représentés le faisceau ponctuel de l'Amérique du Nord (gain max. du faisceau principal : 42,3 dB) et le faisceau ponctuel de Guam (gain max. du faisceau principal : 45,3 dB). De plus, onze faisceaux ponctuels de 1° (gain max. du faisceau principal : 45,3 dB) seront dirigés sur des points de la surface terrestre visibles depuis le satellite (170° de longitude Est), sous un angle de site d'au moins 3° au-dessus de l'horizon, sous réserve de l'accord des administrations.

Only the North American spot beam (42.3 dB max. main beam gain) and the Guam spot beam (45.3 dB max. main beam gain) are shown. In addition, eleven 1° spot beams (45.3 dB max. main beam gain) will be directed to points on the earth, visible from the satellite at 170° East longitude, with an angle of elevation of at least 3° above the horizon, subject to agreement of administrations.

Sólo se indican el haz puntual de América del Norte (ganancia máxima del haz principal: 42,3 dB) y el haz puntual de Guam (ganancia máxima del haz principal: 45,3 dB). Además, se dirigiran once haces puntuales de 1° (ganancia máxima del haz principal: 45,3 dB) hacia puntos de la tierra visibles desde el satélite a 170° de longitud Este, con un ángulo de elevación por encima del horizonte de 3° por lo menos, a condición de obtener el acuerdo de las administraciones.

Figure 4 de la Section spéciale [illegible] jointe pour référence
Figure 4 of Special Section AR11/C/1436 included for reference
Figura 4 de la Sección Especial AR11/C/1436 incluida para referencia

NOTES

1. Onze faisceaux ponctuels de 1° (gain max. du faisceau principal : 44 dB) seront dirigés sur des points de la surface terrestre (Régions 1 et 3 seulement) visibles depuis le satellite (170° de longitude Est), sous un angle de site d´au moins 3° au-dessus de l´horizon, sous réserve de l´accord des administrations.

2. Onze faisceaux ponctuels de 1° (gain max. du faisceau principal : 45,3 dB) seront dirigés sur des points de la surface terrestre (Régions 1 et 3 seulement) visibles depuis le satellite (170° de longitude Est), sous un angle de site d´au moins 3° au-dessus de l´horizon, sous réserve de l´accord des administrations.

NOTES

1. Eleven 1° spot beams (44 dB max. main beam gain) will be directed to points on the Earth (Regions 1 and 3 only), visible from the satellite at 170° East longitude, with an angle of elevation of at least 3° above the horizon, subject to agreement of administrations.

2. Eleven 1° spot beams (45.3 dB max. main beam gain) will be directed to points on the Earth, (Regions 1 and 3 only) visible from the satellite at 170° East Longitude, with an angle of elevation of at least 3° above the horizon, subject to agreement of administrations.

NOTAS

1. Se dirigirán once haces puntuales de 1° (ganancia máxima del haz principal: 44 dB) hacia puntos de la tierra (Regiones 1 y 3 solamente) visibles desde el satélite a 170° de longitud Este, con un ángulo de elevación por encima del horizonte de 3° por lo menos, a condición de obtener el acuerdo de las administraciones.

2. Se dirigirán once haces puntuales de 1° (ganancia máxima del haz principal: 45,3 dB) hacia puntos de la tierra (Regiones 1 y 3 solamente) visibles desde el satélite a 170° de longitud Este, con un ángulo de elevación por encima del horizonte de 3° por lo menos, a condición de obtener el acuerdo de las administraciones.

OBSERVATIONS DE L'IFRB

Relative à la Conclusion conformément au RR1503

FAVORABLE pour toutes les assignations de fréquence à la station spatiale.

Relative à l'examen conformément au RR1077

La coordination est aussi requise avec les Administrations suivantes :

J, URS

Relative aux demandes de coordination antérieures

Voir Section spéciale AR11/C/1436 annexée à la Circulaire hebdomadaire Nº 1871 du 11 avril 1989.

IFRB COMMENTS

Relating to the Finding with respect to RR1503

FAVOURABLE for all frequency assignments to the space station.

Relating to the examination with respect to RR1077

Coordination is also required with the following Administrations:

J, URS

Relating to previous coordination requests

See Special Section AR11/C/1436 annexed to weekly Circular No. 1871 dated 11 April 1989.

OBSERVACIONES DE LA IFRB

Relativa a la Conclusión según el RR1503

FAVORABLE para todas las asignaciones de frecuencia a la estación espacial.

Relativa al examen según el RR1077

Se requiere también la coordinación con las Administraciones siguientes:

J, URS

Relativa a las solicitudes de coordinación anteriores

Véase la Sección Especial AR11/C/1436 anexa a la Circular semanal N.º 1871 de 11 de abril de 1989.

Relative aux stations terriennes avec caractéristiques typiques

Une administration qui approuve la coordination des assignations de fréquence à la station spatiale dont les caractéristiques sont contenues dans la présente Section spéciale est réputée approuver la coordination de toute station terrienne située dans la zone de service de la station spatiale comme indiqué au point 6 et dont les caractéristiques sont telles qu´elle ne cause ni ne subit un niveau de brouillage supérieur à celui qui serait causé ou subi par la station terrienne dont les caractéristiques sont aussi publiées dans la Section spéciale.

Relative au faisceau orientable

Le Comité a noté que la station spatiale est prévue pour fonctionner avec un faisceau orientable. Il a tenu compte de cette caractéristique d´exploitation lors de l´examen visé au RR1077. A cet égard, il y a lieu d´attirer l´attention des administrations sur la Règle de procédure Nº H1 de l´IFRB, qui a été portée à leur connaissance par la Lettre-circulaire Nº 732 en date du 11 avril 1988.

Relating to the earth stations with typical characteristics

An Administration which agrees to the coordination of frequency assignments to the space station the details of which are contained in this Special Section is presumed to agree to the coordination of any earth station located within the service area of the space station as indicated in item 6 and whose characteristics are such that it does not cause nor receive a higher level of interference than would be caused or received by the earth station the characteristics of which are also published in the Special Section.

Relating to steerable beams

The Board has noted that the space station is planned for the operation of a steerable beam. The Board has taken this operational characteristic into account while effecting the examination foreseen under RR1077. In this connection, the attention of the administrations is drawn to the IFRB Rule of Procedure No. H1 communicated to administrations by Circular-letter No 732 dated 11 April 1988.

Relativa a las estaciones terrenas con características tipo

Se supone que una administración, que está de acuerdo con la coordinación de asignaciones de frecuencia a la estación espacial cuyos detalles figuran en esta Sección Especial, está de acuerdo con la coordinación de cualquier estación terrena situada dentro de la zona de servicio de la estación espacial como indicado en el punto 6 y cuyas características son tales que no produzca ni reciba un nivel mayor de interferencia que el que produciría o sería recibido por la estación terrena cuyas características se publican también en la Sección Especial.

Relativa al haz orientable

La Junta ha observado que la estación espacial está proyectada para la utilización de un haz orientable. La Junta ha tenido en cuenta esta característica operacional al efectuar el examen previsto en RR1077. A este respecto, se señala a las administraciones la Regla de Procedimiento N.º H1 de la IFRB comunicada a las administraciones por Carta circular N.º 732 de 11 de abril de 1988.

UNION INTERNATIONALE DES TÉLÉCOMMUNICATIONS

COMITÉ INTERNATIONAL
D'ENREGISTREMENT DES FRÉQUENCES
IFRB

INTERNATIONAL TELECOMMUNICATION UNION

INTERNATIONAL FREQUENCY
REGISTRATION BOARD
IFRB

UNIÓN INTERNACIONAL DE TELECOMUNICACIONES

JUNTA INTERNACIONAL
DE REGISTRO DE FRECUENCIAS
IFRB

CIRCULAIRE HEBDOMADAIRE / DATE
WEEKLY CIRCULAR / DATE
CIRCULAR SEMANAL / FECHA 1871/11.04.89

SECTION SPÉCIALE No
SPECIAL SECTION No.
SECCIÓN ESPECIAL N.o

AR11/C/1436

STATION SPATIALE:
SPACE STATION: USASAT 13M
ESTACIÓN ESPACIAL:
McCaw

ou / or / o

STATION(S) TERRIENNE(S):
EARTH STATION(S): -
ESTACIÓN(ES) TERRENA(S):

STATION SPATIALE ASSOCIÉE:
ASSOCIATED SPACE STATION: -
ESTACIÓN ESPACIAL ASOCIADA:

ADMINISTRATION RESPONSABLE:
RESPONSIBLE ADMINISTRATION: USA
ADMINISTRACIÓN RESPONSABLE:

RENSEIGNEMENTS REÇUS PAR LE COMITÉ LE
INFORMATION RECEIVED BY THE BOARD ON 23.08.88
INFORMACIÓN RECIBIDA POR LA JUNTA EL

*** Ces renseignements ont été reçus par l'IFRB en vertu du RR1074 et sont publiés en application du RR1078. Ils font l'objet de l'une des deux procédures suivantes, indiquées ci-dessous par un X dans la case pertinente.**

This information has been received by the IFRB pursuant to RR1074 and is published in accordance with RR1078. It is subject to one of two procedures, indicated below by an X in the relevant box.

Esta información ha sido recibida por la IFRB de conformidad con RR1
publica en virtud de RR1078. Está sujeta a uno de los dos procedimientos s
señalado con una X en la casilla apropiada.

☒

Une demande de coordination a été envoyée conformément au RR1073 aux administrations indiquées ci-dessous. En application du RR1078, le Comité a ajouté, le cas échéant, le symbole des autres administrations (identifiées par *) dont les services sont susceptibles d'être affectés.

Toute administration dont le symbole apparaît dans la présente Section Spéciale accuse immédiatement réception, par télégramme, des données concernant la coordination (RR1082).

A request for coordination has been sent in accordance with RR1073 to the administrations indicated below. In conformity with RR1078, the Board has added, as appropriate, the symbols of any other administrations (identified by *) whose services are likely to be affected.

Any administration whose symbol appears in the present Special Section shall acknowledge receipt of the coordination data immediately by telegram (RR1082).

De conformidad con RR1073, se ha enviado una solicitud de coordinación a
administraciones indicadas más abajo. Conforme a RR1078, la Junta ha a
dido adecuadamente el símbolo de las demás administraciones (identifica
por un *) cuyos servicios pueden resultar afectados.

Las administraciones cuyo símbolo aparece en la presente Sección Espe
deberán acusar recibo inmediatamente por telegrama de la información re
rente a la coordinación (RR1082).

DEMANDE DE COORDINATION (RR1060) ADRESSÉE À
REQUEST FOR COORDINATION (RR1060) ADDRESSED TO AUS, PNG, USA/IT
SOLICITUD DE COORDINACIÓN (RR1060) DIRIGIDA A

DATE LIMITE POUR LA DÉCISION (RR1084):
EXPIRY DATE FOR DECISION (RR1084): 11.08.89
FECHA LÍMITE PARA LA DECISIÓN (RR1084):

☐

Les dispositions du RR1066 s'appliquent à ces assignations qui sont publiées uniquement pour information.

The provisions of RR1066 apply to these assignments, which are published for information only.

Las disposiciones de RR1066 se aplican a estas asignaciones, que se publican a título de información únicamente.

ADMINISTRATION NOTIFICATRICE
NOTIFYING ADMINISTRATION
ADMINISTRACION NOTIFICANTE
ETATS-UNIS - UNITED STATES
ESTADOS UNIDOS

Les renseignements reproduits ci-dessous sont présentés sous la forme prescrite dans l'appendice 3 au Règlement des radiocommunications (sections A et D)
The information reproduced hereunder has been arranged in the form prescribed in Appendix 3 to the Radio Regulations (Sections A and D).
La información reproducida a continuación se presenta en la forma prescrita en el apendice 3 al Reglamento de Radiocomunicaciones (secciones A y D).

ADMINISTRATION OU COMPAGNIE EXPLOITANTE
OPERATING ADMINISTRATION OR COMPANY
ADMINISTRACION O COMPAÑIA EXPLOTADORA

IDENTITE DU RESEAU A SATELLITE
IDENTITY OF SATELLITE NETWORK
IDENTIDAD DE LA RED DE SATELITE
USASAT 13M

STATION SPATIALE D'EMISSION
TRANSMITTING SPACE STATION
ESTACIÓN ESPACIAL TRANSMISORA

REFERENCE A LA CIRCULAIRE HEBDOMADAIRE RELATIVE AU NUMERO 1042
REFERENCE OF WEEKLY CIRCULAR RELATING TO No. 1042
REFERENCIA A LA CIRCULAR SEMANAL RELATIVA AL NUMERO 1042
AR11/A/343/1763

NOM ET ADRESSE DE L'ADMINISTRATION
NAME AND ADDRESS OF ADMINISTRATION
NOMBRE Y DIRECCIÓN DE LA ADMINISTRACIÓN
The Secretary of the Federal
Communications Commission
WASHINGTON, D.C. 20554
FEDCOMCOM, WASHINGTON D.C.

		SATELLITE GEOSTATIONNAIRE / *GEOSTATIONARY SATELLITE* / SATÉLITE GEOSTACIONARIO							
		5 RENSEIGNEMENTS RELATIFS A L'ORBITE/*ORBITAL INFORMATION*/INFORMACIÓN RELATIVA A LA ÓRBITA						RES 4 CAMR–1979 – WARC–1979	
NOM DE LA STATION SPATIALE D'EMISSION *NAME OF TRANSMITTING SPACE STATION* NOMBRE DE LA ESTACIÓN ESPACIAL TRANSMISORA	DATE DE MISE EN SERVICE *DATE OF BRINGING INTO USE* FECHA DE PUESTA EN SERVICIO	LONGITUDE NOMINALE *NOMINAL LONGITUDE* LONGITUD NOMINAL	TOLERANCES *TOLERANCES* TOLERANCIAS LONGITUDE *LONGITUDE* LONGITUD	INCLINAISON *INCLINATION* INCLINACIÓN	ARC DE VISIBILITE *VISIBILITY ARC* ARCO VISIBLE	ARC DE SERVICE *SERVICE ARC* ARCO DE SERVICIO	DIFFERENCE *DIFFERENCE* DIFERENCIA	DUREE DE VALIDITE *PERIOD OF VALIDITY* DURACIÓN DE VALIDEZ	HORAIRE MAXIMAL DE FONCTIONNEMENT SUR CHAQUE PORTEUSE (UTC) *MAXIMUM HOURS OF OPERATION ON EACH CARRIER (UTC)* HORARIO MAXIMO DE FUNCIONAMIENTO CON CADA PORTADORA (UTC)
4	3	5 a	5 a	5 a	5 a 1	5 a 2	5 a 3	ans – years – años	
USASAT 13M	01.10.1991	170°E	± 0,1°	± 0,05°	165°E-175°E	165°E-175°E	-	10	00-24

						CARACTERISTIQUES DE PUISSANCE *POWER CHARACTERISTICS* CARACTERISTICAS DE POTENCIA			CARACTERISTIQUES DE L'ANTENNE *ANTENNA CHARACTERISTICS* CARACTERISTICAS DE LA ANTENA						
FREQUENCE ASSIGNEE *ASSIGNED FREQUENCY* FRECUENCIA ASIGNADA	BANDE DE FREQUENCES ASSIGNEE *ASSIGNED FREQUENCY BAND* BANDA DE FRECUENCIAS ASIGNADA	ZONE(S) DE SERVICE OU STATION(S) AVEC LAQUELLE (LESQUELLES) LA COMMUNICATION DOIT ETRE ETABLIE *SERVICE AREA(S) OR STATION(S) WITH WHICH COMMUNICATION IS TO BE ESTABLISHED* ZONA(S) DE SERVICIO O ESTACIÓN(ES) CON LA(S) QUE SE ESTABLECERÁ LA COMUNICACIÓN	CLASSE DE STATION ET NATURE DU SERVICE *CLASS OF STATION AND NATURE OF SERVICE* CLASE DE ESTACIÓN Y NATURALEZA DEL SERVICIO	CLASSE D'EMISSION, LARGEUR DE BANDE NECESSAIRE ET NATURE DE LA TRANSMISSION *CLASS OF EMISSION, NECESSARY BANDWIDTH AND DESCRIPTION OF TRANSMISSION* CLASE DE EMISIÓN, ANCHURA DE BANDA NECESARIA Y DESCRIPCIÓN DE LA TRANSMISIÓN	FREQUENCE(S) PORTEUSE(S) *CARRIER FREQUENCY(IES)* FRECUENCIA(S) PORTADORA(S)	PUISSANCE DE CRETE *PEAK POWER* POTENCIA DE CRESTA	PUISSANCE TOTALE DE CRETE *TOTAL PEAK POWER* POTENCIA TOTAL DE CRESTA	DENSITE MAXIMALE DE PUISSANCE *MAXIMUM POWER DENSITY* DENSIDAD MÁXIMA DE POTENCIA	DIAGRAMME DE RAYONNEMENT *RADIATION DIAGRAM* DIAGRAMA DE RADIACIÓN	POLARISATION *POLARIZATION* POLARIZACIÓN	PRECISION DE POINTAGE *POINTING ACCURACY* PRECISIÓN DE ORIENTACIÓN	GAIN DANS LA DIRECTION DE L'ORBITE *GAIN IN THE DIRECTION OF THE ORBIT* GANANCIA EN EL SENTIDO DE LA ÓRBITA	CARACTERISTIQUES DE MODULATION *MODULATION CHARACTERISTICS* CARACTERÍSTICAS DE MODULACIÓN	Note - Nota	FAISCEAU BEAM HAZ
1	2	6	7	8a, 8c	8b	9a	9b	9b	10a–10b	10c	10d	10e	11		
MHz	kHz				MHz	dBW	dBW	dBW/Hz							
11 720 11 760 11 800 11 840 11 880 11 920 11 960 12 000 12 040 12 080 12 120 12 160	36 000	Note Nota 1	EC CV	36M0F9W			3,8	-64,2	Fig. 1 Gmax: +41,0 dB	H	± 0,05°	—			NA 1 Note Nota 2
				1M50F1W			-9,5	-64,5							
				100KF1W			-26,5	-67,5							
11 740 11 780 11 820 11 860 11 900 11 940 11 980 12 020 12 060 12 100 12 140 12 180										V					
12 520 12 560 12 600 12 640 12 680 12 720									Fig. 1 Gmax: +44 dB	H/V		Fig. 2			GU 1 Note Nota 3

1	2	6	7	8 a, 8 c	8 b	9 a	9 b	9 b	10 a–10 b	10 c	10 d	10 e	11		(g)
MHz GHz	kHz				MHz	dBW	dBW	dBW/Hz							
12,7475	5 000	GUM	ER CV	100KF7D			-20,0	-62,0	Fig. 3 Gmax: +44,0 dB	–		Fig. 2			GUAM SPOT (GU2)
12,5025				200KF7D											

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STATION(S) TERRIENNE(S) D'EMISSION
TRANSMITTING EARTH STATION(S)
ESTACIÓN(ES) TERRENA(S) TRANSMISORA(S)

DATE DE MISE EN SERVICE *DATE OF BRINGING INTO USE* FECHA DE PUESTA EN SERVICIO	NOM DE LA STATION TERRIENNE D'EMISSION *NAME OF TRANSMITTING EARTH STATION* NOMBRE DE LA ESTACIÓN TERRENA TRANSMISORA	PAYS *COUNTRY* PAIS	LONGITUDE ET LATITUDE DE L'EMPLACEMENT DE LA STATION TERRIENNE D'EMISSION *LONGITUDE AND LATITUDE OF TRANSMITTING EARTH STATION SITE* LONGITUD Y LATITUD DE LA UBICACION DE LA ESTACION TERRENA TRANSMISORA	CARACTERISTIQUES DE L'ANTENNE *ANTENNA CHARACTERISTICS* CARACTERISTICAS DE LA ANTENNA			STATION(S) SPATIALE(S) AVEC LAQUELLE (LESQUELLES) LA COMMUNICATION DOIT ETRE ETABLIE *SPACE STATION(S) WITH WHICH COMMUNICATION IS TO BE ESTABLISHED* ESTACION(ES) ESPACIAL(ES) CON LA(S) QUE SE ESTABLECERA LA COMUNICACION	HORAIRE MAXIMAL DE FONCTIONNEMENT SUR CHAQUE PORTEUSE (UTC) *MAXIMUM HOURS OF OPERATION ON EACH CARRIER (UTC)* HORARIO MAXIMO DE FUNCIONAMIENTO CON CADA PORTADORA (UTC)
				ANGLE DE SITE MINIMAL *MINIMUM ANGLE OF ELEVATION* ANGULO MINIMO DE ELEVACION	LIMITES D'AZIMUT *AZIMUTHAL LIMITS* LIMITES DE ACIMUT	ALTITUDE (m) ALTITUD (m)		
3	4 a	4 b	4 c	9 e	9 f	9 h	5	11
-	Stations terriennes à caractéristiques typiques Earth stations with typical characteristics Estaciones terrenas con caracteristicas tipo	USA	A l'intérieur des zones de service Within the service areas Dentro de las zonas de servicio				USASAT 13M (170°E)	00-24

FREQUENCE ASSIGNEE *ASSIGNED FREQUENCY* FRECUENCIA ASIGNADA 1 MHz	BANDE DE FREQUENCES ASSIGNEE *ASSIGNED FREQUENCY BAND* BANDA DE FRECUENCIAS ASIGNADA 2 KHz	CLASSE DE STATION ET NATURE DU SERVICE *CLASS OF STATION AND NATURE OF SERVICE* CLASE DE ESTACION Y NATURALEZA DEL SERVICIO 6	CLASSE D'EMISSION, LARGEUR DE BANDE NECESSAIRE ET NATURE DE LA TRANSMISSION *CLASS OF EMISSION, NECESSARY BANDWIDTH AND DESCRIPTION OF TRANSMISSION* CLASE DE EMISION, ANCHURA DE BANDA NECESARIA Y DESCRIPCION DE LA TRANSMISION 7 a, 7 c	FREQUENCE(S) PORTEUSE(S) *CARRIER FREQUENCY (IES)* FRECUENCIA(S) PORTADORA(S) 7 b	PUISSANCE DE CRETE *PEAK POWER* POTENCIA DE CRESTA 8 a	PUISSANCE TOTALE DE CRETE *TOTAL PEAK POWER* POTENCIA TOTAL DE CRESTA 8 b dBW	DENSITE MAXIMALE DE PUISSANCE *MAXIMUM POWER DENSITY* DENSIDAD MAXIMA DE POTENCIA 8 b dBW/Hz	GAIN ISOTROPE *ISOTROPIC GAIN* GANANCIA ISOTROPA 9 a dB	OUVERTURE DU FAISCEAU A DEMI PUISSANCE *HALF POWER BEAMWIDTH* ABERTURA DEL HAZ DE MEDIA POTENCIA 9 b	DIAGRAMME DE RAYONNEMENT *RADIATION DIAGRAM* DIAGRAMA DE RADIACIÓN 9 c	POLARISATION *POLARIZATION* POLARIZACION 9 g	CARACTERISTIQUES DE MODULATION *MODULATION CHARACTERISTICS* CARACTERISTICAS DE MODULACIÓN 10	Station - Estación m	FAISCEAU (Zone de service) BEAM (Service area) HAZ (Zone de servicio)	Note - Nota
14 020	36 000	TC CV	36M0F9W			11,0	-57,0	+50,6	0,50°	Ref. Avis/Rec.	H		3	NA 2	2
14 060										CCIR 465-1					
14 100			1M50F1W			1,0	-54,0								
14 140															
14 180			100KF1W			-16,0	-57,0								
14 220															
14 260															
14 300															
14 340															
14 380															
14 420															
14 460															
14 040											V				
14 080															
14 120															
14 160															
14 200															
14 240															
14 280															
14 320															
14 360															
14 400															
14 440															
14 480															

1	2	6	7 a, 7 c	7 b	8 a	8 b	8 b	9 a	9 b	9 c	9 g	10	m	(g)	
MHz	kHz					dBW	dBW/Hz	dB							
14 020 14 060 14 100 14 140 14 180 14 220	36 000	TC CV	36M0F9W			11,0	-57,0	+50,6	0,50°	Ref. Avis/Rec. CCIR 465-1	H/V		3	GU 3	3
			1M50F1W			1,0	-54,0								
			100KF1W			-16,0	-57,0								

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STATION SPATIALE DE RECEPTION
RECEIVING SPACE STATION
ESTACIÓN ESPACIAL RECEPTORA

NOM DE LA STATION SPATIALE DE RECEPTION *NAME OF RECEIVING SPACE STATION* NOMBRE DE LA ESTACIÓN ESPACIAL RECEPTORA	DATE DE MISE EN SERVICE *DATE OF BRINGING INTO USE* FECHA DE PUESTA EN SERVICIO	SATELLITE GEOSTATIONNAIRE / *GEOSTATIONARY SATELLITE* / SATÉLITE GEOSTACIONARIO							
		5 RENSEIGNEMENTS RELATIFS A L'ORBITE/*ORBITAL INFORMATION*/INFORMACIÓN RELATIVA A LA ÓRBITA						RES 4 CAMR–1979 – WARC–1979	HORAIRE MAXIMAL DE FONCTIONNEMENT SUR CHAQUE PORTEUSE (UTC) *MAXIMUM HOURS OF OPERATION ON EACH CARRIER (UTC)* HORARIO MAXIMO DE FUNCIONAMIENTO CON CADA PORTADORA (UTC)
		LONGITUDE NOMINALE *NOMINAL LONGITUDE* LONGITUD NOMINAL	TOLERANCES *TOLERANCES* TOLERANCIAS		ARC DE VISIBILITE *VISIBILITY ARC* ARCO VISIBLE	ARC DE SERVICE *SERVICE ARC* ARCO DE SERVICIO	DIFFERENCE *DIFFERENCE* DIFERENCIA	DUREE DE VALIDITE *PERIOD OF VALIDITY* DURACIÓN DE VALIDEZ	
			LONGITUDE *LONGITUDE* LONGITUD	INCLINAISON *INCLINATION* INCLINACIÓN					
4	3	5a	5a	5a	5a1	5a2	5a3	ans – years – años	
USASAT 13M	01.10.1991	170°E	± 0,1°	± 0,05°	165°E-175°E	165°E-175°E	-	10	00-24

FREQUENCE ASSIGNEE *ASSIGNED FREQUENCY* FRECUENCIA ASIGNADA	BANDE DE FREQUENCE ASSIGNEE *ASSIGNED FREQUENCY BAND* BANDA DE FRECUENCIAS ASIGNADA	ZONE(S) DE SERVICE OU STATION(S) AVEC LAQUELLE (LESQUELLES) LA COMMUNICATION DOIT ETRE ETABLIE *SERVICE AREA(S) OR STATION(S) WITH WHICH COMMUNICATION IS TO BE ESTABLISHED* ZONA(S) DE SERVICIO O ESTACIÓN(ES) CON LA(S) QUE SE ESTABLECERÁ LA COMUNICACIÓN	CLASSE DE STATION ET NATURE DU SERVICE *CLASS OF STATION AND NATURE OF SERVICE* CLASE DE ESTACIÓN Y NATURALEZA DEL SERVICIO	CLASSE D'EMISSION, LARGEUR DE BANDE NECESSAIRE ET NATURE DE LA TRANSMISSION *CLASS OF EMISSION, NECESSARY BANDWIDTH AND DESCRIPTION OF TRANSMISSION* CLASE DE EMISIÓN ANCHURA DE BANDA NECESARIA Y DESCRIPCIÓN DE LA TRANSMISIÓN	FREQUENCE(S) PORTEUSE(S) *CARRIER FREQUENCY(IES)* FRECUENCIA(S) PORTADORA(S)	CARACTERISTIQUES DE L'ANTENNE *ANTENNA CHARACTERISTICS* CARACTERISTICAS DE LA ANTENA				TEMPERATURE DE BRUIT DU SYSTEME DE RECEPTION *RECEIVING SYSTEM NOISE TEMPERATURE* TEMPERATURA DE RUIDO DEL SISTEMA RECEPTOR	Note - Nota	FAISCEAU BEAM HAZ
						DIAGRAMME DE RAYONNEMENT *RADIATION DIAGRAM* DIAGRAMA DE RADIACIÓN	POLARISATION *POLARIZATION* POLARIZACIÓN	PRECISION DE POINTAGE *POINTING ACCURACY* PRECISIÓN DE ORIENTACIÓN	GAIN DANS LA DIRECTION DE L'ORBITE *GAIN IN THE DIRECTION OF THE ORBIT* GANANCIA EN EL SENTIDO DE LA ÓRBITA			
1	2	6	7	8a,8c	8b	9a,9b	9c	9d	9e	10		
MHz	kHz				MHz					K		
14 020 14 060 14 100 14 140 14 180 14 220 14 260 14 300 14 340 14 380 14 420 14 460	36 000	Note Nota 4	EC CV	36M0F9W 1M50F1W 100KF1W		Fig. 4 Gmax: +42,3 dB	H	± 0,05°	Fig. 2	1000	2	NA 2
14 040 14 080 14 120 14 160 14 200 14 240 14 280 14 320 14 360 14 400 14 440 14 480							V					
14 020 14 060 14 100 14 140 14 180 14 220						Fig. 4 Gmax: +45,3 dB	H/V				3	GU 3

1	2	6	7	8a, 8c	8b	9a, 9b	9c	9d	9e	10		(g)
MHz GHz	kHz				MHz					K		
14,002	4 000	GUM	ED CV	50K0F7D		Fig. 5 Gmax: +45,3 dB	-		Fig. 2		-	GUAM SPOT (GU 4)

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Les renseignements reproduits ci dessous sont presentés sous la forme prescrite dans l'appendice 3 au Reglement des radiocommunications (sections A et C)
The information reproduced hereunder has been arranged in the form prescribed in Appendix 3 to the Radio Regulations (Sections A and C)
La información reproducida a continuación se presenta en la forma prescrita en el apendice 3 al Reglamento de Radiocomunicaciones (secciones A y C)

STATION(S) TERRIENNE(S) DE RECEPTION
RECEIVING EARTH STATION(S)
ESTACIÓN(ES) TERRENA(S) RECEPTORA(S)

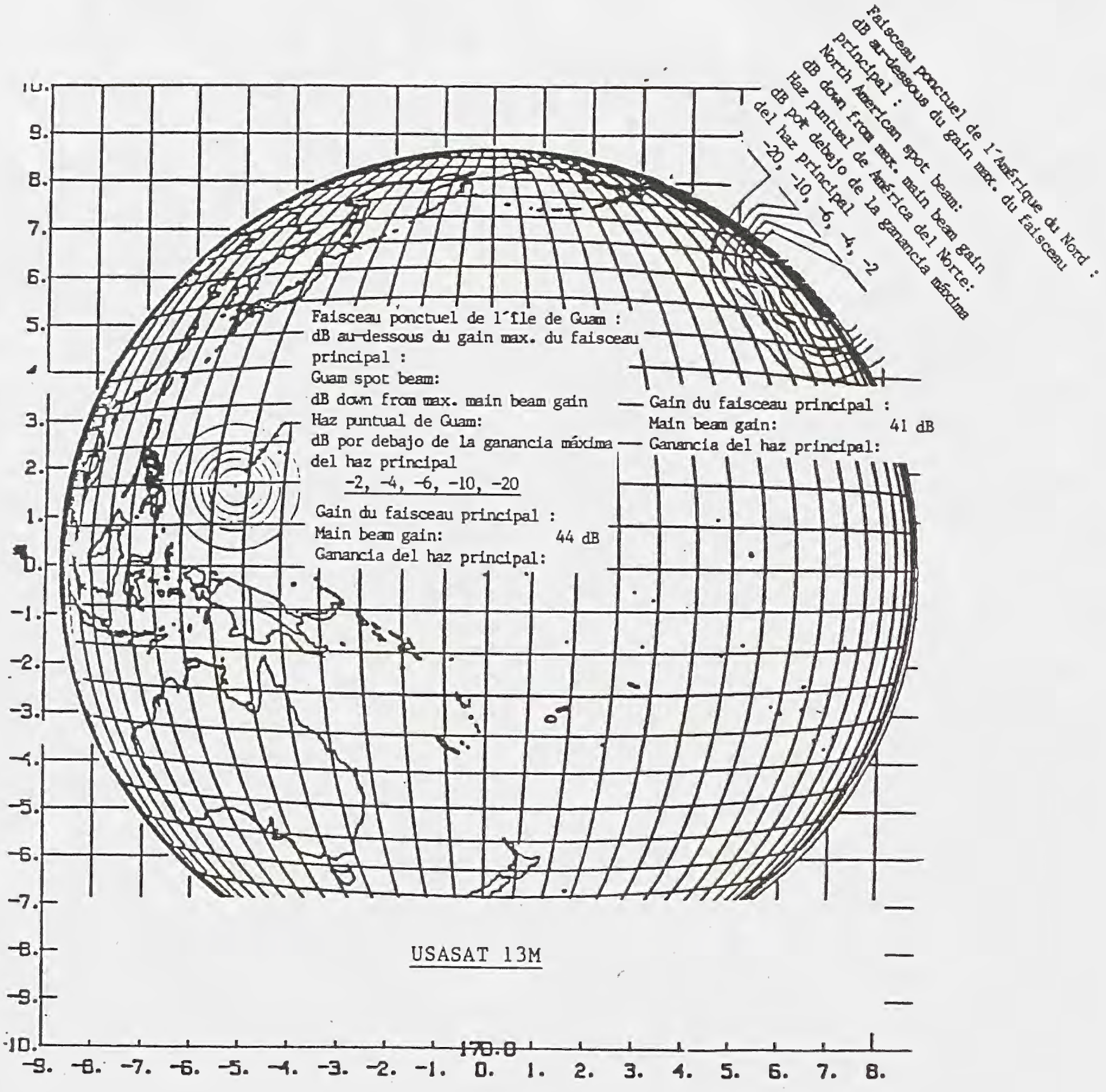
DATE DE MISE EN SERVICE *DATE OF BRINGING INTO USE* FECHA DE PUESTA EN SERVICIO	NOM DE LA STATION TERRIENNE DE RECEPTION *NAME OF RECEIVING EARTH STATION* NOMBRE DE LA ESTACION TERRENA RECEPTORA	PAYS *COUNTRY* PAIS	LONGITUDE ET LATITUDE DE L'EMPLACEMENT DE LA STATION TERRIENNE DE RECEPTION *LONGITUDE AND LATITUDE OF RECEIVING EARTH STATION SITE* LONGITUD Y LATITUD DE LA UBICACION DE LA ESTACION TERRENA RECEPTORA	CARACTERISTIQUES DE L'ANTENNE *ANTENNA CHARACTERISTICS* CARACTERISTICAS DE LA ANTENA			STATION(S) SPATIALE(S) AVEC LAQUELLE (LESQUELLES) LA COMMUNICATION DOIT ETRE ETABLIE *SPACE STATION(S) WITH WHICH COMMUNICATION IS TO BE ESTABLISHED* ESTACION(ES) ESPACIAL(ES) CON LA(S) QUE SE ESTABLECERA LA COMUNICACION	HORAIRE MAXIMAL DE FONCTIONNEMENT SUR CHAQUE PORTEUSE (UTC) *MAXIMUM HOURS OF OPERATION ON EACH CARRIER (UTC)* HORARIO MAXIMO DE FUNCIONAMIENTO CON CADA PORTADORA (UTC)
				ANGLE DE SITE MINIMAL *MINIMUM ANGLE OF ELEVATION* ANGULO MINIMO DE ELEVACIÓN	LIMITES D'AZIMUT *AZIMUTHAL LIMITS* LIMITES DE ACIMUT	ALTITUDE (m) ALTITUD (m)		
3	4 a	4 b	4 c	8 e	8 f	8 g	5	10
	Stations terriennes à caractéristiques typiques Earth stations with typical characteristics Estaciones terrenas con características tipo	USA	A l'intérieur des zones de service Within the service areas Dentro de las zonas de servicio				USASAT 13M (170°E)	00-24

FREQUENCE ASSIGNEE *ASSIGNED FREQUENCY* FRECUENCIA ASIGNADA	BANDE DE FREQUENCES ASSIGNEE *ASSIGNED FREQUENCY BAND* BANDA DE FRECUENCIAS ASIGNADA	CLASSE DE STATION ET NATURE DU SERVICE *CLASS OF STATION AND NATURE OF SERVICE* CLASE DE ESTACION Y NATURALEZA DEL SERVICIO	CLASSE D'EMISSION, LARGEUR DE BANDE NECESSAIRE ET NATURE DE LA TRANSMISSION *CLASS OF EMISSION, NECESSARY BANDWIDTH AND DESCRIPTION OF TRANSMISSION* CLASE DE EMISION, ANCHURA DE BANDA NECESARIA Y DESCRIPCION DE LA TRANSMISION	POLARISATION *POLARIZATION* POLARIZACIÓN	GAIN ISOTROPE *ISOTROPIC GAIN* GANANCIA ISOTROPA	OUVERTURE DU FAISCEAU A DEMI-PUISSANCE *HALF POWER BEAMWIDTH* ABERTURA DEL HAZ DE MEDIA POTENCIA	DIAGRAMME DE RAYONNEMENT *RADIATION DIAGRAM* DIAGRAMA DE RADIACION	TEMPERATURE DE BRUIT DU SYSTEME DE RECEPTION *RECEIVING SYSTEM NOISE TEMPERATURE* TEMPERATURA DE RUIDO DEL SISTEMA RECEPTOR	TEMPERATURE EQUIVALENTE DE BRUIT DE LA LIAISON PAR SATELLITE (VALEUR LA PLUS FAIBLE) *LOWEST EQUIVALENT SATELLITE LINK NOISE TEMPERATURE* TEMPERATURA EQUIVALENTE DE RUIDO DEL ENLACE POR SATELITE (LA MAS BAJA)	GAIN DE TRANSMISSION *TRANSMISSION GAIN* GANANCIA DE TRANSMISION	STATION - ESTACIÓN	FAISCEAU BEAM HAZ	Note - Nota
1	2	6	7 a, 7 c	8h	8 a	8 b	8 c	9 a	9 b	9 c	m		
MHz	kHz				dB			K	K	dB			
11 720	36 000	TC CV	36M0F9W	H	+49,3	0,58°	Ref. Avis/Rec.	290	560	-5,7	3	NA 1	2
11 760							CCIR 465-1						
11 800			1M50F1W						865	-2,4			
11 840													
11 880			100KF1W										
11 920													
11 960													
12 000													
12 040													
12 080													
12 120													
12 160													
11 740				V									
11 780													
11 820													
11 860													
11 900													
11 940													
11 980													
12 020													
12 060													
12 100													
12 140													
12 180													

1	2	6	7 a, 7 c	7 b	8 a	8 b	8 c	9 a	9 b	9 c		(g)	
MHz	kHz			MHz	dB			K	K	dB			
12 520 12 560 12 600 12 640 12 680 12 720	36 000	TC CV	36M0F9W	H/V	+49,3	0,58°	Ref. Avis/Rec. CCIR 465-1	290	560	-5,6	13	GU 1	3
			1M50F1W						865	-2,4			
			100KF1W										

Figura 1

CONTOURS DE GAIN DE L'ANTENNE D'EMISSION DE LA STATION SPATIALE
SPACE STATION TRANSMITTING ANTENNA GAIN CONTOURS
CONTORNOS DE GANANCIA DE LA ANTENA TRANSMISORA DE LA ESTACION ESPACIAL



Seuls sont représentés le faisceau ponctuel de l'Amérique du Nord (gain max. dans le faisceau principal : 41 dB) et le faisceau ponctuel de Guam (gain max. du faisceau principal : 44 dB). De plus, onze faisceaux ponctuels de 1° (gain max. du faisceau principal : 44 dB) seront dirigés sur des points de la surface terrestre visibles depuis le satellite (170° de longitude Est), sous un angle de site d'au moins 3° au-dessus de l'horizon, sous réserve de l'accord des administrations.

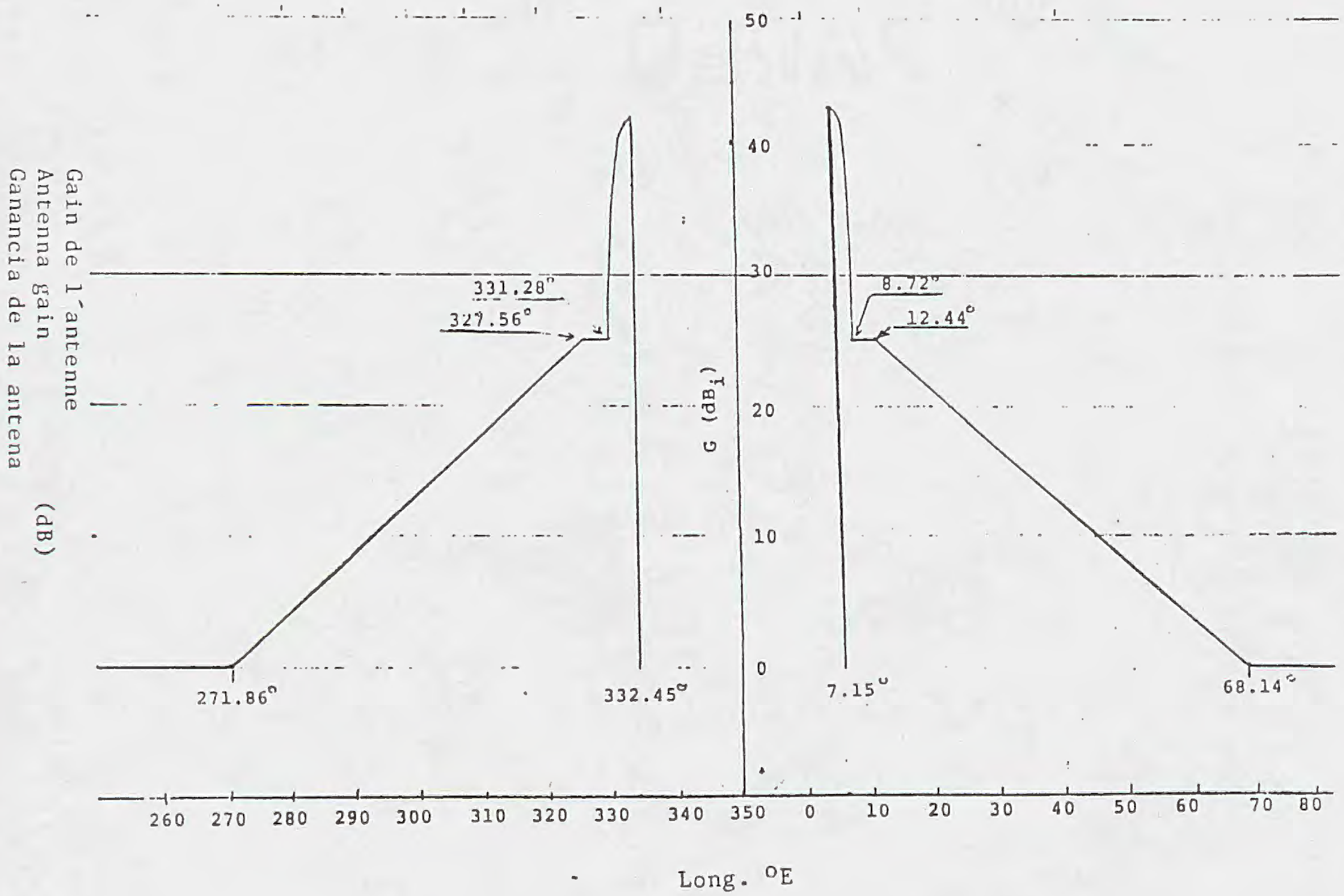
Only the North American spot beam (41 dB max. main beam gain) and the Guam spot beam (44 dB max. main beam gain) are shown. In addition, eleven 1° spot beams (44 dB max. main beam gain) will be directed to points on the earth, visible from the satellite at 170° East longitude, with an angle of elevation of at least 3° above the horizon, subject to agreement of administrations.

Sólo se indican el haz puntual de América del Norte (ganancia máxima del haz princiap: 41 dB) y el haz puntual de Guam (ganancia máxima del haz principal: 44 dB). Además, se dirigirán once haces puntuales de 1° (ganancia máxima del haz principal: 44 dB) hacia puntos de la tierra visibles desde el satélite a 170° de longitud Este, con un ángulo de elevación por encima del horizonte de 3° por lo menos, a condición de obtener el acuerdo de las administraciones.

Figure
2
Figura

GAIN DE L´ANTENNE DE LA STATION SPATIALE DANS LA DIRECTION DE L´ORBITE DES SATELLITES GEOASTATIONNAIRES
GAIN OF THE SPACE STATION ANTENNA IN THE DIRECTION OF THE GEOSTATIONARY SATELLITE ORBIT
GANANCIA DE LA ANTENA DE LA ESTACION ESPACIAL EN EL SENTIDO DE LA ORBITA DE LOS SATELITES GEOESTACIONARIOS

<u>USASAT 13M</u>

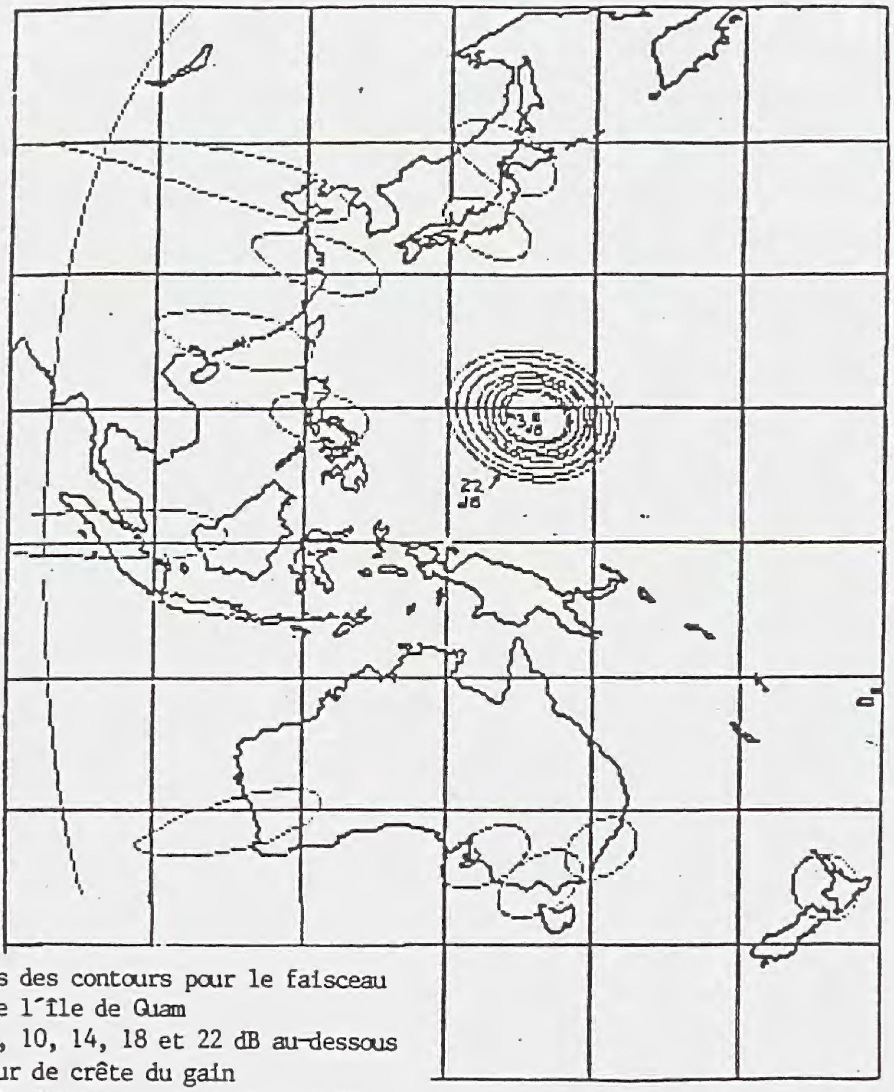


3

Figura

CONTOURS DE GAIN DE L´ANTENNE D´EMISSION DE LA STATION SPATIALE
SPACE STATION TRANSMITTING ANTENNA GAIN CONTOURS
CONTORNOS DE GANANCIA DE LA ANTENA TRANSMISORA DE LA ESTACION ESPACIAL

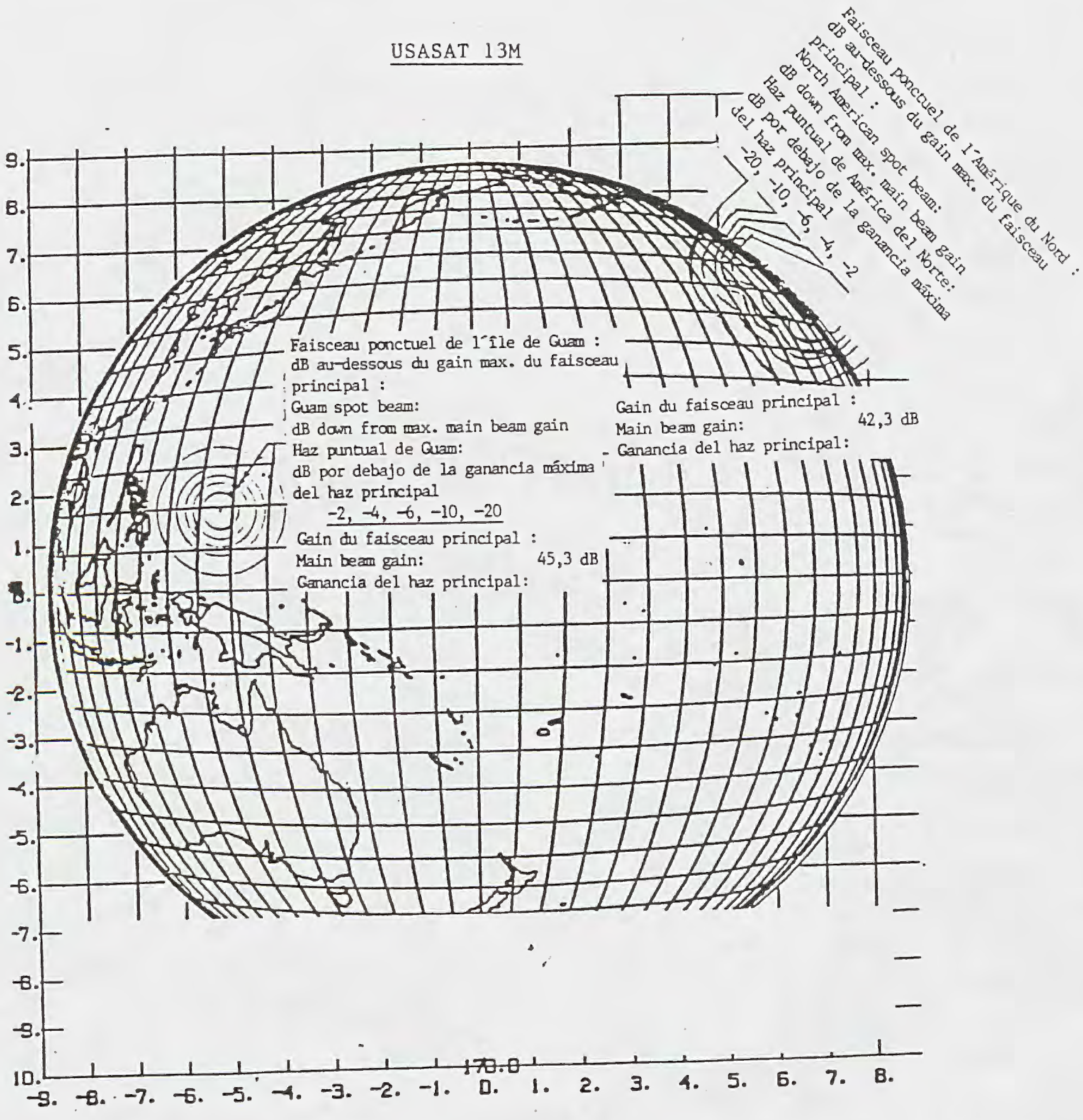
USASAT 13M



Intervalles des contours pour le faisceau ponctuel de l´île de Guam
3, 4, 6, 8, 10, 14, 18 et 22 dB au-dessous de la valeur de crête du gain
Gain max. du faisceau principal : 44 dBi
Contour intervals shown for Guam spot beam
3, 4, 6, 8, 10, 14, 18 and 22 dB down from peak value of gain max.
Main beam gain: 44 dBi
Contornos del haz principal de Guam a
3, 4, 6, 8, 10, 14, 18 y 22 dB por debajo del valor de ganancia de cresta
Ganancia máxima del haz principal: 44 dBi

Figure
4
Figura

CONTOURS DE GAIN DE L´ANTENNE DE RECEPTION DE LA STATION SPATIALE
SPACE STATION RECEIVING ANTENNA GAIN CONTOURS
CONTORNOS DE GANANCIA DE LA ANTENA RECEPTORA DE LA ESTACION ESPACIAL



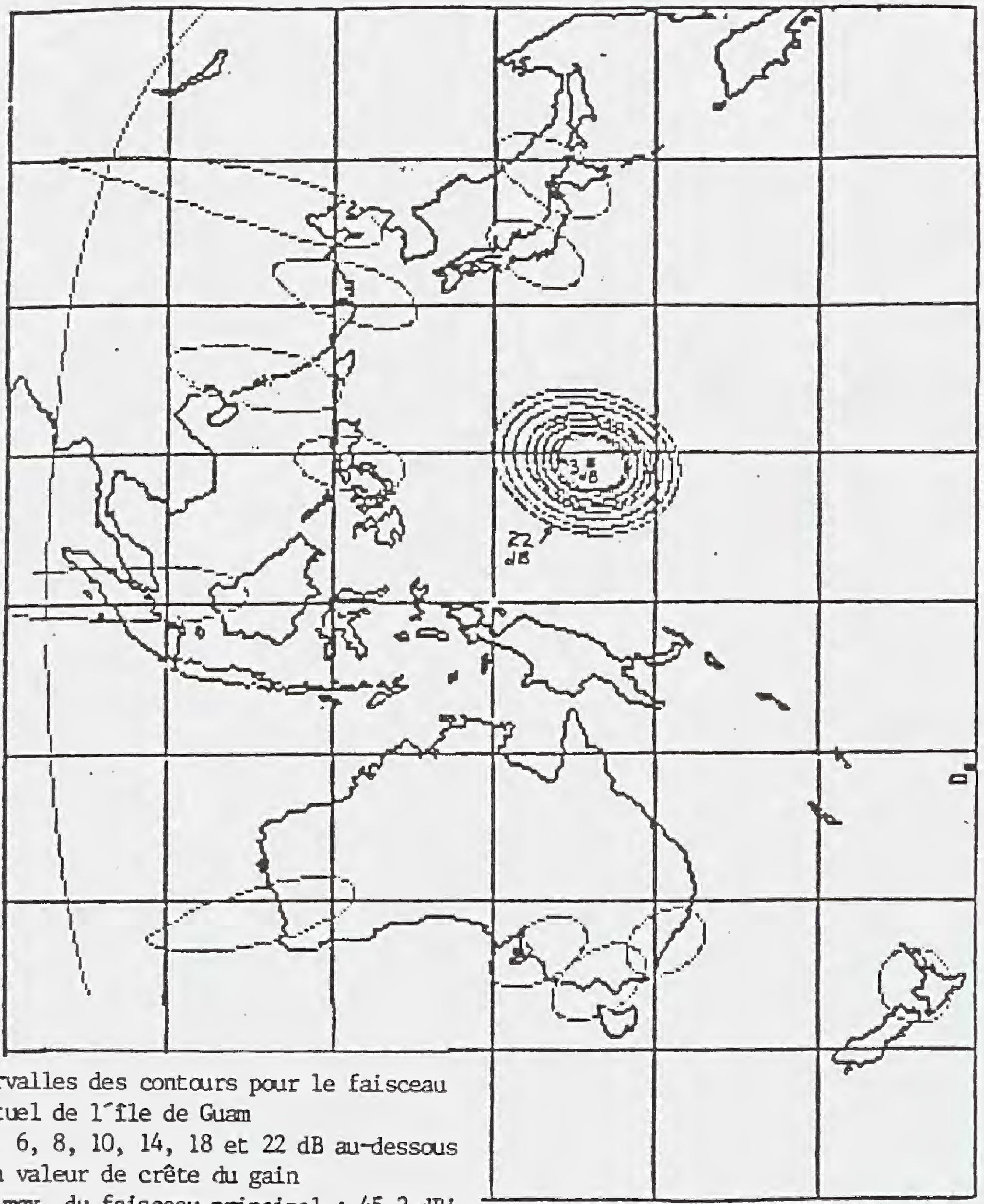
Seuls sont représentés le faisceau ponctuel de l´Amérique du Nord (gain max. dans le faisceau principal : 42,3 dB) et le faisceau ponctuel de Guam (gain max. du faisceau principal : 45,3 dB). De plus, onze faisceaux ponctuels de 1° (gain max. du faisceau principal : 45,3 dB) seront dirigés sur des points de la surface terrestre visibles depuis le satellite (170° de longitude Est), sous un angle de site d´au moins 3° au-dessus de l´horizon, sous réserve de l´accord des administrations.

Only the North American spot beam (42.3 dB max. main beam gain) and the Guam spot beam (45.3 dB max. main beam gain) are shown. In addition, eleven 1° spot beams (45.3 dB max. main beam gain) will be directed to points on the earth, visible from the satellite at 170° East longitude, with an angle of elevation of at least 3° above the horizon, subject to agreement of administrations.

Sólo se indican el haz puntual de América del Norte (ganancia máxima del haz principal: 42,3 dB) y el haz puntual de Guam (ganancia máxima del haz principal: 45,3 dB). Además, se dirigirán once haces puntuales de 1° (ganancia máxima del haz principal: 45,3 dB) hacia puntos de la tierra visibles desde el satélite a 170° de longitud Este, con un ángulo de elevación

5
Figura

CONTOURS DE GAIN DE L'ANTENNE DE RECEPTION DE LA STATION SPATIALE
SPACE STATION RECEIVING ANTENNA GAIN CONTOURS
CONTORNOS DE GANANCIA DE LA ANTENA RECEPTORA DE LA ESTACION ESPACIAL



Intervalles des contours pour le faisceau ponctuel de l'île de Guam
3, 4, 6, 8, 10, 14, 18 et 22 dB au-dessous de la valeur de crête du gain
Gain max. du faisceau principal : 45,3 dBi
Contour intervals shown for Guam spot beam
3, 4, 6, 8, 10, 14, 18 and 22 dB down from peak value of gain max.
Main beam gain: 45.3 dBi
Contornos del haz principal de Guam a
3, 4, 6, 8, 10, 14, 18 y 22 dB por debajo del valor de ganancia de cresta
Ganancia máxima del haz principal: 45,3 dBi

NOTES

1. Les zones de service comprennent la côte Ouest de l´Amérique du Nord, l´île de Guam et un maximum de onze autres régions géographiques visibles depuis l´engin spatial situé à 170° de longitude Est, sous réserve de l´accord des administrations ayant juridiction sur ces zones.

Il y a au total treize faisceaux d´antenne d´émission de station spatiale, coïncidant chacun avec un faisceau d´antenne de réception (même ouverture de faisceau et mêmes coordonnées du point de visée). Un des faisceaux (1° x 3°, avec un gain maximum de 41 dB dans le faisceau principal) est toujours pointé sur la côte Ouest de l´Amérique du Nord. Un autre faisceau (1°, avec un gain maximum de 44 dB dans le faisceau principal) est toujours pointé sur Guam, comme le montre la Figure 1. De plus, il y a onze faisceaux actifs (1°,avec un gain maximum de 44 dB dans le faisceau principal), choisis sur l´orbite par commande au sol dans les couples de faisceaux actifs; pour chacun d´eux, les coordonnées du point de visée sont déterminées avant le lancement.

2. Un faisceau éclairant la côte Ouest de l´Amérique du Nord.

3. Un faisceau de 1° éclairant l´île de Guam.

NOTES

1. The service areas include the West Coast of North America, Guam, and up to eleven other geographic regions, visible from the spacecraft at 170° East longitude, subject to agreement of the Administrations responsible for those areas.

There is a total of thirteen space station transmitting antenna beams, each being coincident with a receiving antenna beam (same beamwidth and boresight coordinates). One of the beams (1° x 3°, having a maximum main beam gain of 41 dB)is always aimed at the West Coast of North America. Another beam (1°, having a maximum main beam gain of 44 dB)is always aimed at Guam, as shown in Figure 1. Additionally, there are eleven active beams (1°, having a maximum main beam gain of 44 dB), selected in orbit, by ground command, from pairs of such beams, each of which has boresight coordinates determined prior to launch.

2. A beam illuminating the West Coast of North America.

3. A 1° beam illuminating Guam.

NOTAS

1. Las zonas de servicio comprenden la Costa Occidental de América del Norte, Guam y hasta otras once regiones geográficas, visibles desde el vehículo espacial a 170° de longitud Este, a condición de obtener el acuerdo de las administraciones responsables de esas zonas.

Hay un total de trece haces de antena transmisora de estación espacial, cada uno de los cuales coincide con un haz de antena receptora (con igual abertura de haz e iguales coordenadas del eje de puntería). Uno de los haces (1° x 3°, con una ganancia máxima del haz principal de 41 dB) apunta siempre a la Costa Occidental de América del Norte. Otro haz (1°, con una ganancia máxima del haz principal de 44 dB) apunta siempre a Guam, según se indica en la Figura 1. Además, hay once haces activos (1°, con una ganancia máxima del haz principal de 44 dB), elegidos en órbita por mando desde Tierra entre pares de esos haces; las coordenadas del eje de puntería de cada uno de esos haces se determinan antes del lanzamiento.

2. Un haz que ilumina la Costa Occidental de America del Norte.

3. Un haz de 1° que ilumina Guam.

4. Les zones de service comprennent la côte Ouest de l'Amérique du Nord, l'île de Guam et un maximum de onze autres régions géographiques visibles depuis l'engin spatial situé à 170° de longitude Est, sous réserve de l'accord des administrations ayant juridiction sur ces zones.

Il y a au total treize faisceaux d'antenne de réception de station spatiale, coïncidant chacun avec un faisceau d'antenne d'émission (même ouverture de faisceau et mêmes coordonnées du point de visée). Un des faisceaux (1° x 3°, avec un gain maximum de 42,3 dB dans le faisceau principal) est toujours pointé sur la côte Ouest de l'Amérique du Nord. Un autre faisceau (1°, avec un gain maximum de 45,3 dB dans le faisceau principal) est toujours pointé sur Guam, comme le montre la Figure 1. De plus, il y a onze faisceaux actifs (1°,avec un gain maximum de 45,3 dB dans le faisceau principal), choisis sur l'orbite par commande au sol dans les couples de faisceaux actifs; pour chacun d'eux, les coordonnées du point de visée sont déterminées avant le lancement.

4. The service areas include the West Coast of North America, Guam, and up to eleven other geographic regions, visible from the spacecraft at 170° East longitude, subject to agreement of the Administrations responsible for those areas.

There is a total of thirteen space station receiving antenna beams, each being coincident with a transmitting antenna beam (same beamwidth and boresight coordinates). One of the beams (1° x 3°, having a maximum main beam gain of 42.3 dB is always aimed at the West Coast of North America. Another beam (1°, having a maximum main beam gain of 45.3 dB is always aimed at Guam, as shown in Figure 1. Additionally, there are eleven active beams (1°, having a maximum main beam gain of 45.3 dB), selected in orbit, by ground command, from pairs of such beams, each of which has boresight coordinates determined prior to launch.

4. Las zonas de servicio comprenden la Costa Occidental de América del Norte, Guam y hasta once otras regiones geográficas, visibles desde el vehículo espacial a 170° de longitud Este, a reserva del acuerdo de las administraciones responsables de esas zonas.

Hay un total de trece haces de antena receptora de estación espacial , cada uno de los cuales coincide con un haz de antena transmisora (con igual abertura de haz e iguales coordenadas del eje de puntería). Uno de los haces (1° x 3°, con una ganancia máxima del haz principal de 42,3 dB) apunta siempre a la Costa Occidental de América del Norte. Otro haz (1°, con una ganancia máxima del haz principal de 45,3 dB) apunta siempre a Guam, según se indica en la Figura 1. Además, hay once haces activos (1°, con una ganancia máxima del haz principal de 45,3 dB), elegidos en órbita por mando desde Tierra entre pares de esos haces; las coordenadas del eje de puntería de cada uno de esos haces se determinan antes del lanzamiento.

OBSERVATIONS DE L´IFRB

Relative à la Conclusion conformément au RR1503

i) Assignations de la station spatiale d´émission dans la bande 11,7-12,2 GHz (Faisceau NA 1)

DEFAVORABLE (sera favorable si la procédure de l´Article 14 est complétée avec succès).

ii) Pour toutes les autres assignations à la station spatiale

FAVORABLE

Relative aux stations terriennes avec caractéristiques typiques

Une administration qui approuve la coordination des assignations de fréquence à la station spatiale dont les caractéristiques sont contenues dans la présente Section spéciale est réputée approuver la coordination de toute station terrienne située dans la zone de service de la station spatiale comme indiquée au point 6 et dont les caractéristiques sont telles qu´elle ne cause ni ne subit un niveau de brouillage supérieur à celui qui serait causé ou subi par la station terrienne dont les caractéristiques sont aussi publiées dans la Section spéciale.

IFRB COMMENTS

Relating to the Finding with respect to RR1503

i) Transmitting space station assignments in the 11.7-12.2 GHz band (NA 1 Beam)

UNFAVOURABLE (will be favourable if the Article 14 procedure is successfully applied).

ii) For all other assignments to the space station

FAVOURABLE

Relating to the earth stations with typical characteristics

An Administration which agrees to the coordination of frequency assignments to the space station the details of which are contained in this Special Section is presumed to agree to the coordination of any earth station located within the service area of the space station as indicated in item 6 and whose characteristics are such that it does not cause nor receive a higher level of interference than would be caused or received by the earth station the characteristics of which are also published in the Special Section.

OBSERVACIONES DE LA IFRB

Relativa a la Conclusión según el RR1503

i) Asignaciones de la estación espacial transmisora en la banda 11,7-12,2 GHz (Haz NA 1)

DESFAVORABLE (será favorable si el procedimiento del Artículo 14 se aplica con éxito).

ii) Para todas las otras asignacio de la estación espacial

FAVORABLE

Relativa a las estaciones terrenas con características tipo

Se supone que una administración,qu está de acuerdo con la coordinación asignaciones de frecuencia a la est espacial cuyos detalles figuran en Sección Especial, está de acuerdo con la coordinación de cualquier estación terrena situada dentro de la zona de servicio de la estación espacial como indicado en el punto y cuyas características son tales que no produzca ni reciba un nivel mayor de interferencia que el que produciría o sería recibido por la estación terrena cuyas características se publican también en la Sección Especial.

Relative à la station terrienne associée

Pour les caractéristiques de la station terrienne associée voir la Section spéciale AR11/C/1437 annexée à la Circulaire hebdomadaire N^o 1871 du 11 avril 1989.

NOTE DE L'IFRB

Les caractéristiques complètes requises par l'Appendice 3 relatives aux "faisceaux actifs" mentionnés dans les Notes 1 et 4 (pages 19 et 20) et sur les Figures 1 et 4 seront publiées ultérieurement dans un Addendum à cette Section spéciale.

Relating to the associated earth station

For the characteristics of the associated earth station see Special Section AR11/C/1437 annexed to Weekly Circular No. 1871 of 11 April 1989.

IFRB NOTE

The complete Appendix 3 characteristics relating to the "active beams" mentioned under Notes 1 and 4 (pages 19 and 20) and on Figures 1 and 4 will be published later in an Addendum to this Special Section.

Relativa a la estación terrena asociada

Para las características de la estación terrena asociada, véase la Sección Especial AR11/C/1437 anexa a la Circular Semanal N.º 1871 de 11 de abril de 1989

NOTA DE LA IFRB

Las características completas requeridas en el Apéndice 3 relativas a los "haces activos" mencionados en las Notas 1 y 4 (páginas 19 y 20) y en las Figuras 1 y 4 se publicarán ulteriormente en un Addéndum a la presente Sección Especial.

UNION INTERNATIONALE DES TÉLÉCOMMUNICATIONS

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CULAIRE HEBDOMADAIRE / DATE
EKLY CIRCULAR / DATE
CULAR SEMANAL / FECHA 1801/24.11.87

SECTION SPÉCIALE Nº
SPECIAL SECTION No.
SECCIÓN ESPECIAL N.º **AR11/C/1179**

TION SPATIALE:
CE STATION: PACSTAR-1
ACIÓN ESPACIAL:

ou
or
o

STATION(S) TERRIENNE(S):
EARTH STATION(S): -
ESTACIÓN(ES) TERRENA(S):

STATION SPATIALE ASSOCIÉE:
ASSOCIATED SPACE STATION: -
ESTACIÓN ESPACIAL ASOCIADA:

/INISTRATION RESPONSABLE:
PONSIBLE ADMINISTRATION: PNG
/INISTRACIÓN RESPONSABLE:

RENSEIGNEMENTS REÇUS PAR LE COMITÉ LE
INFORMATION RECEIVED BY THE BOARD ON 09.06.87
INFORMACIÓN RECIBIDA POR LA JUNTA EL

eignements ont été reçus par l'IFRB en vertu du RR1074 et sont publiés en ion du RR1078. Ils font l'objet de l'une des deux procédures suivantes, indi- -dessous par un X dans la case pertinente.

This information has been received by the IFRB pursuant to RR1074 and is published in accordance with RR1078. It is subject to one of two procedures, indicated below by an X in the relevant box.

Esta información ha sido recibida por la IFRB de conformidad con RR1074 y se publica en virtud de RR1078. Está sujeta a uno de los dos procedimientos siguientes, señalado con una X en la casilla apropiada.

ie demande de coordination a été envoyée conformément au RR1073 aux ninistrations indiquées ci-dessous. Le Comité a ajouté, le cas échéant, le nbole des autres administrations (identifiées par *) dont les services sont sus- ptibles d'être affectés; pour ces administrations, cette publication tient lieu de mande de coordination (RR1077).

ute administration dont le symbole apparaît dans la présente Section Spéciale use immédiatement réception, par télégramme, des données concernant la ordination (RR1082).

A request for coordination has been sent in accordance with RR1073 to the administrations indicated below. The Board has added, as appropriate, the symbols of any other administrations (identified by *) whose services are likely to be affected; for these administrations this publication is to be considered a request for coordination (RR1077).

Any administration whose symbol appears in the present Special Section shall acknowledge receipt of the coordination data immediately by telegram (RR1082).

De conformidad con RR1073, se ha enviado una solicitud de coordinación a las administraciones indicadas más abajo. La Junta ha añadido adecuadamente el símbolo de las demás administraciones (identificadas por un *) cuyos servicios pueden resultar afectados; esas administraciones deberán considerar esta publicación como una solicitud de coordinación (RR1077).

Las administraciones cuyo símbolo aparece en la presente Sección Especial deberán acusar recibo inmediatamente por telegrama de la información referente a la coordinación (RR1082).

EMANDE DE COORDINATION (RR1060) ADRESSÉE À
EQUEST FOR COORDINATION (RR1060) ADDRESSED TO USA/IT.
OLICITUD DE COORDINACIÓN (RR1060) DIRIGIDA A

DATE LIMITE POUR LA DÉCISION (RR1084):
EXPIRY DATE FOR DECISION (RR1084): 24.03.88
FECHA LÍMITE PARA LA DECISIÓN (RR1084):

:s dispositions du RR1066 s'appliquent à ces assignations qui sont ibliées uniquement pour information.

The provisions of RR1066 apply to these assignments, which are published for information only.

Las disposiciones de RR1066 se aplican a estas asignaciones, que se publican a título de información únicamente.

ADMINISTRATION NOTIFICATRICE
NOTIFYING ADMINISTRATION
ADMINISTRACIÓN NOTIFICANTE
PAPOUASIE-NOUVELLE-GUINEE
PAPUA NEW GUINEA - PAPUA NUEVA GUINEA

ADMINISTRATION OU COMPAGNIE EXPLOITANTE
OPERATING ADMINISTRATION OR COMPANY
ADMINISTRACIÓN O COMPAÑÍA EXPLOTADORA

NOM ET ADRESSE DE L'ADMINISTRATION
NAME AND ADDRESS OF ADMINISTRATION
NOMBRE Y DIRECCIÓN DE LA ADMINISTRACIÓN
The Managing Director
Posts and Telecommunications Corporation
P.O. Box 1349
BOROKO

Les renseignements reproduits ci-dessous sont présentés sous la forme prescrite dans l'appendice 3 au Règlement des radiocommunications (sections A et D).
The information reproduced hereunder has been arranged in the form prescribed in Appendix 3 to the Radio Regulations (Sections A and D).
La información reproducida a continuación se presenta en la forma prescrita en el apéndice 3 al Reglamento de Radiocomunicaciones (secciones A y D).

STATION SPATIALE D'EMISSION
TRANSMITTING SPACE STATION
ESTACIÓN ESPACIAL TRANSMISORA

IDENTITE DU RESEAU A SATELLITE
IDENTITY OF SATELLITE NETWORK
IDENTIDAD DE LA RED DE SATÉLITE

PACSTAR-1

REFERENCE A LA CIRCULAIRE HEBDOMADAIRE RELATIVE AU NUMERO 1
REFERENCE OF WEEKLY CIRCULAR RELATING TO No. 1042
REFERENCIA A LA CIRCULAR SEMANAL RELATIVA AL NÚMERO 1042

AR11/A/200/1676

SATELLITE GEOSTATIONNAIRE / *GEOSTATIONARY SATELLITE* / SATÉLITE GEOSTACIONARIO

NOM DE LA STATION SPATIALE D'EMISSION *NAME OF TRANSMITTING SPACE STATION* NOMBRE DE LA ESTACIÓN ESPACIAL TRANSMISORA	DATE DE MISE EN SERVICE *DATE OF BRINGING INTO USE* FECHA DE PUESTA EN SERVICIO	5 RENSEIGNEMENTS RELATIFS A L'ORBITE/*ORBITAL INFORMATION*/INFORMACIÓN RELATIVA A LA ÓRBITA						RES 4 CAMR-1979 - WARC-1979	HORAIRE MAXIMAL DE FONCTIONNEMENT SUR CHAQUE PORTEUSE (UTC) *MAXIMUM HOURS OF OPERATION ON EACH CARRIER (UTC)* HORARIO MÁXIMO DE FUNCIONAMIENTO CON CADA PORTADOR. (UTC)
		LONGITUDE NOMINALE *NOMINAL LONGITUDE* LONGITUD NOMINAL	TOLERANCES *TOLERANCES* TOLERANCIAS		ARC DE VISIBILITE *VISIBILITY ARC* ARCO VISIBLE	ARC DE SERVICE *SERVICE ARC* ARCO DE SERVICIO	DIFFERENCE *DIFFERENCE* DIFERENCIA	DUREE DE VALIDITE *PERIOD OF VALIDITY* DURACIÓN DE VALIDEZ	
			LONGITUDE *LONGITUDE* LONGITUD	INCLINAISON *INCLINATION* INCLINACIÓN					
4	3	5 a	5 a	5 a	5 a 1	5 a 2	5 a 3	ans - years - años	
PACSTAR-1	01.11.1989	167,45°E	± 0,05°	0,05°	Non existant Non-existent No existe	165°E-175°W	-	20	00-24

FREQUENCE ASSIGNEE *ASSIGNED FREQUENCY* FRECUENCIA ASIGNADA	BANDE DE FREQUENCES ASSIGNEE *ASSIGNED FREQUENCY BAND* BANDA DE FRECUENCIAS ASIGNADA	ZONE(S) DE SERVICE OU STATION(S) AVEC LAQUELLE (LESQUELLES) LA COMMUNICATION DOIT ETRE ETABLIE *SERVICE AREA(S) OR STATION(S) WITH WHICH COMMUNICATION IS TO BE ESTABLISHED* ZONA(S) DE SERVICIO O ESTACIÓN(ES) CON LA(S) QUE SE ESTABLECERÁ LA COMUNICACIÓN	CLASSE DE STATION ET NATURE DU SERVICE *CLASS OF STATION AND NATURE OF SERVICE* CLASE DE ESTACIÓN Y NATURALEZA DEL SERVICIO	CLASSE D'EMISSION, LARGEUR DE BANDE NECESSAIRE ET NATURE DE LA TRANSMISSION *CLASS OF EMISSION, NECESSARY BANDWIDTH AND DESCRIPTION OF TRANSMISSION* CLASE DE EMISIÓN, ANCHURA DE BANDA NECESARIA Y DESCRIPCIÓN DE LA TRANSMISIÓN	FREQUENCE(S) PORTEUSE(S) *CARRIER FREQUENCY(IES)* FRECUENCIA(S) PORTADORA(S)	CARACTERISTIQUES DE PUISSANCE *POWER CHARACTERISTICS* CARACTERISTICAS DE POTENCIA			CARACTERISTIQUES DE L'ANTENNE *ANTENNA CHARACTERISTICS* CARACTERISTICAS DE LA ANTENA				CARACTERISTIQUES DE MODULATION *MODULATION CHARACTERISTICS* CARACTERÍSTICAS DE MODULACIÓN	Faisceau - Beam - Haz RENSEIGNEMENTS SUPPLEMENTAIRES *SUPPLEMENTARY INFORMATION* INFORMACIÓN COMPLEMENTARIA
						PUISSANCE DE CRETE *PEAK POWER* POTENCIA DE CRESTA	PUISSANCE TOTALE DE CRETE *TOTAL PEAK POWER* POTENCIA TOTAL DE CRESTA	DENSITE MAXIMALE DE PUISSANCE *MAXIMUM POWER DENSITY* DENSIDAD MÁXIMA DE POTENCIA	DIAGRAMME DE RAYONNEMENT *RADIATION DIAGRAM* DIAGRAMA DE RADIACIÓN	POLARISATION *POLARIZATION* POLARIZACIÓN	PRECISION DE POINTAGE *POINTING ACCURACY* PRECISIÓN DE ORIENTACIÓN	GAIN DANS LA DIRECTION DE L'ORBITE *GAIN IN THE DIRECTION OF THE ORBIT* GANANCIA EN EL SENTIDO DE LA ÓRBITA		
1	2	6	7	8 a, 8 c*	8 b	9 a*	9 b	9 b	10 a–10 b	10 c*	10 d	10 e	11*	(g)
MHz	kHz				MHz	dBW	dBW	dBW/Hz						
4 165 4 116 4 076 4 036 3 978 3 902 3 826 3 750 3 665	54 000 36 000 36 000 36 000 72 000 72 000 72 000 72 000 90 000	Fig. 1	EC	64K0G7D			-23,0	-70,8	Fig. 1 Gmax: +36,0 dB		± 0,1°			SPOT-1
				26M0F9W			4,0	-59,0						
		Fig. 2		64K0G7D			-21,2	-69,0	Fig. 2 Gmax: +36,0 dB					SPOT-2
				26M0F9W			2,8	-60,2						
		Fig. 3		64K0G7D			-21,2	-69,0	Fig. 3 Gmax: +36,0 dB					SPOT-3
				26M0F9W			2,8	-60,2						
		Fig. 4		64K0G7D			-32,0	-80,0	Fig. 4 Gmax: +36,0 dB					SPOT-4
				26M0F9W			-6,0	-69,0						
				1M00G7D			-18,8	-78,8						
		Fig. 5		64K0G7D			-18,6	-66,4	Fig. 5 Gmax: +36,0 dB					CENT.PAC
				26M0F9W			7,8	-55,2						
		Fig. 6		64K0G7D			-18,6	-66,4	Fig. 6 Gmax: +36,0 dB					WEST PAC
				26M0F9W			7,8	-55,2						
				1M00G7D			-10,2	-70,2						

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1	2	6	7	8 a, 8 c*	8 b	9 a *	9 b	9 b	10 a–10 b	10 c*	10 d	10 e	11*	(g)
MHz	kHz				MHz	dBW	dBW	dBW/Hz						
12 616 12 540 12 464 12 388 12 312 12 236	72 000 72 000 72 000 72 000 72 000 72 000	Fig. 7	EC	64K0G7D			-23,0	-70,8	Fig. 7 Gmax: +45,9 dB		± 0,1°	Fig. 8		SPOT-5
				26M0F9W			5,5	-57,5						
				1M00G7D			-13,0	-73,0						
		Fig. 9		64K0G7D			-24,8	-72,5	Fig. 9 Gmax: +45,9 dB					SPOT-6
				26M0F9W			5,5	-57,5						
				1M00G7D			-13,0	-73,0						
12 120 12 044 11 968 11 892 11 816 11 740	72 000 72 000 72 000 72 000 72 000 72 000	Fig. 10		64K0G7D			-28,8	-76,5	Fig. 10 Gmax: +44,5 dB			—		SPOT-7
				26M0F9W			-1,0	-64,0						
				1M00G7D			-17,0	-77,0						

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STATION(S) TERRIENNE(S) D'EMISSION
TRANSMITTING EARTH STATION(S)
ESTACIÓN(ES) TERRENA(S) TRANSMISORA(S)

DATE DE MISE EN SERVICE *DATE OF BRINGING INTO USE* FECHA DE PUESTA EN SERVICIO	NOM DE LA STATION TERRIENNE D'EMISSION *NAME OF TRANSMITTING EARTH STATION* NOMBRE DE LA ESTACIÓN TERRENA TRANSMISORA	PAYS *COUNTRY* PAÍS	LONGITUDE ET LATITUDE DE L'EMPLACEMENT DE LA STATION TERRIENNE D'EMISSION *LONGITUDE AND LATITUDE OF TRANSMITTING EARTH STATION SITE* LONGITUD Y LATITUD DE LA UBICACIÓN DE LA ESTACIÓN TERRENA TRANSMISORA	CARACTERISTIQUES DE L'ANTENNE *ANTENNA CHARACTERISTICS* CARACTERÍSTICAS DE LA ANTENNA			STATION(S) SPATIALE(S) AVEC LAQUELLE (LESQUELLES) LA COMMUNICATION DOIT ETRE ETABLIE *SPACE STATION(S) WITH WHICH COMMUNICATION IS TO BE ESTABLISHED* ESTACIÓN(ES) ESPACIAL(ES) CON LA(S) QUE SE ESTABLECERÁ LA COMUNICACIÓN	HORAIRE MAXIMAL DE FONCTIONNEMENT SUR CHAQUE PORTEUSE (UTC) *MAXIMUM HOURS OF OPERATION ON EACH CARRIER (UTC)* HORARIO MAXIMO DE FUNCIONAMIENTO CON CADA PORTADOR (UTC)
				ANGLE DE SITE MINIMAL *MINIMUM ANGLE OF ELEVATION* ÁNGULO MÍNIMO DE ELEVACIÓN	LIMITES D'AZIMUT *AZIMUTHAL LIMITS* LÍMITES DE ACIMUT	ALTITUDE (m) ALTITUD (m)		
3	4 a	4 b	4 c	9 e	9 f	9 h	5	(g)
	Stations terriennes à caractéristiques typiques Earth stations with typical characteristics Estaciones terrenas con características tipo	PNG	A l'intérieur des zones de service Within the service areas Dentro de las zonas de servicio				PACSTAR-1 (167,45°E)	00-24

FREQUENCE ASSIGNEE *ASSIGNED FREQUENCY* FRECUENCIA ASIGNADA	BANDE DE FREQUENCES ASSIGNEE *ASSIGNED FREQUENCY BAND* BANDA DE FRECUENCIAS ASIGNADA	CLASSE DE STATION ET NATURE DU SERVICE *CLASS OF STATION AND NATURE OF SERVICE* CLASE DE ESTACION Y NATURALEZA DEL SERVICIO	CLASSE D'EMISSION, LARGEUR DE BANDE NECESSAIRE ET NATURE DE LA TRANSMISSION *CLASS OF EMISSION, NECESSARY BANDWIDTH AND DESCRIPTION OF TRANSMISSION* CLASE DE EMISION, ANCHURA DE BANDA NECESARIA Y DESCRIPCION DE LA TRANSMISION	FREQUENCE(S) PORTEUSE(S) *CARRIER FREQUENCY (IES)* FRECUENCIA(S) PORTADORA(S)	PUISSANCE DE CRETE *PEAK POWER* POTENCIA DE CRESTA	PUISSANCE TOTALE DE CRETE *TOTAL PEAK POWER* POTENCIA TOTAL DE CRESTA	DENSITE MAXIMALE DE PUISSANCE *MAXIMUM POWER DENSITY* DENSIDAD MAXIMA DE POTENCIA	GAIN ISOTROPE *ISOTROPIC GAIN* GANANCIA ISÓTROPA	OUVERTURE DU FAISCEAU A DEMI-PUISSANCE *HALF POWER BEAMWIDTH* ABERTURA DEL HAZ DE MEDIA POTENCIA	DIAGRAMME DE RAYONNEMENT *RADIATION DIAGRAM* DIAGRAMA DE RADIACIÓN	POLARISATION *POLARIZATION* POLARIZACION	CARACTERISTIQUES DE MODULATION *MODULATION CHARACTERISTICS* CARACTERISTICAS DE MODULACION	Station - Estación	FAISCEAU BEAM HAZ
1	2	6	7a, 7c *	7b *	8a *	8b	8b	9a	9b	9c	9g *	10 *		(g)
MHz	kHz					dBW	dBW/Hz	dB					m	
7 042 6 993 6 953 6 913 6 855 6 779 6 703 6 627 6 542	54 000 36 000 36 000 36 000 72 000 72 000 72 000 72 000 90 000	TC	64K0G7D			3,3	-44,5	+42,6	1,28°	29 - 25 log φ			2,5	PAC. REG
			1M00G7D			13,0	-47,0							
			26M0F9W			23,1	-39,9	+51,7	0,43°				7	
			64K0G7D			-7,4	-56,0							
			1M00G7D			4,1	-55,9							
14 456 14 380 14 304 14 228 14 152 14 076	72 000 72 000 72 000 72 000 72 000 72 000		64K0G7D			3,0	-44,8	+42,7	1,23°				1,2	SPOT-5
			1M00G7D			18,5	-41,5							
			64K0G7D			-1,5	-49,3	+46,1	0,82°				1,8	
			1M00G7D			10,0	-50,0							
			26M0F9W			25,8	-38,8	+54,1	0,33°				4,5	
			1M00G7D			8,1	-51,9							
			64K0G7D			-2,1	-49,9							
			64K0G7D			-1,5	-49,3	+46,1	0,82°				1,8	SPOT-6
			1M00G7D			10,0	-50,0							
			26M0F9W			25.8	-38,8	+54,1	0,33°				4,5	
			1M00G7D			8,1	-51,9							
			64K0G7D			-2,1	-49,9							

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1	2	6	7 a, 7 c *	7 b *	8 a *	8 b	8 b	9 a	9 b	9 c	9 g *	10 *		(g)
MHz	kHz					dBW	dBW/Hz	dB					m	
14 456 14 380 14 304 14 228 14 152 14 076	72 000 72 000 72 000 72 000 72 000 72 000	TC	64K0G7D			-3,0	-50,8	+49,8	0,55°	29 - 25 log φ			2,7	SPOT-7
			1M00G7D			13,5	-46,5							
			26M0F9W			25,8	-38,8	+54,1	0,33°				4,5	
			1M00G7D			8,1	-51,9							
			64K0G7D			-2,1	-49,9							

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STATION SPATIALE DE RECEPTION
RECEIVING SPACE STATION
ESTACIÓN ESPACIAL RECEPTORA

NOM DE LA STATION SPATIALE DE RECEPTION *NAME OF RECEIVING SPACE STATION* NOMBRE DE LA ESTACIÓN ESPACIAL RECEPTORA	DATE DE MISE EN SERVICE *DATE OF BRINGING INTO USE* FECHA DE PUESTA EN SERVICIO	SATELLITE GEOSTATIONNAIRE / *GEOSTATIONARY SATELLITE* / SATÉLITE GEOSTACIONARIO							HORAIRE MAXIMAL DE FONCTIONNEMENT SUR CHAQUE PORTEUSE (UTC) *MAXIMUM HOURS OF OPERATION ON EACH CARRIER (UTC)* HORARIO MAXIMO DE FUNCIONAMIENTO CON CADA PORTADORA (UTC)
		5 RENSEIGNEMENTS RELATIFS A L'ORBITE/*ORBITAL INFORMATION*/INFORMACIÓN RELATIVA A LA ÓRBITA						RES 4 CAMR–1979 – WARC–1979	
		LONGITUDE NOMINALE *NOMINAL LONGITUDE* LONGITUD NOMINAL	TOLERANCES *TOLERANCES* TOLERANCIAS LONGITUDE *LONGITUDE* LONGITUD	 INCLINAISON *INCLINATION* INCLINACIÓN	ARC DE VISIBILITE *VISIBILITY ARC* ARCO VISIBLE	ARC DE SERVICE *SERVICE ARC* ARCO DE SERVICIO	DIFFERENCE *DIFFERENCE* DIFERENCIA	DUREE DE VALIDITE *PERIOD OF VALIDITY* DURACIÓN DE VALIDEZ	
4	3	5a	5a	5a	5a1	5a2	5a3	ans – years – años	
PACSTAR-1	01.11.1989	167,45°E	± 0.05°	0.05°	Non existant Non-existent No existe	165°E-175°W	-	20	00-24

FREQUENCE ASSIGNEE *ASSIGNED FREQUENCY* FRECUENCIA ASIGNADA 1	BANDE DE FREQUENCE ASSIGNEE *ASSIGNED FREQUENCY BAND* BANDA DE FRECUENCIAS ASIGNADA 2	ZONE(S) DE SERVICE OU STATION(S) AVEC LAQUELLE (LESQUELLES) LA COMMUNICATION DOIT ETRE ETABLIE *SERVICE AREA(S) OR STATION(S) WITH WHICH COMMUNICATION IS TO BE ESTABLISHED* ZONA(S) DE SERVICIO O ESTACIÓN(ES) CON LA(S) QUE SE ESTABLECERÁ LA COMUNICACIÓN 6	CLASSE DE STATION ET NATURE DU SERVICE *CLASS OF STATION AND NATURE OF SERVICE* CLASE DE ESTACIÓN Y NATURALEZA DEL SERVICIO 7	CLASSE D'EMISSION, LARGEUR DE BANDE NECESSAIRE ET NATURE DE LA TRANSMISSION *CLASS OF EMISSION, NECESSARY BANDWIDTH AND DESCRIPTION OF TRANSMISSION* CLASE DE EMISIÓN ANCHURA DE BANDA NECESARIA Y DESCRIPCIÓN DE LA TRANSMISIÓN 8a, 8c*	FREQUENCE(S) PORTEUSE(S) *CARRIER FREQUENCY(IES)* FRECUENCIA(S) PORTADORA(S) 8b*	CARACTERISTIQUES DE L'ANTENNE *ANTENNA CHARACTERISTICS* CARACTERÍSTICAS DE LA ANTENA DIAGRAMME DE RAYONNEMENT *RADIATION DIAGRAM* DIAGRAMA DE RADIACIÓN 9a, 9b	POLARISATION *POLARIZATION* POLARIZACIÓN 9c*	PRECISION DE POINTAGE *POINTING ACCURACY* PRECISIÓN DE ORIENTACIÓN 9d	GAIN DANS LA DIRECTION DE L'ORBITE *GAIN IN THE DIRECTION OF THE ORBIT* GANANCIA EN EL SENTIDO DE LA ÓRBITA 9e	TEMPERATURE DE BRUIT DU SYSTEME DE RECEPTION *RECEIVING SYSTEM NOISE TEMPERATURE* TEMPERATURA DE RUIDO DEL SISTEMA RECEPTOR 10	RENSEIGNEMENTS SUPPLEMENTAIRES *SUPPLEMENTARY INFORMATION* INFORMACIÓN COMPLEMENTARIA FAISCEAU BEAM HAZ (g)
MHz	kHz				MHz					K	
7 042 6 993 6 953 6 913 6 855 6 779 6 703 6 627 6 542	54 000 36 000 36 000 36 000 72 000 72 000 72 000 72 000 90 000	Fig. 11	EC	64K0G7D 26M0F9W 1M00G7D		Fig. 11 Gmax: +26,0 dB		± 0,10°	-	630	PAC-REG
14 456 14 380 14 304 14 228 14 152 14 076	72 000 72 000 72 000 72 000 72 000 72 000	Fig. 7		64K0G7D 26M0F9W 1M00G7D		Fig. 7 Gmax: +46,8 dB			Fig. 12	1050	SPOT-5
		Fig. 9		64K0G7D 26M0F9W 1M00G7D		Fig. 9 Gmax: +46,8 dB					SPOT-6
		Fig. 10		64K0G7D 26M0F9W 1M00G7D		Fig. 10 Gmax: +44,8 dB			Fig. 13		SPOT-7

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STATION(S) TERRIENNE(S) DE RECEPTION
RECEIVING EARTH STATION(S)
ESTACIÓN(ES) TERRENA(S) RECEPTORA(S)

DATE DE MISE EN SERVICE *DATE OF BRINGING INTO USE* FECHA DE PUESTA EN SERVICIO	NOM DE LA STATION TERRIENNE DE RECEPTION *NAME OF RECEIVING EARTH STATION* NOMBRE DE LA ESTACIÓN TERRENA RECEPTORA	PAYS *COUNTRY* PAIS	LONGITUDE ET LATITUDE DE L'EMPLACEMENT DE LA STATION TERRIENNE DE RECEPTION *LONGITUDE AND LATITUDE OF RECEIVING EARTH STATION SITE* LONGITUD Y LATITUD DE LA UBICACION DE LA ESTACION TERRENA RECEPTORA	CARACTERISTIQUES DE L'ANTENNE *ANTENNA CHARACTERISTICS* CARACTERISTICAS DE LA ANTENA			STATION(S) SPATIALE(S) AVEC LAQUELLE (LESQUELLES) LA COMMUNICATION DOIT ETRE ETABLIE *SPACE STATION(S) WITH WHICH COMMUNICATION IS TO BE ESTABLISHED* ESTACION(ES) ESPACIAL(ES) CON LA(S) QUE SE ESTABLECERA LA COMUNICACION	HORAIRE MAXIMAL DE FONCTIONNEMENT SUR CHAQUE PORTEUSE (UTC) *MAXIMUM HOURS OF OPERATION ON EACH CARRIER (UTC)* HORARIO MAXIMO DE FUNCIONAMIENTO CON CADA PORTADORA (UTC)
				ANGLE DE SITE MINIMAL *MINIMUM ANGLE OF ELEVATION* ANGULO MINIMO DE ELEVACIÓN	LIMITES D'AZIMUT *AZIMUTHAL LIMITS* LIMITES DE ACIMUT	ALTITUDE (m) ALTITUD (m)		
3	4 a	4 b	4 c	8 e	8 f	8 g	5	(q)
	Stations terriennes à caractéristiques typiques Earth stations with typical characteristics Estaciones terrenas con características tipo	PNG	A l'intérieur des zones de service Within the service areas Dentro de las zonas de servicio				PACSTAR-1 (167,45°E)	00-24

FREQUENCE ASSIGNEE *ASSIGNED FREQUENCY* FRECUENCIA ASIGNADA	BANDE DE FREQUENCES ASSIGNEE *ASSIGNED FREQUENCY BAND* BANDA DE FRECUENCIAS ASIGNADA	CLASSE DE STATION ET NATURE DU SERVICE *CLASS OF STATION AND NATURE OF SERVICE* CLASE DE ESTACION Y NATURALEZA DEL SERVICIO	CLASSE D'EMISSION, LARGEUR DE BANDE NECESSAIRE ET NATURE DE LA TRANSMISSION *CLASS OF EMISSION, NECESSARY BANDWIDTH AND DESCRIPTION OF TRANSMISSION* CLASE DE EMISION, ANCHURA DE BANDA NECESARIA Y DESCRIPCION DE LA TRANSMISION	FREQUENCE(S) PORTEUSE(S) *CARRIER FREQUENCY(IES)* FRECUENCIA(S) PORTADORA(S)	GAIN ISOTROPE *ISOTROPIC GAIN* GANANCIA ISOTROPA	OUVERTURE DU FAISCEAU A DEMI PUISSANCE *HALF POWER BEAMWIDTH* ABERTURA DEL HAZ DE MEDIA POTENCIA	DIAGRAMME DE RAYONNEMENT *RADIATION DIAGRAM* DIAGRAMA DE RADIACION	TEMPERATURE DE BRUIT DU SYSTEME DE RECEPTION *RECEIVING SYSTEM NOISE TEMPERATURE* TEMPERATURA DE RUIDO DEL SISTEMA RECEPTOR	TEMPERATURE EQUIVALENTE DE BRUIT DE LA LIAISON PAR SATELLITE (VALEUR LA PLUS FAIBLE) *LOWEST EQUIVALENT SATELLITE LINK NOISE TEMPERATURE* TEMPERATURA EQUIVALENTE DE RUIDO DEL ENLACE POR SATELITE (LA MAS BAJA)		GAIN DE TRANSMISSION *TRANSMISSION GAIN* GANANCIA DE TRANSMISION	Station - Estación	FAISCEAU BEAM HAZ
1	2	6	7 a, 7 c *	7 b *	8 a	8 b	8 c	9 a	9 b		9 c		(g)
MHz	kHz			MHz	dB			K	K		dB	m	
4 165 4 116 4 076 4 036 3 978 3 902 3 826 3 750 3 665	54 000 36 000 36 000 36 000 72 000 72 000 72 000 72 000 90 000	TC	64K0G7D		+37,9	2,15°	29 - 25 log φ	-	125,6		-16,1	2,5	SPOT-1
			26M0F9W						120,7		-17,7		
			64K0G7D						110,9	Note 1 Nota	-30,6		
			26M0F9W						111,4		-28,6		
			64K0G7D						139,8		-13,3		SPOT-2
			26M0F9W						142,3		-12,9		
			64K0G7D						111,7	Note 1 Nota	-27,8		
			26M0F9W						111,1		-29,6		
			64K0G7D						139,8		-13,3		SPOT-3
			26M0F9W						142,3		-12,9		
			64K0G7D						111,7	Note 1 Nota	-27,8		
			26M0F9W						111,2		-29,6		

* Cette information n'est necessaire que si elle a servi comme base pour effectuer la coordination avec une autre administration

This information need only be supplied when it has been used to effect coordination with another administration

Esta informacion debera suministrarse solo cuando haya sido utilizada como base para efectuar la coordinacion con otra administracion

1	2	6	7 a, 7 c *	7 b *	8 a	8 b	8 c	9 a	9 b		9 c		(g)
MHz	kHz			MHz	dB			K	K		dB	m	
4 165 4 116 4 076 4 036 3 978 3 902 3 826 3 750 3 665	54 000 36 000 36 000 36 000 72 000 72 000 72 000 72 000 90 000		64K0G7D		+46,8	0,77°	29 - 25 log φ	-	101,5		-13,8	7	SPOT-4
			26M0F9W						101,5		-13,8		
			1M00G7D						111,5		-13,7		
			64K0G7D						76,4	Note 1 Nota	-28,7		
			26M0F9W						76,4		-28,7		
			1M00G7D						86,4		-28,7		
			64K0G7D		+37,9	2,15°			118,1		-18,9	2,5	CENT. PAC
			26M0F9W						119,3		-18,3		
			64K0G7D						110,4	Note 1 Nota	-33,8		
			26M0F9W						111,3		-29,2		
			64K0G7D						121,9		-17,3		WEST PAC
			26M0F9W						118,1		-18,9		
			64K0G7D						110,7	Note 1 Nota	-31,8		
			26M0F9W						111,1		-29,8		
			64K0G7D		+46,8	0,77°			343,6		-4,3	7	
			26M0F9W						173,6		-10,0		
			1M00G7D						178,0		-8,3		
			64K0G7D						90,4	Note 1 Nota	-24,9		
			26M0F9W						93,4		-24,9		
			1M00G7D						90,4		-22,9		

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* Cette information n'est nécessaire que si elle a servi comme base pour effectuer la coordination avec une autre administration
This information need only be supplied when it has been used to effect co-ordination with another administration
Esta información deberá suministrarse sólo cuando haya sido utilizada como base para efectuar la coordinación con otra administración

1	2	6	7 a, 7 c *	7 b *	8 a	8 b	8 c	9 a	9 b		9 c		(g)
MHz	kHz			MHz	dB			K	K		dB	m	
12 616 12 540 12 464 12 388 12 312 12 236	72 000 72 000 72 000 72 000 72 000 72 000	TC	64K0G7D		+41,9	1,23°	29 - 25 log φ	-	177,6		-26,0	1,2	SPOT-5
			26M0F9W						284,7		-9,8		
			64K0G7D						224,1	Note 1 Nota	-11,1		
			26M0F9W						218,8		-11,6		
			64K0G7D		+45,5	0,93°			180,9		-22,5	1,8	
			26M0F9W						421,3		-6,3		
			1M00G7D						155,9		-22,5		
			64K0G7D						285,6	Note 1 Nota	-7,6		
			26M0F9W						273,5		-8,1		
			1M00G7D						185,0		-12,6		
			64K0G7D		+53,1	0,38°			187,1		-14,5	4,5	
			26M0F9W						791,0		-2,3		
			1M00G7D						187,1		-14,5		
			64K0G7D						865,9	Note 1 Nota	0,4		
			26M0F9W						765,8		-0,1		
			1M00G7D						368,5		-4,6		
			64K0G7D		+45,5	0,93°			180,9		-22,5	1,8	SPOT-6
			26M0F9W						421,3		-6,3		
			1M00G7D						155,9		-22,5		
			64K0G7D						285,6	Note 1 Nota	-7,6		
			26M0F9W						273,5		-8,1		
			1M00G7D						185,0		-12,6		

* Cette information n'est nécessaire que si elle a servi comme base pour effectuer la coordination avec une autre administration

This information need only be supplied when it has been used to effect co-ordination with another administration

Esta información deberá suministrarse sólo cuando haya sido utilizada como base para efectuar la coordinación con otra administración

1	2	6	7 a, 7 c *	7 b *	8 a	8 b	8 c	9 a	9 b		9 c		(g)
MHz	kHz			MHz	dB			K	K		dB	m	
12 616 12 540 12 464 12 388 12 312 12 236	72 000 72 000 72 000 72 000 72 000 72 000	TC	64K0G7D		+53,1	0,38°	29 - 25 log φ	-	187,1		-14,5	4,5	SPOT-6
			26M0F9W						791,0		-2,3		
			1M00G7D						187,1		-14,5		
			64K0G7D						865,9	Note 1 Nota 1	0,4		
			26M0F9W						765,8		-0,1		
			1M00G7D						368,5		-4,6		
12 120 12 044 11 968 11 892 11 816 11 740			64K0G7D		+48,6	0,63°			154,7		-23,5	2,7	SPOT-7
			26M0F9W						179,7		-23,4		
			1M00G7D						154,7		-23,5		
			64K0G7D						238,3	Note 1 Nota 1	-8,5		
			26M0F9W						263,3		-8,5		
			1M00G7D						205,7		-10,5		
			64K0G7D		+52,7	0,39°			163,2		-19,0	4,5	
			26M0F9W										
			1M00G7D										
			64K0G7D						395,2	Note 1 Nota 1	-4,1		
			26M0F9W						631,0		-4,1		
			1M00G7D						304,7		-6,1		

* Cette information n'est nécessaire que si elle a servi comme base pour effectuer la coordination avec une autre administration

This information need only be supplied when it has been used to effect co-ordination with another administration

Esta información deberá suministrarse sólo cuando haya sido utilizada como base para efectuar la coordinación con otra administración

NOTE 1

Valeurs supplémentaires de Teq et de Gamma

Le réseau PACSTAR comporte la possibilité de commutation de faisceaux et permet la réception, par une seule station terrienne, des émissions de stations terriennes utilisant différentes fréquences et différentes caractéristiques d'émission.

Cette possibilité se traduit par des valeurs supplémentaires de température de bruit sur la liaison par satellite (Teq) et de gain de transmission (Gamma) à la station terrienne de réception.

NOTE 1

Additional values of Teq and Gamma

The PACSTAR network includes the capability of beam switching and that earth station emissions employing different frequencies and transmission characteristics will be received by a single earth station.

This capability results in additional values for satellite link noise temperature (Teq) and transmission gain (Gamma) at the receiving earth station.

NOTA 1

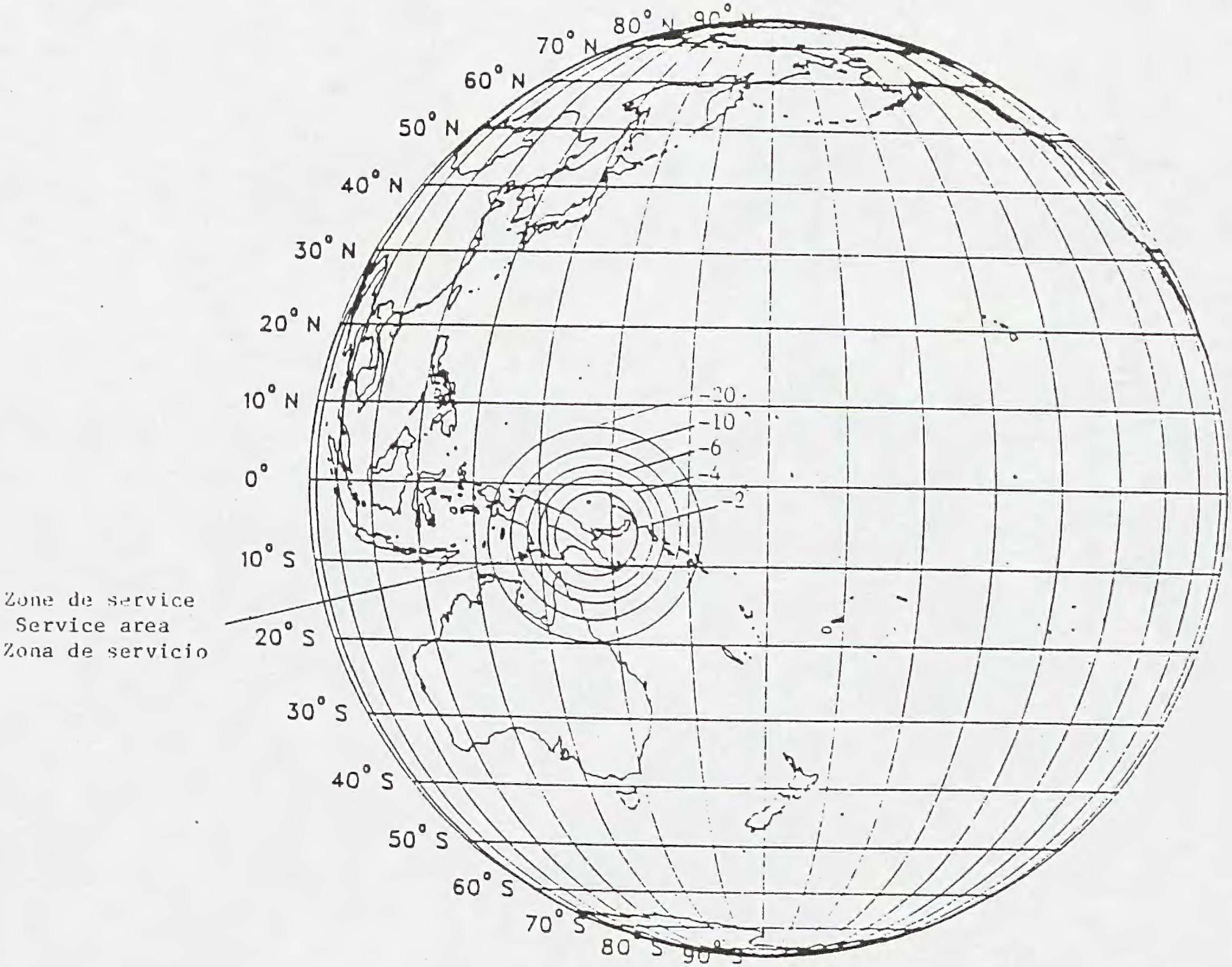
Valores adicionales de Teq y de Gama

La red PACSTAR tiene la posibilidad de cambiar de haz y las emisiones de estaciones terrenas que utilicen diferentes frecuencias y características de transmisión serán recibidas por una sola estación terrena.

Esta posibilidad da como resultado otros valores de temperatura de ruido del enlace de satélite (Teq) y de ganancia de transmisión (Gama) en la estación terrena receptora.

Figure
1
Figura

CONTOURS DE GAIN DE L'ANTENNE D'EMISSION DE LA STATION SPATIALE
SPACE STATION TRANSMITTING ANTENNA GAIN CONTOURS
CURVAS DE GANANCIA DE LA ANTENA TRANSMISORA DE LA ESTACION ESPACIAL



Faisceau
Beam
Haz

SPOT 1

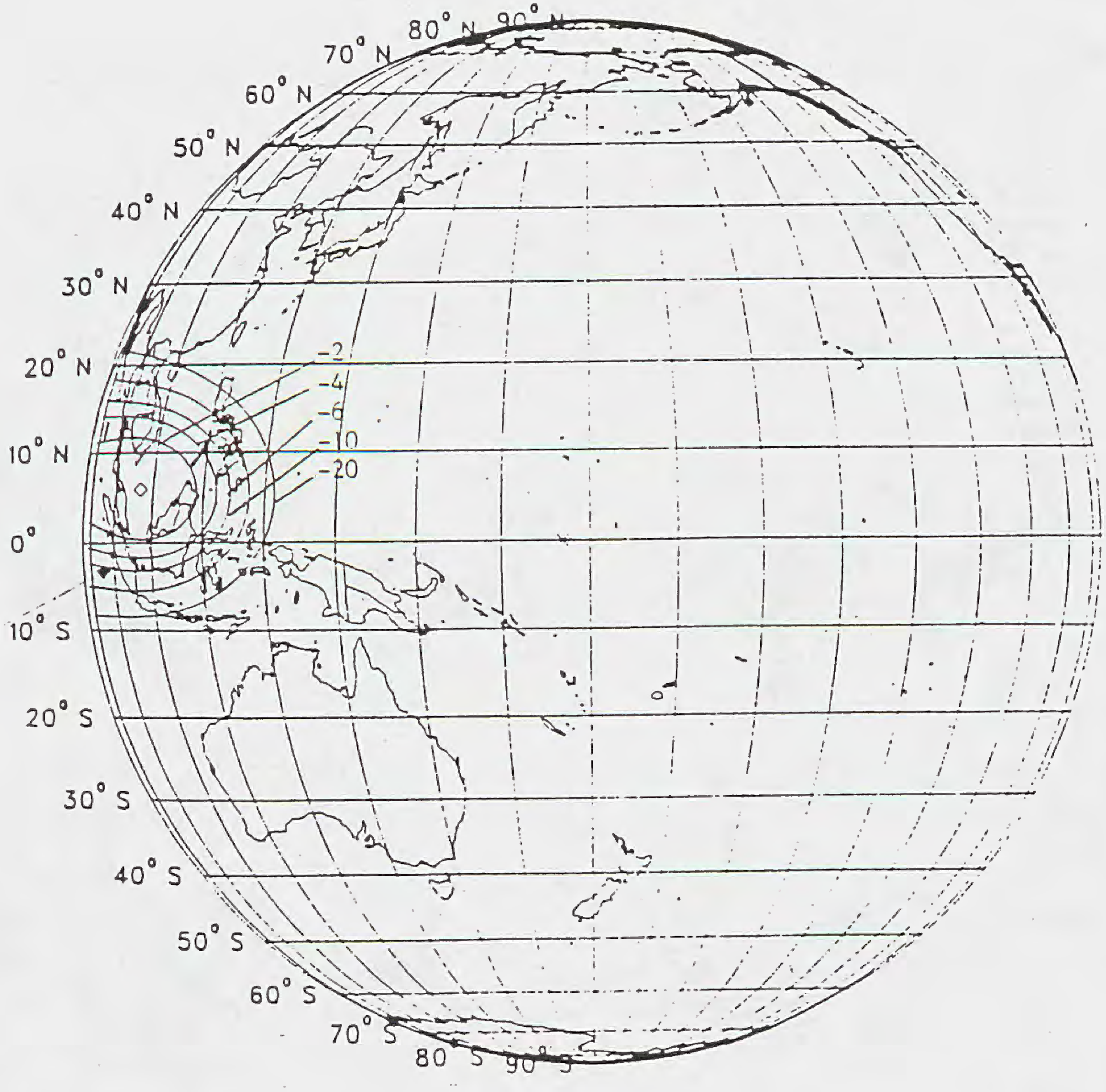
Bande
Band
Banda

3/4 GHz

Gmax: +36,0 dB

Figure
2
Figura

CONTOURS DE GAIN DE L´ANTENNE D´EMISSION DE LA STATION SPATIALE
SPACE STATION TRANSMITTING ANTENNA GAIN CONTOURS
CURVAS DE GANANCIA DE LA ANTENA TRANSMISORA DE LA ESTACION ESPACIAL

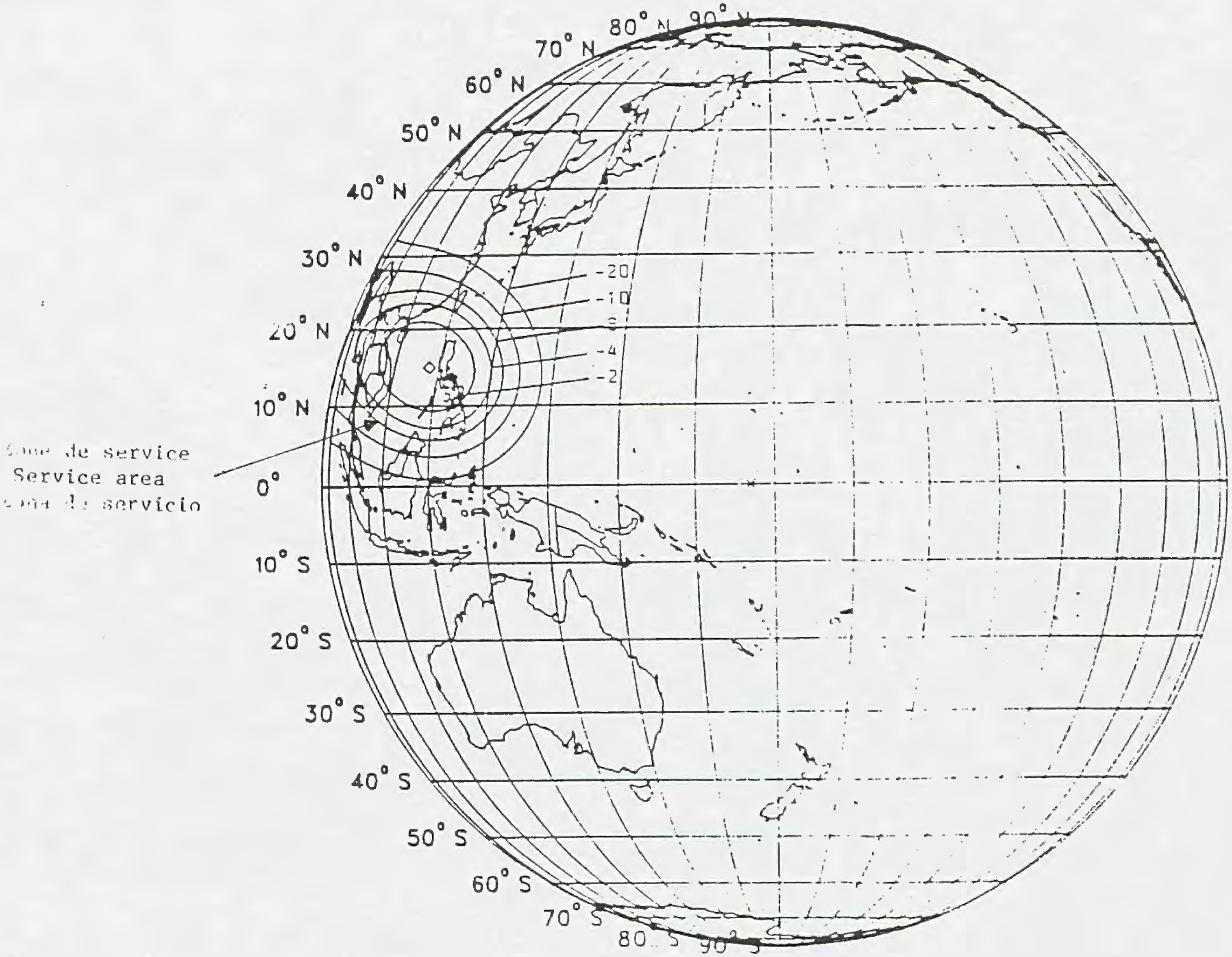


de service
Service area
Zona de servicio

Faisceau Beam	SPOT 2	Bande Band	3/4 GHz	Gmax: +36,0 dB

Figure
3
Figura

CONTOURS DE GAIN DE L´ANTENNE D´EMISSION DE LA STATION SPATIALE
SPACE STATION TRANSMITTING ANTENNA GAIN CONTOURS
CURVAS DE GANANCIA DE LA ANTENA TRANSMISORA DE LA ESTACION ESPACIAL



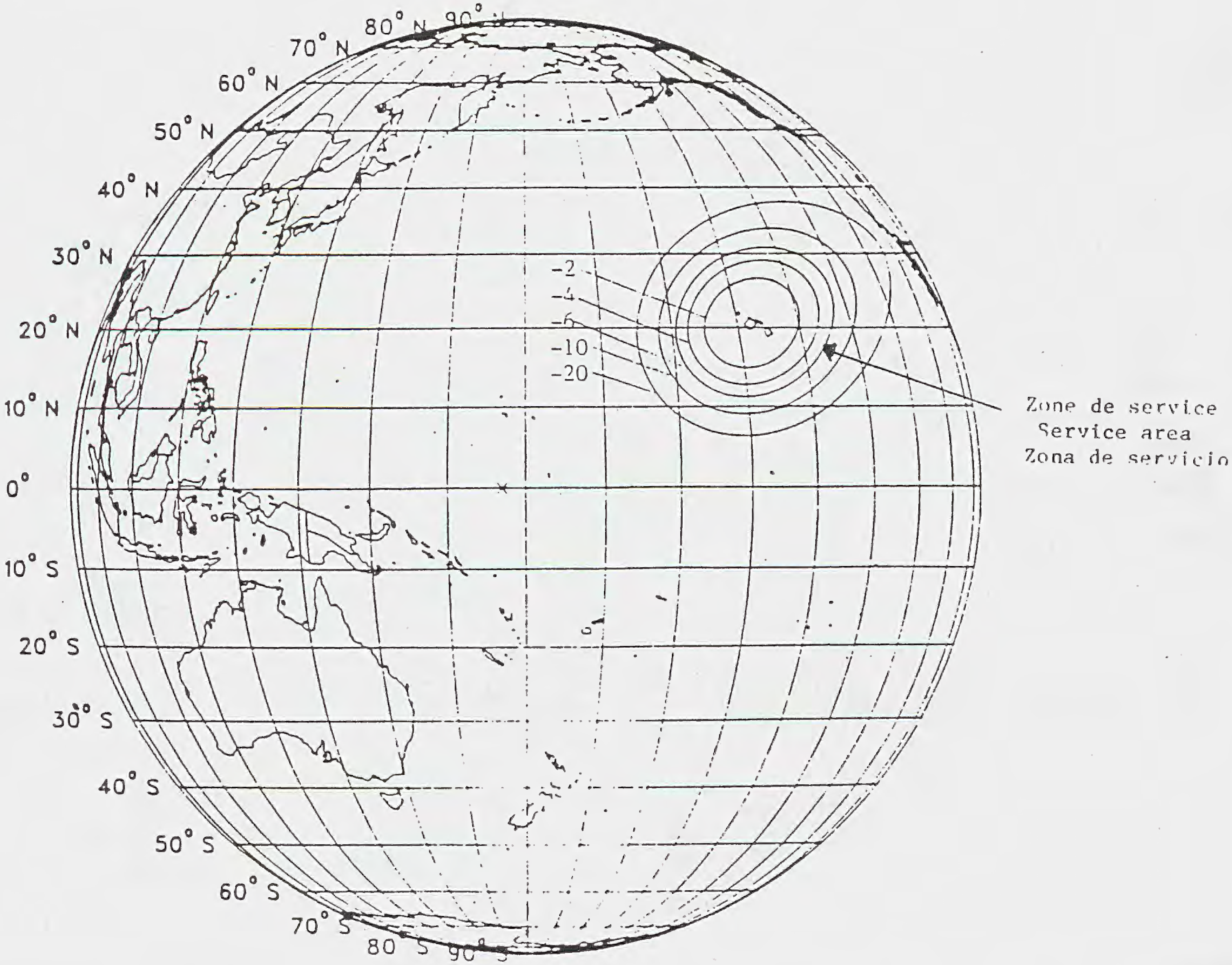
Faisceau
Beam
Haz
SPOT-3

Bande
Band
Banda
3/4 GHz

Gmax: +36,0 dB

Figure
4
Figura

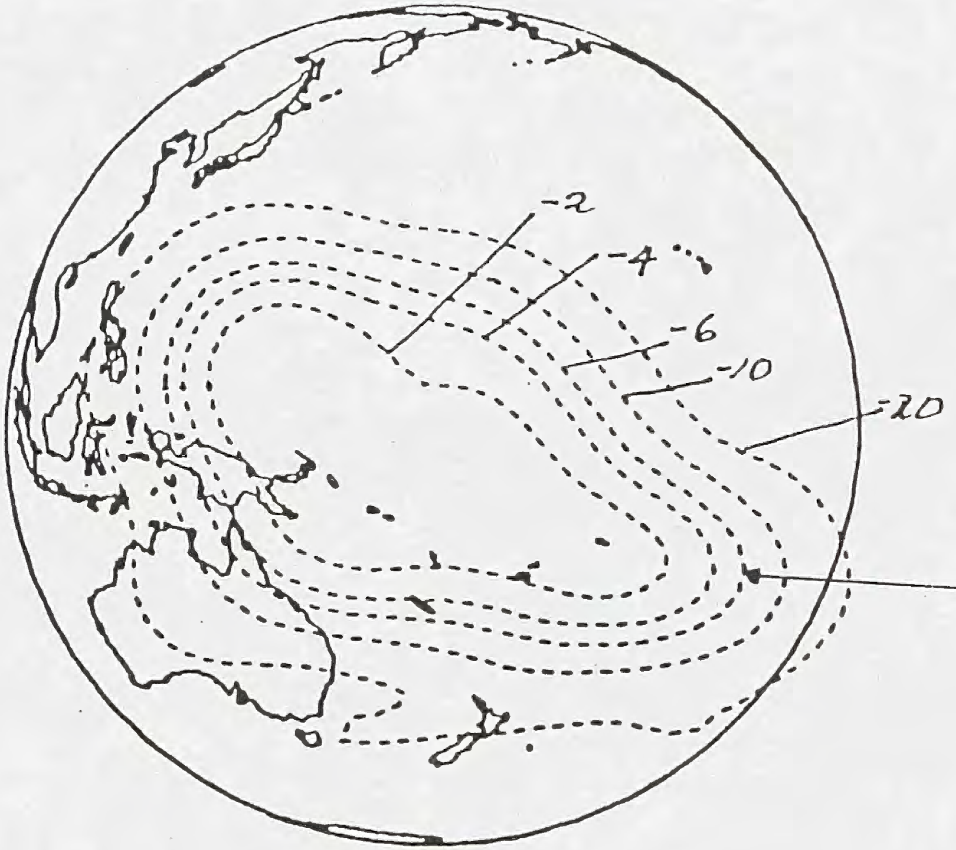
CONTOURS DE GAIN DE L'ANTENNE D'EMISSION DE LA STATION SPATIALE
SPACE STATION TRANSMITTING ANTENNA GAIN CONTOURS
CURVAS DE GANANCIA DE LA ANTENA TRANSMISORA DE LA ESTACION ESPACIAL



Faisceau Beam Haz	SPOT-4	Bande Band Banda	3/4 GHz	Gmax: +36,0 dB

Figure
5
Figura

CONTOURS DE GAIN DE L'ANTENNE D'EMISSION DE LA STATION SPATIALE
SPACE STATION TRANSMITTING ANTENNA GAIN CONTOURS
CURVAS DE GANANCIA DE LA ANTENA TRANSMISORA DE LA ESTACION ESPACIAL



Zone de service
Service area
Zona de servicio

Faisceau
Beam CENT. PAC
Haz

Bande
Band 3/4 GHz Gmax: +36,0 dB
Banda

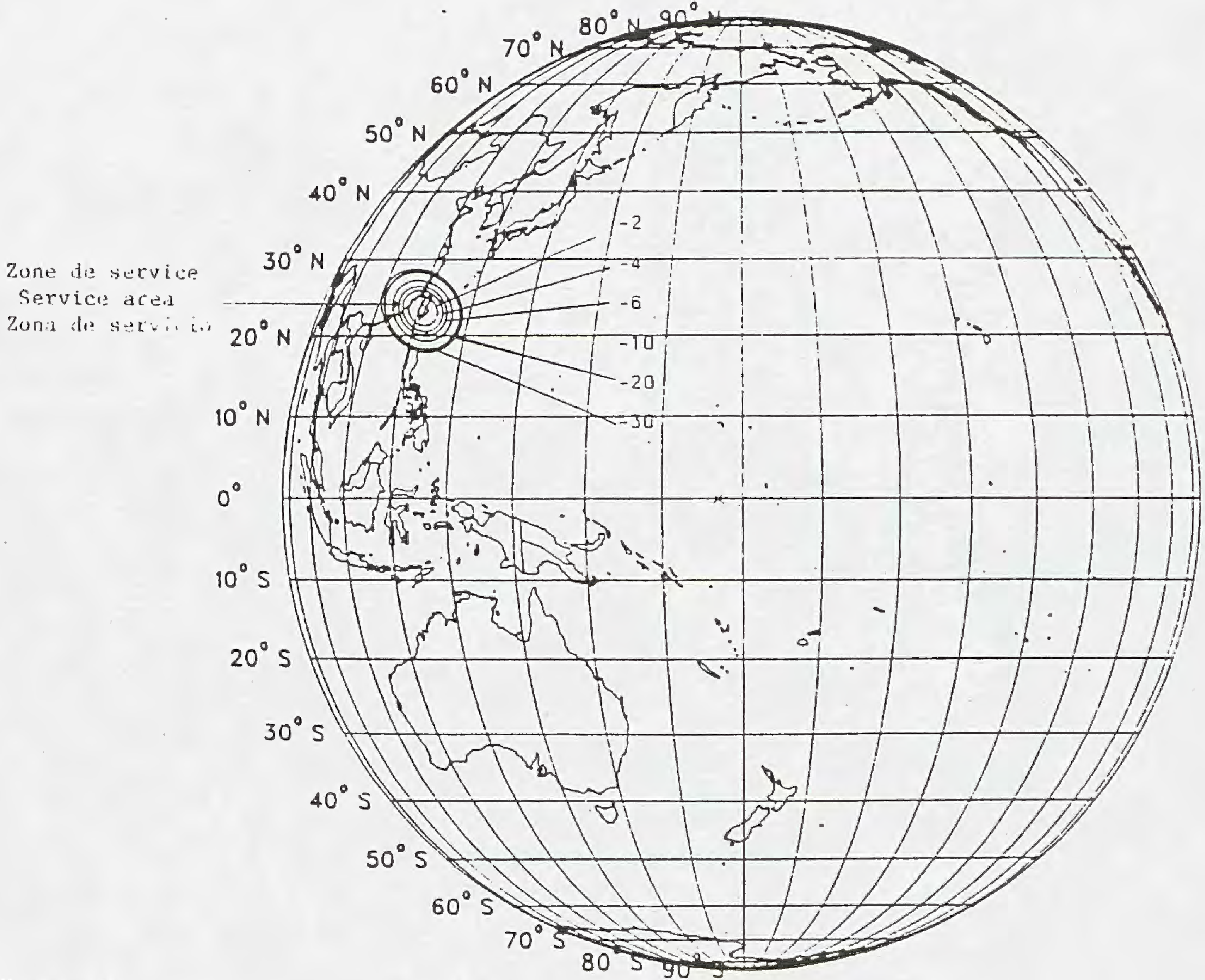
Figure 6 Figura

CONTOURS DE GAIN DE L'ANTENNE D'EMISSION DE LA STATION SPATIALE
SPACE STATION TRANSMITTING ANTENNA GAIN CONTOURS
CURVAS DE GANANCIA DE LA ANTENA TRANSMISORA DE LA ESTACION ESPACIAL

Faisceau Beam Haz	WEST PAC	Bande Band Banda	3/4 GHz	Gmax: +36,0 dB

Figure
7
Figura

CONTOURS DE GAIN DE L'ANTENNE D'EMISSION ET DE RECEPTION DE LA STATION SPATIALE
SPACE STATION TRANSMITTING AND RECEIVING ANTENNA GAIN CONTOURS
CURVAS DE GANANCIA DE LA ANTENA TRANSMISORA Y RECEPTORA DE LA ESTACION ESPACIAL



Faisceau Beam Haz	SPOT-5	Bande Band Banda	12 GHz	Gmax: +45,9 dB
			14 GHz	Gmax: +46,8 dB

Figure
8
Figura

GAIN ESTIME DE L´ANTENNE D´EMISSION DE LA STATION SPATIALE
DANS LA DIRECTION DE L´ORBITE DES SATELLITES GEOSTATIONNAIRES
ESTIMATED GAIN OF THE SPACE STATION TRANSMITTING ANTENNA
IN THE DIRECTION OF THE GEOSTATIONARY SATELLITE ORBIT
GANANCIA ESTIMADA DE LA ANTENA TRANSMISORA DE LA ESTACION ESPACIAL
EN LA DIRECCION DE LA ORBITA DE LOS SATELITES GEOESTACIONARIOS

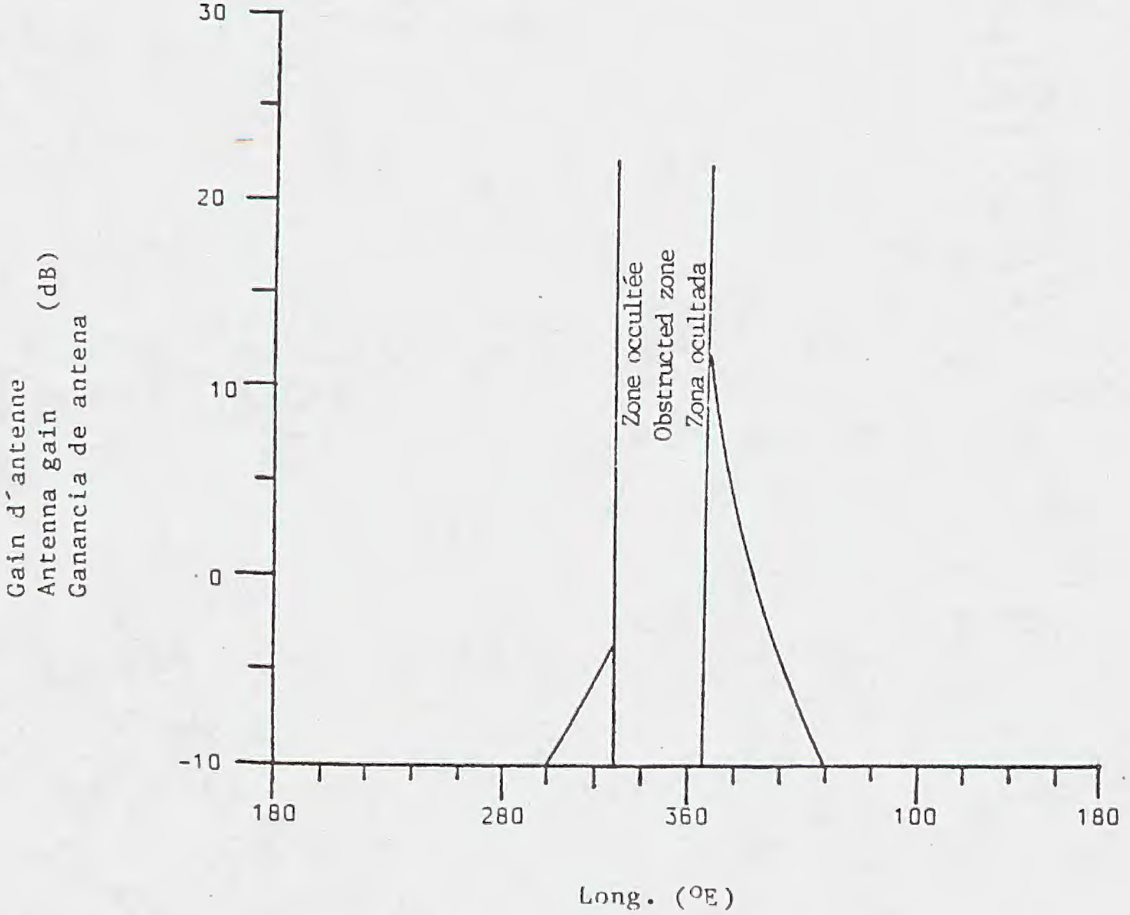
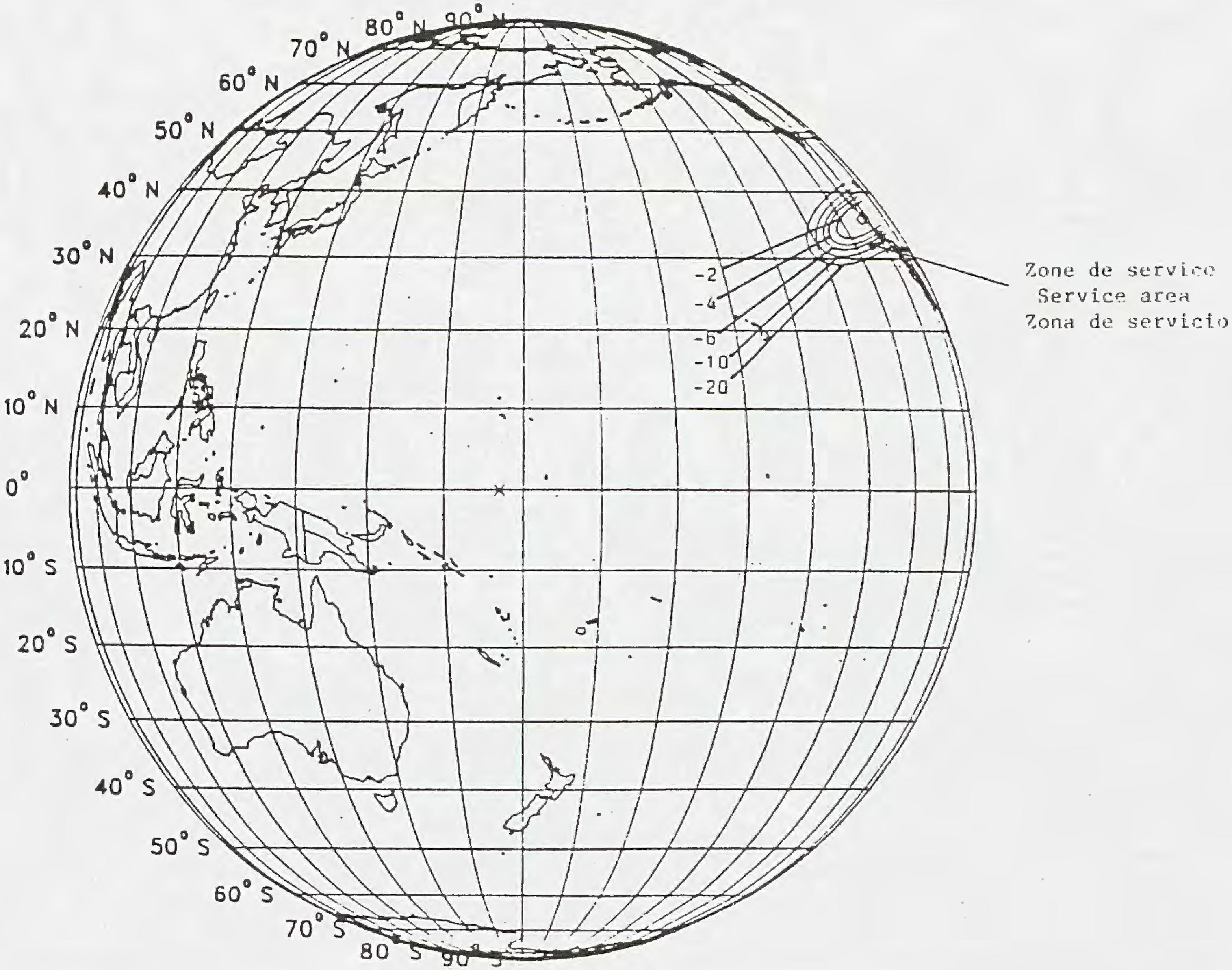


Figure 10 Figura

CONTOURS DE GAIN DE L´ANTENNE D´EMISSION ET DE RECEPTION DE LA STATION SPATIALE
SPACE STATION TRANSMITTING AND RECEIVING ANTENNA GAIN CONTOURS
CURVAS DE GANANCIA DE LA ANTENA TRANSMISORA Y RECEPTORA DE LA ESTACION ESPACIAL



Faisceau
Beam SPOT-7
Haz

Bande 12 GHz Gmax: +44,5 dB
Band
Banda 14 GHz Gmax: +44,8 dB

Figure 12
Figura

GAIN ESTIME DE L´ANTENNE DE RECEPTION DE LA STATION SPATIALE
DANS LA DIRECTION DE L´ORBITE DES SATELLITES GEOSTATIONNAIRES
ESTIMATED GAIN OF THE SPACE STATION RECEIVING ANTENNA
IN THE DIRECTION OF THE GEOSTATIONARY SATELLITE ORBIT
GANANCIA ESTIMADA DE LA ANTENA TRANSMISORA DE LA ESTACION ESPACIAL
EN LA DIRECCION DE LA ORBITA DE LOS SATELITES GEOESTACIONARIOS

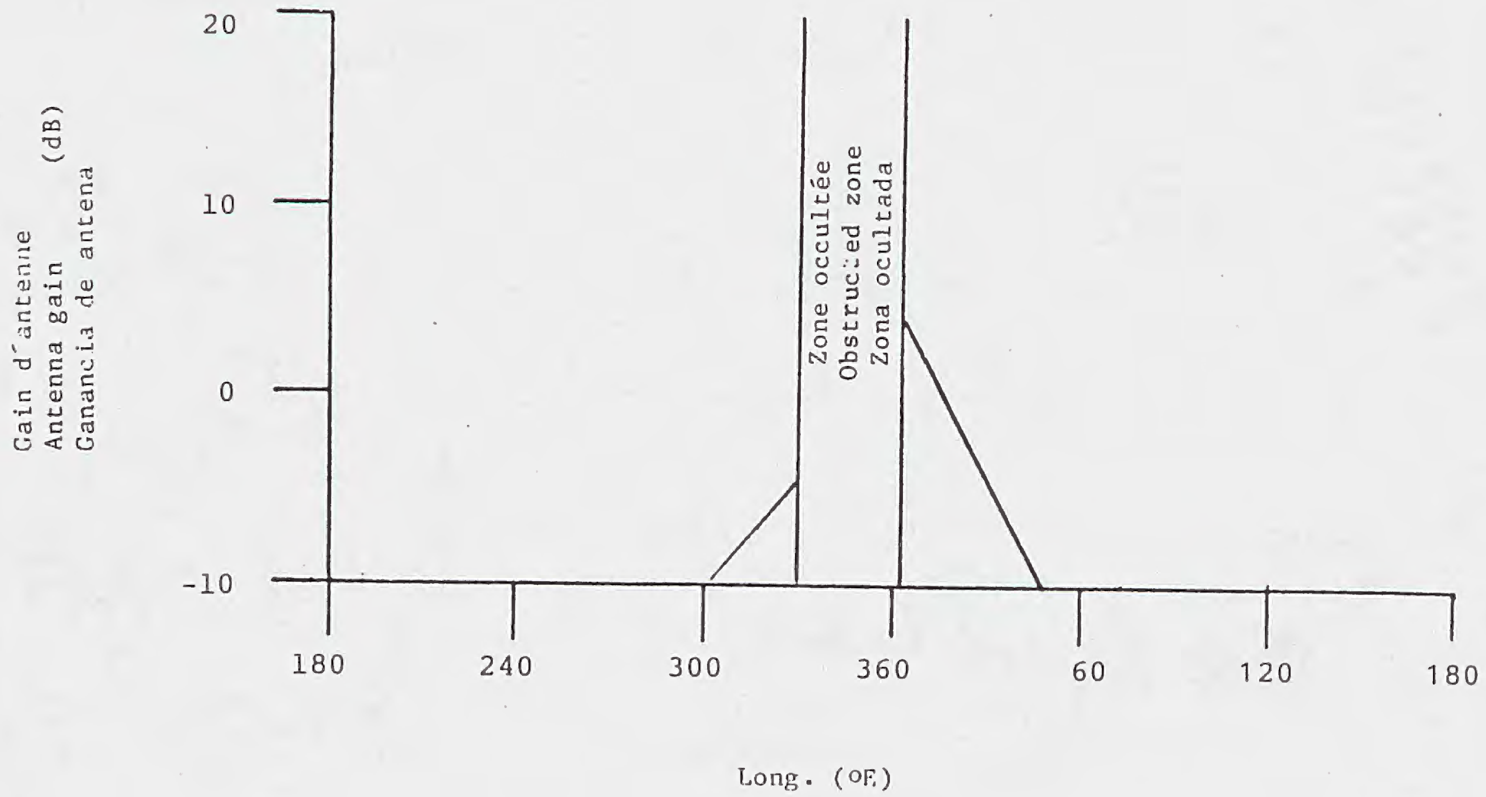
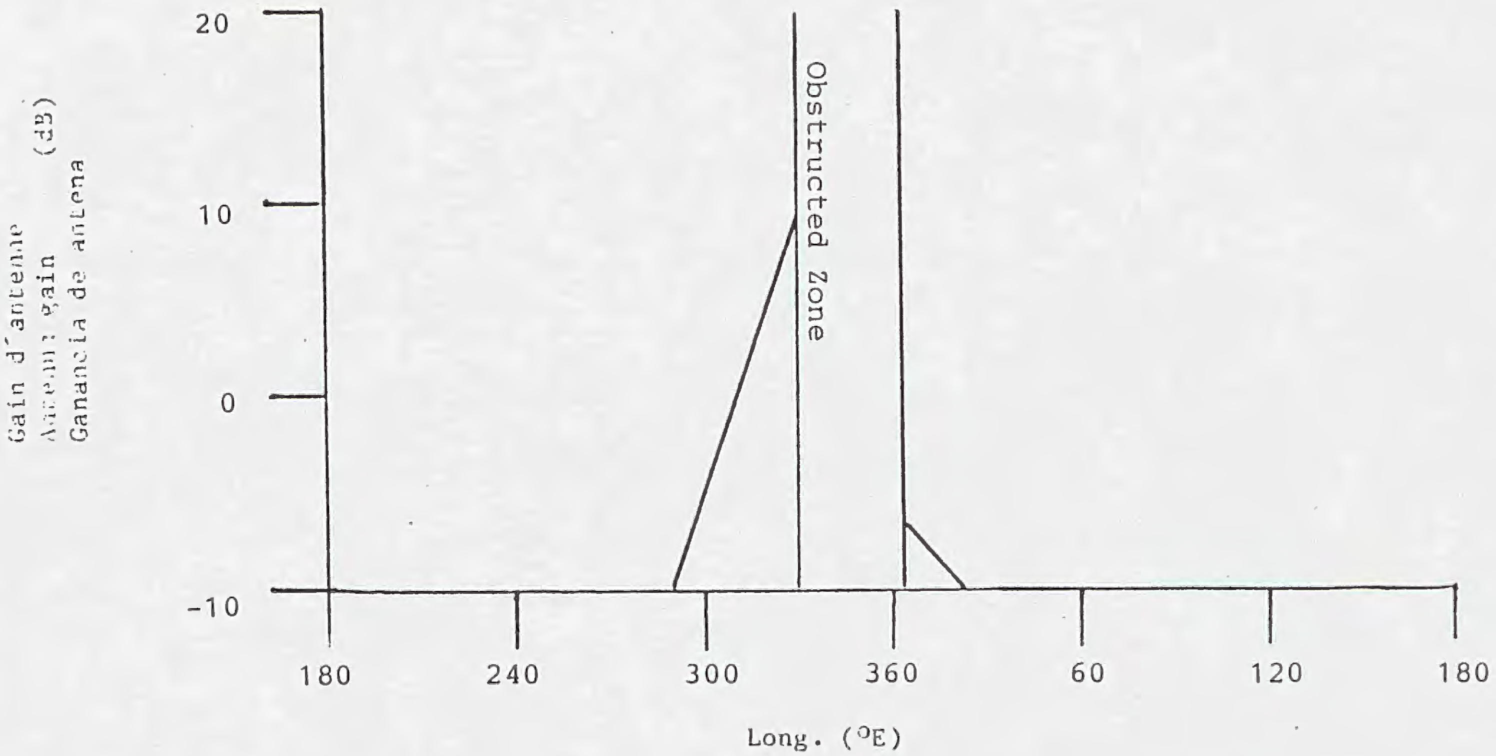


Figure
13
Figura

GAIN ESTIME DE L'ANTENNE DE RECEPTION DE LA STATION SPATIALE DANS LA DIRECTION DE L'ORBITE DES SATELLITES GEOSTATIONNAIRES
ESTIMATED GAIN OF THE SPACE STATION RECEIVING ANTENNA IN THE DIRECTION OF THE GEOSTATIONARY SATELLITE ORBIT
GANANCIA ESTIMADA DE LA ANTENA TRANSMISORA DE LA ESTACION ESPACIAL EN LA DIRECCION DE LA ORBITA DE LOS SATELITES GEOESTACIONARIOS



OBSERVATIONS DE L´IFRB

Relative à la Conclusion conformément au RR1503

1) Fréquences assignées (MHz)

3 665; 3 750; 3 826; 3 902;
3 978; 4 036; 4 076; 4 116;
4 165;

- Favorable dans tous les cas exceptée la classe d´émission 26MOF9W dans les faisceaux SPOT-2 et WEST-PAC.

- Défavorable pour la classe d´émission 26MOF9W dans les faisceaux SPOT-2 et WEST-PAC (les limites de la densité surfacique de puissance de RR2566 sont dépassées).

2) Fréquences assignées dans les bandes des 6 GHz, 12,2-12,7 GHz et 14-14,5 GHz :

FAVORABLE

3) Fréquences assignées dans la bande 11,7-12,2 GHz pour exploitation dans la Région 2 :
DEFAVORABLE (non conforme avec RR839).

IFRB COMMENTS

Relating to the Finding with respect to RR1503

1) Assigned frequencies (MHz)

3 665; 3 750; 3 826; 3 902;
3 978; 4 036; 4 076; 4 116;
4 165;

- Favourable in all cases except for class of emission 26MOF9W in the SPOT-2 and WEST-PAC beams.

- Unfavourable for class of emission 26MOF9W in the SPOT-2 and WEST-PAC beams (p.f.d. limits of RR2566 are exceeded).

2) Assigned frequencies in the 6 GHz, 12.2-12.7 GHz and 14-14.5 GHz bands:

FAVOURABLE

3) Assigned frequencies in the 11.7-12.2 GHz band for operation in Region 2:
UNFAVOURABLE (not in conformity with RR839).

OBSERVACIONES DE LA IFRB

Relativa a la Conclusión según el RR1503

1) Frecuencias asignadas (MHz)

3 665; 3 750; 3 826; 3 902;
3 978; 4 036; 4 076; 4 116;
4 165;

- Favorable en todas los casos excepto para la clase de emisión 26MOF9W en los haces SPOT-2 y WEST-PAC.

- Desfavorable para la clase de de emisión 26MOF9W en los haces SPOT-2 y WEST-PAC (se rebasan los límites de densidad de flujo de potencia de RR2566).

2) Frecuencias asignadas en las bandas de 6 GHz, 12,2-12,7 GHz y 14-14,5 GHz:

FAVORABLE

3) Frecuencias asignadas en la banda de 11,7-12,2 GHz para su explotación en la Región 2:
DESFAVORABLE (non conforme a RR839).

Relative aux stations terriennes avec caractéristiques typiques

Une administration qui approuve la coordination des assignations de fréquence à la station spatiale dont les caractéristiques sont contenues dans la présente Section spéciale est réputée approuver la coordination de toute station terrienne située dans la zone de service de la station spatiale comme indiquée au point 6 et dont les caractéristiques sont telles qu´elle ne cause ni ne subit un niveau de brouillage supérieur à celui qui serait causé ou subi par la station terrienne dont les caractéristiques sont aussi publiées dans la Section spéciale.

Relative aux frontières nationales

Le tracé des frontières n´implique de la part de l´UIT aucune prise de position quant au statut politique d´un pays ou d´une zone géographique, ni aucune reconnaissance officielle de ces frontières.

Relating to the earth stations with typical characteristics

An Administration which agrees to the coordination of frequency assignments to the space station the details of which are contained in this Special Section is presumed to agree to the coordination of any earth station located within the service area of the space station as indicated in item 6 and whose characteristics are such that it does not cause nor receive a higher level of interference than would be caused or received by the earth station the characteristics of which are also published in the Special Section.

Relating to national borders

The tracing of borders does not imply on the part of the ITU any position with respect to the political status of a country or geographical area, or official recognition of these borders.

Relativa a las estaciones terrenas con características tipo

Se supone que una administración, que está de acuerdo con la coordinación de asignaciones de frecuencia a la estación espacial cuyos detalles figuran en esta Sección Especial, está de acuerdo con la coordinación de cualquier estación terrena situada dentro de la zona de servicio de la estación espacial como indicado en el punto 6 y cuyas características son tales que no produzca ni reciba un nivel mayor de interferencia que el que produciría o sería recibido por la estación terrena cuyas características se publican también en la Sección Especial.

Relativa a las fronteras nacionales

El trazado de fronteras en los mapas no implica que la UIT tome posición en cuanto al estatuto político de países o zonas geográficas ni el reconocimiento por su parte de esas fronteras.

News from: ALPHA LYRACOM

Contact: Elizabeth Dickins
(203) 622-6664

PAN AMERICAN SATELLITE

FOR IMMEDIATE RELEASE

PAN AMERICAN SATELLITE ASKS FCC TO LIFT PROHIBITION ON INTERCONNECTION WITH THE PUBLIC SWITCHED TELEPHONE NETWORK

GREENWICH, CT July 18, 1990 -- Pan American Satellite today filed with the Federal Communications Commission a petition for rule making, asking the FCC to lift the restrictions imposed on PAS and other separate international satellite systems in 1985. The most onerous of these restrictions prohibits PAS and future U.S. private international satellite systems from carrying any traffic interconnected with the public switched telephone network (PSN). In its petition, PAS pointed out that the U.S. policy of promoting competition in domestic and international telecommunications has achieved enormous success and has now been taken up by nations around the world which are in various stages of deregulating their telecommunications monopolies to allow competition from the private sector.

President Ronald Reagan authorized U.S. private international satellite systems in November 1984, determining that competition with the International Satellite Organization (Intelsat) was in the national interest. Intelsat and its 118 members, which are mostly government-owned Postal Telegraph & Telephone monopolies (PTTs) had been, by international treaty, the sole provider of international satellite telecommunications since 1962. The FCC authorized the

-MORE-launch of PAS-1 and provision of international telecommunications services by PAS in June of 1988. Restrictions were placed upon PAS' authorization after Intelsat successfully lobbied the Administration and Congress to protect the monopoly from competition in areas which constituted 90% of its revenues.

PAS also noted that the international telecommunications environment has changed significantly since 1985, and that given these changes and to encourage further liberalization of telecommunications around the world, the U.S. should no longer actively serve an ancien regime of an economic monopoly wrapped in governmental privilege and immunities, which is the hallmark of the Intelsat system.

"We were sent to battle with this monstrous worldwide telephone cartel with both hands tied behind our back," said Rene Anselmo, Chairman of PAS. "Intelsat's response to PAS was to launch a global boycott of the company, lobby to prevent and stall the launch of our satellite, and start a war of predatory pricing to drive us out of the market. And that is only the tip of the iceberg of unfairness that they have thrown at us."

"What we seek is a level playing field. We are allowed to compete for only 10% of the international satellite telecommunications market, while Intelsat uses the monopoly revenues from their 90% sinecure to indulge in predatory pricing and other anti-competitive acts to drive us from this toehold market. We're not alone in this fight, users in Latin America are also asking that these artificial barriers be lifted."

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In PAS's view, the PSN restrictions on separate international satellite systems is "the policy equivalent of shooting oneself in the foot" since it not only increases costs to U.S. consumers and businesses, it harms the new private entities overseas that are just beginning to compete with their local PTTs. These fledgling telecommunications entrepreneurs offer the U.S. its best hope for achieving its goal for global telecommunications deregulation and expanding market opportunities for U.S. telecommunications exporters. The PSN restriction places obstacles in their path by forcing them to deal with the telephone monopolies instead of directly with PAS. PAS went on to point out that the PSN restriction is inconsistent with the FCC's recent action to prevent foreign telephone monopolies from artificially inflating international telephone rates. These telephone monopolies are Intelsat's owners. PAS urged the FCC and other U.S. policy makers to take the next logical step and open all international satellite services to competition.

Pan American Satellite is the world's first private international satellite system. PAS provides a host of specialized satellite communications services including: full and part-time video, low and high speed data circuits, broadcast data and radio and business television to over 50 countries in Latin America, Europe, and the Caribbean.

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Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the matter of)
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PAN AMERICAN SATELLITE)
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Petition for Rulemaking to Provide)
Fully Competitive Services,)
Including Services Interconnected)
with the Public Switched Network)

PETITION FOR RULEMAKING

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SUMMARY

Pan American Satellite is requesting modification of the restrictions established in the FCC's 1985 rulemaking decision regarding separate satellite systems. The most onerous of these restrictions prohibits separate systems from carrying any traffic interconnected with the public switched network ("PSN"). Although the PSN restriction may have been appropriate in 1985, changes since then in international telecommunications make it necessary to eliminate the PSN restriction.

Elimination of the PSN restriction is consistent with the actions taken recently by the FCC and other U.S. policymakers to correct the imbalance of trade with respect to telephone traffic. By protecting Intelsat's monopoly in the provision of international switched services via satellite, the U.S. Government is protecting, not U.S. interests, but the interests of Intelsat's owners, the foreign telecommunications monopolies that are overcharging U.S. telephone consumers by as much as $1 billion, according to the FCC. The PSN restriction thus works at cross-purposes with the U.S. commitment to global competition.

The availability of PAS-1 has led to lower prices and improved services for international video users and users of domestic transponder capacity overseas. Users of voice and data business services have not only been denied these benefits, but also have been forced to subsidize below-cost rates offered to video users and overseas domestic transponder users to secure their traffic for the Intelsat system.

The PSN restriction also has placed obstacles in the path of the new, private telecommunications entrepreneurs outside of the United States. In many countries, deregulation of telecommunications is advancing, and the PSN restriction has prevented the new entrepreneurs in these countries from using PAS facilities to compete with the PTTs in offering international services. By limiting the ability of these nascent competitors to expand their service offerings at lower prices, the PSN restriction runs counter to the stated U.S. policy of encouraging a pluralistic, competitive overseas environment, which would open markets widely to U.S. exporters of telecommunications goods and services.

The U.S. Government must weigh against these benefits the neglible possibility of harm to Intelsat. Intelsat has never provided any evidence or empirical studies demonstrating the validity of its claims that its exposure to competition for all services would lead to a loss of economies of scale or a decline in service to developing countries. The available evidence is to the contrary, and indeed, within the Intelsat system, the developing countries may be subsidizing the industrialized countries.

PAS has demonstrated, moreover, by its commitment of three-quarters of its satellite capacity to serving Latin America and the Caribbean, that separate systems are likely to serve the so-called "thin routes" as well or better than does Intelsat. PAS has pledged to offer satellite service in any region of the world that Intelsat is unable to serve as a result of the adverse effects of competition. It also has been demonstrated empirically, both in the United States and (with respect to non-switched services) internationally, that more competition -- and the accompanying decreases in prices and increases in technological innovation and service diversity -- expand the market for all suppliers. Instead of Intelsat's receiving a smaller percentage of a static traffic base, Intelsat has experienced significant increases in traffic.

The most significant conclusion one can draw from the U.S. policy of introducing competition to international telecommunications is that it has been an enormous success. It has succeeded, however, only to the extent that the Government has had faith in the marketplace and has not attempted to hobble new entrants in order to protect the chimerical "values" of monopoly. In today's environment, it is unrealistic to expect that separate systems can survive when they are burdened with restrictions intended to favor the dominant supplier in the marketplace. If separate systems are to survive, and if U.S. separate systems policy is to be measured a success in the long run, the policy must evolve and respond to the changes that have been wrought in the international telecommunications market over the past five years -- changes due in no small part to the introduction of competition pursuant to that policy.

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PETITION FOR RULEMAKING

Pan American Satellite ("PAS"), by its attorneys and pursuant to Section 1.401 of the Commission's Rules, hereby requests modification of the Commission's policies relating to separate satellite systems, and of the associated conditions in PAS's authorizations. The most significant of the modifications being sought by PAS would allow it to provide services interconnected with the public switched network ("PSN").

I. BACKGROUND.

In a 1985 rulemaking decision, the Commission established a number of requirements and restrictions that would govern the operation of separate satellite systems. Establishment of Satellite Systems Providing International Communications, 101 F.C.C.2d 1046 (1985) ("Separate Systems Order"), on reconsideration, 61 R.R.2d 649 (1986), on further reconsideration, 1 F.C.C. Rcd. 439 (1986). One of these restrictions prohibits separate systems from carrying "'public-switched traffic,'" a restriction intended "to avoid significant economic harm to

Intelsat by protecting its 'commercial core.'" 101 F.C.C.2d at 1098.[1] While thus "prohibit[ing] the interconnection of [separate systems] with the public switched message network," id. at 1111, the Commission at the same time emphasized that "private line" services and "private-line type services which are tailored or 'customized' to meet special customer needs" could be offered -- indeed, were expected to be offered, in order to provide competition to Intelsat -- by separate systems. Id. at 1100, 1102, 1138; see 61 R.R.2d at ¶ 22.

As the Commission intended, id. at 1111, the "no-interconnection" restriction is incorporated into the various PAS authorizations that have been issued by the Commission. See, e.g., Pan American Satellite Corp., 101 F.C.C.2d 1318, 1337 (1985); Pan American Satellite, DA 89-1253, ¶ 5 (Oct. 5, 1989). This restriction is also incorporated into the Intelsat document that formed the basis for a finding by the Assembly of Parties that operation of the PAS-1 satellite would not cause "significant economic harm" for purposes of Article XIV(d) of the Intelsat Agreement. See AP-11-10E (20 Feb. 1987). It is time, however, to re-examine the need for the restriction.

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[1] Separate systems are also required to offer capacity on a non-common carrier basis and for periods of at least one year. See 101 F.C.C.2d at 1103-06. PAS is here seeking relief from these restrictions, which adversely affect its ability to offer services competitive with Intelsat's. Because the PSN restriction is the most onerous, however, and because the arguments for lifting this restriction are essentially the same as the arguments that would be made to lift the other restrictions, the discussion that follows focuses on the PSN restriction.

The PSN restriction may have been appropriate in 1985, when the introduction of competition in international telecommunications represented, on the part of the United States, a bold move into uncharted waters -- almost an act of faith in the marketplace. Now, Intelsat has demonstrated its resilience to competition, and PAS, as the only operational separate system, has demonstrated that such competition leads to significant public interest benefits. PAS also has found, however, that the handicaps placed on new entrants in 1985 are unduly burdensome and that, unless the imbalance in Intelsat's favor is corrected, the fragile toehold that separate systems have gained in the marketplace will be lost. In today's environment, it is unrealistic to expect that separate systems can survive when they are burdened with restrictions intended to favor the dominant supplier in the marketplace.

In the past year, it has become evident that the U.S. political and economic systems have inspired worldwide a turn to pluralism in both politics and the marketplace. U.S. telecommunications policy should also encourage pluralism and should not actively serve an <u>ancien</u> <u>regime</u> of economic monopoly wrapped in governmental privilege, which is the hallmark of the Intelsat system. Accordingly, it is appropriate to reassess whether and to what extent Intelsat's owners -- which are mostly government-owned or controlled postal, telephone, and telegraph monopolies ("PTTs") -- need protection in today's marketplace.[2] Such reassessment is, moreover, consistent with the general review now underway of the pricing and accounting practices of the world's telephone companies.

The FCC and other U.S. policymakers have expressed concern about the imbalance of trade with respect to telephone traffic, which imbalance arises largely out of the monopoly position of the PTTs.[3] Responding to these concerns, the FCC recently proposed a broad "reform of its existing international settlements policy," intended to address "the increase in the U.S. net settlements deficit . . . , with perhaps as much as $1 billion of this deficit representing an overpayment by U.S. consumers to foreign carriers." FCC News Release (July 12, 1990). These same "foreign carriers" own Intelsat, and their ability to overcharge for telephone service is bolstered by the U.S. policy that bans competition with Intelsat for all services connected to the PSN. The United States cannot meaningfully

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[2] Throughout this Petition, the term "PTT" is used to refer to Intelsat's owner/signatories, even though some of them are no longer actual PTTs in the narrow sense of the term. With the exception of Comsat, however, they all have the essential characteristic of a PTT with respect to international satellite communications in their markets: they are the dominant, and in most cases monopoly, suppliers.

[3] Articles in the general press have also pointed to this telephone trade imbalance. See, e.g., New York Times, July 17, 1990, at A1 ("foreign monopolies . . . . maintain high prices despite drop in costs"); Washington Post, June 20, 1990, at G6 ("[t]he United States now shells out far more than it takes in -- the shortfall was about $2 billion in 1988"); Financial Times, April 3, 1990 ("phone companies overcharge callers $10 billion a year").

address the adverse effects of the international telephone cartel, including our imbalance of trade in telephone services, without also addressing the PSN restriction. Chairman Sikes recent statement that, "[w]e certainly don't want to become the unwitting handmaidens to a regimen that does not allow price changes,"[4] applies equally to international accounting rates and the PSN restriction.

II. EXPERIENCE SINCE 1985 SUPPORTS REMOVAL OF THE PSN RESTRICTION.

A. U.S. Policy Objectives Have Been Secured When Competition Is Allowed.

In a 1985 "White Paper on New International Satellite Systems," the Senior Interagency Group on International Communications and Information Policy stated (at 5) a U.S. policy goal of "promot[ing] competition and reliance on market mechanisms, as feasible, and . . . foster[ing] cost-based pricing, quality service, and more efficient use of resources." The White Paper went on (at 10) to list a number of U.S. policies adopted in furtherance of the foregoing and other goals; among these policies was the following:

> Advocating and adopting international communications policies which stress reliance on free enterprise, competition, and free trade, wherever feasible . . . .

This White Paper led to the FCC's adoption of the Separate Systems Order, which similarly emphasized the benefits of competition. See 101 F.C.C.2d at 1065-68.

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[4] New York Times, July 17, 1990, at A1.

The separate systems policy that evolved from the White Paper and the FCC's Separate Systems Order was just one manifestation of the general and continuing thrust of U.S. policy toward increased telecommunications competition throughout the world. The U.S. goal of creating a more competitive telecommunications environment did not arise merely from a bias for the marketplace, but was based on a practical appreciation of the fact that such an environment worldwide would enhance U.S. trade and economic interests.

Reflecting a U.S. Government commitment to deregulation, the FCC in the 1980s opened up virtually all aspects of international telecommunications to competition, including allowing international earth station services to be offered on a competitive basis, permitting transborder satellite services, and eliminating the "balanced loading" policy that mandated the division of traffic between international satellites and cables. See, e.g., Earth Station Ownership, 100 F.C.C.2d 250 (1984); American Satellite Co., 88 F.C.C.2d 178 (1981); Policy for Distribution of U.S. International Carrier Circuits, FCC 88-122 (Apr. 14, 1988). The elimination of the "balanced loading" requirement in 1988 was particularly meaningful, because it demonstrated an FCC recognition that Intelsat and Comsat are sufficiently mature to fend for themselves in the marketplace without regulatory crutches.

The most significant conclusion one can draw from the U.S. policy of introducing competition to international telecommunications is that, as discussed below, it has been an enormous success. It has succeeded, however, only to the extent that the Government has had faith in the marketplace and has not attempted to hobble new entrants in order to protect the chimerical "values" of monopoly.[5]

By upholding the PSN restriction, the United States is both denying U.S. telecommunications users the advantages of competition and compounding for them the problems associated with monopoly control of facilities. As to video transmissions, where competition is allowed, costs have plummeted. There also has been a substantial increase in the number of video services available, both within countries that have had no effective TV network infrastructure and between and among all countries. Television programs of both U.S. and domestic origin are now available to millions of persons who never received a television signal before the introduction of satellite competition. U.S. programmers -- such as CNN, TBS, ESPN, ABC, and CBS -- are taking advantage of the availability of PAS-1 to extend their reach into Latin America and Europe, opening markets not only for their program networks and for U.S. suppliers of earth stations and

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[5] The FCC's Common Carrier Bureau Chief, Richard Firestone, has recently been quoted as follows:

> Since we introduced open skies in the US, we have seen prices coming down and innovation sky-rocketing. That kind of benefit to consumers is possible internationally.

Financial Times, July 17, 1990, at 18.

equipment, but also for those companies that advertise on those networks. Moreover, as restrictive policies fall in Europe, European networks and broadcasters, such as SAT 1 and RAI, are starting to use PAS-1 to expand the diversity and reach of their own programming.

There is no justification for offering video users the considerable price and service benefits of competition, while denying those benefits to users of voice and data business services. Why should a U.S. television network, but not a U.S. bank, have a choice of suppliers? And why should the bank -- forced to use Intelsat for VSAT switched data services -- subsidize the low rates that are offered to the television networks to secure their traffic for the Intelsat system? The PSN restriction allows such cross-subsidization, giving Intelsat the ability and incentive to offer at very low rates those services that compete with separate system services, secure in the knowledge that monopoly revenues will be available to pay the system's costs.

B. Expansion Of Competition In International Telecommunications Fosters U.S. Interests Broadly.

It is only when one considers how the worldwide changes that have taken place in telecommunications foster U.S. interests that one sees the perverse effects of the PSN restriction. Without doubt, the U.S.-imposed restriction is a protectionist policy. But unlike most protectionist policies, which are intended to promote and protect the interests of the nation propounding them, the PSN restriction protects only the foreign PTT signatories of Intelsat. It works directly against the interests of the United States in developing a competitive telecommunications marketplace worldwide and in advancing the exports of U.S. companies in that marketplace. It is the policy equivalent of shooting oneself in the foot.

1. Elimination of the PSN restriction would expand the number and diversity of telecommunications competitors worldwide.

Other nations have joined the United States in opening up telecommunications markets to competition. Although PTTs have generally retained monopoly positions in voice telephone service, some foreign governments today allow more than one entity to provide long-distance telephone services. These and other governments also allow competition in so-called private line services, video services, and data networks connected to the PSN. These developments have created the ironic (and obviously unintended) result that U.S. policy on allowable competitive services is more regressive than the policies of many other nations.[6]

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[6] This effect was stated recently in a letter to PAS from the German telecommunications operating company, Deutsche Bundespost Telekom ("DBP Telekom"). The DBP Telekom letter makes clear that the liberalized German telecommunications law allows competitive supply of PSN-connected "data, text and facsimile transmissions," which cannot be offered by PAS in Germany because of the PSN restriction. The DBP Telekom position is that "the conditions applying at the German end must comply with German law," and that prohibitions such as the PSN restriction have previously been "denounced" by the United States "as a barrier to trade."

A more destructive irony is that the small, but growing, number of telecommunications entrepreneurs in other countries are being actively discouraged by the PSN restriction. Although PAS is forced by U.S. policy and Intelsat Article XIV(d) to obtain "operating agreements" with PTTs, the PTTs are not PAS's natural customers. Rather, it is the emerging competitors in other nations -- small common carriers, video uplinkers, teleport operators, and companies seeking to establish networks for their own businesses -- that are PAS's customers. These entrepreneurs look to the United States as a philosophic leader and ally in their drive for the opening up of telecommunications markets. From the U.S. perspective, they represent a constituency, willing and eager to advance U.S. telecommunications policies favoring competition, simply by pursuing their business activities in their home markets.

These are also the entities that would benefit most from lifting the PSN restriction, and these are the competitors that the PTTs fear most. It is not coincidental, but deliberate strategy, that, when the PTTs use the Intelsat processes for purposes of delay, and when they hide behind Intelsat's privileges and immunities as an international organization, they are also obstructing and delaying the new telecommunications entrepreneurs that, for the first time, are offering competition to the PTTs in their own backyards. These new competitors are enterprises that U.S. policy should encourage, yet the PSN restriction places obstacles in their path.

Although these entities use PAS, they can do so only for certain kinds of very restricted traffic. PAS has been told repeatedly by its customers, and by companies that would like to be its customers, that the use of the PAS-1 satellite for international PSN services is needed to allow them to establish competitive alternatives to their PTTs. Providing such alternatives would bring the many benefits of competition to communications users in their own nations -- which, on the PAS system, are largely the developing nations of Latin America and the Caribbean region. By forcing these nascent competitors to deal only with their country's PTT for international, PSN-connected satellite services, the U.S. policy is hindering further development in these nations -- development that both would benefit these nations and further larger U.S. interests.

2. Elimination of the PSN restriction would advance the interests of U.S. companies in the world market.

Reducing PTT monopoly control of facilities and services and liberalizing telecommunications would have a positive impact on U.S. trade. As Congress emphasized in making telecommunications the only sector with a specific title in the 1988 Trade Act, §§ 1371, et seq., trade in telecommunications goods and services is vitally important to the United States, because U.S. companies, at least for a limited time, have certain technological and market-related advantages. Simply stated, when -- instead of only one PTT procuring all telecommunications goods and services in a country -- there are many companies providing a variety of telecommunications services, and many users who can procure facilities and services directly, rather than through a PTT, the customer base for U.S. suppliers expands dramatically.

Moreover, when these new customers are using a U.S.-designed and operated satellite, such as PAS-1, there is an even greater opportunity for U.S. manufacturers to sell equipment that is optimized for the satellite. For example, a PAS transponder sale to a Chilean company led to Scientific-Atlanta's winning a contract to supply some $32 million of hardware. As U.S. trade policymakers are well aware, however, some of the most important export-related opportunities for U.S. firms are in the area of telecommunications switched services. U.S. policy now prevents all competition by satellite for international switched services, which in turn prevents U.S. firms from taking full advantage of the stimulus to trade that a competitive telecommunications market provides.[7]

In addition to the global changes discussed above, there have been shifts in the market niche selected for separate systems by U.S. policy. What originally was seen as a wide (if

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[7] In a related example, some six months after AT&T applied for permission to provide switched services to the Soviet Union via the Intersputnik "separate system," the State Department informed the FCC that, because of the U.S. separate systems policy, State would recommend against the granting of the AT&T application. Letter from Lawrence Eagleburger, Deputy Secretary of State, to Chairman Sikes, FCC, May 14, 1990. Shortly after this decision, a major European supplier of telecommunications equipment, Alcatel, announced a $2.8 billion agreement to sell digital telephone switching equipment to the Soviet Union. See Financial Times, June 20, 1990. It is appropriate to ask whose national interests were served by application of the PSN restriction in this instance.

somewhat tilted) playing field, on which separate systems and Intelsat would compete for a rich array of non-PSN connected services, has turned into a Procrustean bed for separate systems, made narrower each day by the advance of technology and by Intelsat's predatory response to competition.

III. THE MARKET FOR NON-PSN CONNECTED INTERNATIONAL SERVICES IS A SHRINKING ONE.

Given the changes in telecommunications markets and technology, Intelsat's protected monopoly in international satellite switched services is expanding, and, concomitantly, the market for allowable separate system services is shrinking.[8]

In 1985, Intelsat Business Service ("IBS") was in its infancy, international digital offerings were very restricted, and integrated services digital networks ("ISDN") were subjects of academic discourse, not operational reality. ISDN is now beginning to be implemented, with virtual corporate networks being developed both domestically and internationally. These networks mix video, voice and data, and do not distinguish

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[8] Although Intelsat often claims that it is virtually overcome by "competition" from fiber optic cables, in fact, it is not competition in any conventional sense, because Intelsat and the transoceanic fiber cable systems are owned in large part by the same entities, the PTT monopolies. Even the "private" PTAT-1 partnership is comprised of some of the same entities that provide monopoly telecommunications services around the world, including Cable & Wireless. The competition between Intelsat's facilities and undersea cables is not so much based on pricing, which is controlled by the owners, as it is on technical and other factors that influence the owners' decisions as to which facility will receive which share of traffic. PAS presently is the only true competition in the international market.

between switched and non-switched traffic. Such distinctions are made in the customer's terminal facilities.

Intelsat offers the facilities for providing certain types of ISDN (or proto-ISDN) networks via its IBS offering. While the tariff for this offering theoretically precludes the carriage of public telephony, it is well known that a large amount of IBS traffic includes telephone circuits that are connected into the PSN through the customer's PBX.[9] In fact, short of an absolute prohibition on PSN connection, such as is imposed on U.S. separate systems, there is no way to isolate switched and non-switched traffic on a private corporate network. The customer simply aggregates its traffic and places some of it on private lines and some on switched lines, according to financial dictates and service requirements. An increasing amount of digital traffic, which includes voice services, will be carried on a combination of public switched and private facilities, making impossible the separation of switched traffic from private traffic.

In this environment, the prohibition on connecting separate system services to the PSN means that an increasing percentage of the market for international telecommunications is excluded from the separate systems' service offerings, leaving only domestic

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[9] It is common for corporate IBS networks to be interconnected with the PSN on either or both ends, notwithstanding Intelsat's tariff proscription against such interconnection. _See_ Intelsat Service Manual, Sec. III.C.1 (10/87) ("IBS may not be connected to the public switched telephone network"). _See also_ Intelsat 1987-1988 Annual Report at 21; Comsat Tariff F.C.C. No. 103, at 56 (May 9, 1988).

transponder sales outside of the United States, closed-ended intracorporate networks, and broadcast video services. With respect to intracorporate business services, PAS has found that business customers will not employ two international satellite networks for their needs: one for a broad range of PSN-connected services, and one for the non-PSN connected intracorporate networks permitted to separate systems. Therefore, despite the U.S. Government's intention to open a wide variety of international business services to competition, the PSN restriction frustrates that goal. Moreover, with domestic transponder sales and broadcast video services left as the only practicable services to be provided by U.S. separate systems, Intelsat, through its so-called competitive response and "new strategic plan," can and does target such services and undercuts the prices that a separate system can charge in its sole market niche, by cross-subsidizing from its protected monopoly services.

IV. ENDING THE PSN RESTRICTION WILL BENEFIT THE PUBLIC INTEREST AND WILL NOT HARM INTELSAT.

The original reason for the PSN restriction was to assure that Intelsat's earnings would be sufficient both to maintain its global system and to prevent dramatic increases in cost to Intelsat signatories on the presumably subsidized, low traffic density routes. The logic supporting such protection is today at odds both with the trends in international telecommunications generally and with the reality of the Intelsat system's operations.

A. The PSN Restriction Leads To <u>Inefficient Cross-subsidization.</u>

As discussed above, the PSN restriction gives Intelsat the ability to cross-subsidize between monopoly and competitive services. Intelsat has shown itself to be an aggressive competitor of PAS's in domestic transponder sales and video services. As the Common Carrier Bureau recognized in the context of Comsat's "Caribnet" proposal, Intelsat may, in such situations, engage in predatory pricing in an effort to retain its markets and prevent PAS from gaining a foothold. <u>See</u> <u>Communications Satellite Corp.</u>, Mimeo No. 2809 (April 16, 1987). Because the FCC does not regulate Intelsat's rates, moreover,[10] and because Comsat is not required to separate its competitive and monopoly Intelsat offerings,[11] there is effectively no regulatory check on cross-subsidization by Intelsat and Comsat.

The experience with Intelsat's Planned Domestic Service ("PDS") is instructive. When PAS first announced its entry into the international marketplace, a principal element of its service offering was to be domestic sales of transponders outside of the United States. Intelsat's "competitive response" was to offer cut-rate transponders for domestic use. This dumping of supposed

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[10] The Caribnet decision discussed in the text represented an unusual example, one in which the Common Carrier Bureau was apparently willing to "pierce the veil" that separates Intelsat's rates from Comsat's. In general, the Commission has treated Intelsat's rates as a "given" in reviewing Comsat's tariff filings.

[11] <u>See generally</u> Goldschmidt, Intelsat Pricing and the Intelsat-K (May 15, 1990) (filed by PAS in FCC File No. CSS-89-004).

excess capacity became known as "Colino's fire sales," at prices "so low that no one will confirm them, it seems out of embarrassment as much as anything else." Cable & Satellite Europe, June 1990, at 52.[12] PDS prices were identified as predatory in a study prepared for PAS by Economists Incorporated, which concluded that Intelsat's monopoly ratepayers were bearing the brunt of the "fire sale" pricing.[13] Intelsat eventually had to cut back severely on PDS sales, because too much capacity had been sold at too low a price and Intelsat was running out of capacity. While predatory in intent, the PDS sales did not succeed in driving PAS out of the market, but they did do substantial damage.[14]

B. Loss Of Economies Of Scale And Scope.

Intelsat has long argued that diverting traffic from its facilities would lead to a loss of the significant economies of scale or scope embedded in the Intelsat system. However, these

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[12] Since the PDS sales constitute one element of PAS's antitrust claim against Comsat, there may be other reasons why there is reluctance to confirm the PDS sales prices.

[13] Economists Incorporated, Intelsat Pricing and Costing for PDS Service (Nov. 20, 1987) (filed by PAS with U.S. Government representatives in connection with the 74th Meeting of Intelsat's Board of Governors); see Comsat Response (Dec. 3, 1987); Reply of Economists Incorporated (Dec. 8, 1987).

[14] The Intelsat/Comsat pricing plan for the Intelsat-K video satellite shows a predatory intent similar to the underlying motivation for PDS sales. See Goldschmidt, supra; "Intelsat K: Revenge on PanAmSat?", Space Markets, May 1989, at 284.

economies merely have been asserted. They have not been demonstrated empirically, because they do not exist; the argument is a canard. The evidence that does exist, particularly the example of the U.S. domestic satellite industry, suggests that any economies of scale or scope associated with satellite systems may be captured at much lower traffic densities than Intelsat's. The U.S. domestic satellite networks charge less for comparable services than does Intelsat, but operate at far lower traffic volumes. See Firestone, supra note 5.

C. Service To Low Traffic Density Countries.

Another argument advanced in 1985 for limiting competition from separate systems was that competition would cause "cream skimming" on Intelsat's high-volume routes, leaving Intelsat alone to serve the low-volume routes to developing countries. Indeed, the fear of losing an alleged subsidy and increasing the telecommunications costs to the low-density countries has often been cited as a reason to restrict the separate satellite systems' offerings.[15] This argument, however, is the classical one justifying the so-called value of a monopoly supplier; it is also a canard.[16]

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[15] Intelsat's Deputy Director General, David Tudge, and Comsat's Bruce Crockett, now Chairman of the Intelsat Board of Governors, have recently made this "cream-skimming" argument for restricting separate systems. They did not cite to any studies or provide any evidence, however. See Financial Times, July 17, 1990, at 18; Satellite News, May 7, 1990, at 6.

[16] This argument is identical to AT&T's claim, early in the development of the "specialized common carriers," that such competition would endanger service to rural areas of the United (continued...)

First, the evidence for any subsidies between the heavy-volume and light-volume countries is nonexistent. Former Intelsat official Walter Hinchman found in 1985 that there are so many factors necessary to define the subsidy that no "formal economic findings" can be made regarding its "existence."[17]

Second, there is a strong probability that the subsidy runs in the opposite direction from what Intelsat claims -- i.e., that the developing countries subsidize the industrialized countries.[18] The most costly part of the Intelsat system involves the services provided to Europe and North America. These services include Ku-band transponders, steerable antennas, and the elaborate on-board switching and connections associated with the Ku-band packages. All of Intelsat's satellites are equipped with these packages, regardless of whether the satellites will actually serve the Europe-North America route.

Similarly, the very costly Intelsat-K satellite is intended for Europe-U.S. traffic, with a token beam directed at South America. Because this capacity is supported by all members, any shortfalls in meeting the revenue requirements for these expensive facilities will be paid by all members, including the

---

[16] (...continued)
States. Instead, of course, rural as well as urban areas have benefitted from competition.

[17] Comments of Walter Hinchman Associates, Inc., FCC CC Docket No. 84-1299, at 17 (filed April 1, 1985).

[18] See K. Dunmore, Dale Hatfield Associates, "An Analysis of the Intelsat Subsidy Issue," Att. I to Comments of Orion Satellite Corp., FCC Docket No. 84-1299 (filed April 1, 1985).

developing countries. <u>See</u> Goldschmidt, <u>supra</u> note 11. Moreover, because the monopoly services subsidize the competitive services, the users in developing nations, who rely more on the monopoly services, support the users of competitive services.

Third, and most significantly, PAS has devoted three-quarters of its satellite capacity to serving the so-called low-volume routes in Latin America and the Caribbean. The majority of the PAS system's traffic is to the South, not across the Atlantic, and the demand for the PSN services that PAS seeks to carry is primarily to the South. In addition, as discussed below, competition has been of substantial benefit to the countries in Latin America and the Caribbean region. There is a greater selection of satellite capacity and services available now at lower cost in Latin America and the Caribbean than in many of the more developed countries in the world.

Of course, service to sub-Saharan Africa remains a concern to public authorities in the United States and abroad. Intelsat has played upon that concern in an effort to preserve its monopoly in PSN services, but the argument has no more validity than Intelsat's other rationalizations for keeping its monopoly. In this regard, Africa is not substantially different from Latin America prior to the introduction of competition from PAS.

Intelsat never properly served Latin America with anything but low technical quality, thin-route voice services, as is the case now in sub-Saharan Africa. It was only when PAS appeared that the Latin American countries received anything more than token attention from Intelsat. One can expect that the same phenomenon will be observed with respect to Africa. Despite Intelsat's assertions, there is no reason to believe that Africa will be excluded from satellite competition. Orion has started to market its services to Africa, and PAS has expressed its willingness to offer satellite services in Africa both on PAS-2 and PAS-3. Indeed, PAS has pledged to offer satellite service in any region of the world that Intelsat is unable to serve as a result of the adverse effects of competition.

It is well-established U.S. policy that deregulation gives users more choice at lower costs, not less choice at higher costs. This is true as to both industrialized and developing nations. Indeed, in the developing world particularly, satellites and the VSAT networks that they make possible may help to give countries "the ability to leapfrog the evolutionary development of traditional wireline systems." Address of Amb. Bradley Holmes to the Federal Communications Bar Association, Washington, D.C., June 14, 1990, at 6; see Financial Times, July 17, 1990, at 18.

D. Competition Increases Overall Traffic Volume.

Intelsat's operating premise has been that any traffic carried by a separate system is traffic lost to the Intelsat system -- an assumption basic to the Article XIV(d) consultation process. The empirical evidence shows, however, that competition leads to a larger overall market, with the dominant carrier losing market share, rather than absolute traffic. Indeed, the dominant carrier's overall traffic usually increases as a result of competition -- the familiar "expanding the pie" effect long ago predicted by the FCC.[19]

The U.S. toll and satellite markets provide the best evidence of how competition leads to larger overall markets. The U.S. satellite market, the only competitive satellite market in the world, is far larger and more diverse than any of the national satellite systems created overseas under the constraints of monopoly supply. <u>See</u> Firestone, <u>supra</u> note 5. Similarly, the U.S. toll market has grown in absolute terms since the "specialized common carriers" were permitted to carry toll traffic after 1978. Rather than losing traffic, AT&T is carrying record amounts of traffic, although it has a smaller market share.

The same effect already can be observed in the international market, which is expected to grow explosively as competition emerges among satellite systems and between satellite and undersea fiber cable carriage. For example, Comsat recently told the Commission that the growth in Category A (<u>i.e.</u>, public switched) services was increasing faster than had been predicted in 1987 and would reach far higher levels than predicted,[20] despite the competition envisioned from fiber systems. Further

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[19] The Commission wrote: "[S]ervice differentiation and lower prices brought about by separate satellite systems and final service providers would stimulate demand for service and enlarge the size of the international communications service market." 101 F.C.C.2d at 1143.

[20] Comsat Further Supplement to Application, FCC File No. CSS-88-005, at 4 (filed May 2, 1989).

evidence of the effects of competition on the international market may be seen by looking at Intelsat's own projections of traffic growth between 1988 and 1993. Intelsat, for example, carried 35.5 36-MHz equivalent video transponders in the Atlantic Ocean Region ("AOR") during 1988, and forecasts 55 36-MHz AOR video transponders by 1993.[21] This growth is projected in a period during which PAS will go from no traffic to a minimum of 10 36-MHz equivalents for international video on PAS-1, as well as further growth in video traffic expected for the TAT-9 cable and PAS-2.[22]

It should be noted that the PAS-1 satellite carries four full-time and one part-time 36-MHz transponders for video service to and from Latin America. There were no full-time transponders serving Latin America prior to the launch of PAS-1. Intelsat is now planning to offer Ku-band receive-only service to Latin America on the Intelsat K, as well as higher powered C-band transponders on the Intelsat VIIs. It may be argued that this overall growth would have occurred in any event. It is clear, however, that Intelsat's adoption of PDS and certain design changes in the Intelsat V.B's were directly in response to PAS marketing efforts in Latin America, and that the many changes in

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[21] Id., Tables 1 and 2.

[22] The PAS-1's international facilities are well over 60% committed at this point. Given the existing Intelsat capacity shortage in the AOR (following the Colino "fire sales" of allegedly surplus capacity), the Commission may speculate on how the traffic PAS is carrying would have been carried by Intelsat.

Intelsat's video tariffs, as well as the design of the Intelsat VII satellites and the procurement of the Intelsat-K, were all made in response to competition from separate satellite systems.[23]

V. CONCLUSION.

If PAS's rulemaking request is granted, the principal beneficiaries will be users of telecommunications services, particularly those in the United States and in developing countries, who will have available a greater quantity and diversity of services at lower prices. Emerging telecommunications entrepreneurs in foreign nations also will have more choice among international facilities, and U.S. companies will have more opportunities to export telecommunications goods and services. If these benefits are to be realized, and if U.S. separate systems policy is to be measured a success in the long run, the policy must evolve and respond to the changes that have been wrought in the international telecommunications market over the past five years

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[23] See, e.g., "Intelsat K: Revenge on PanAmSat?", supra note 14.

-- changes due in no small part to the introduction of competition pursuant to that policy.

For the foregoing reasons, PAS's petition for rulemaking should be granted.

Respectfully submitted,

PAN AMERICAN SATELLITE

By: /s/ Henry Goldberg
Henry Goldberg
Phillip L. Spector

GOLDBERG & SPECTOR
1229 Nineteenth Street, N.W.
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Its Attorneys

July 18, 1990

News from: ALPHA LYRACOM Contact: Elizabeth Dickins
203/ 622-6664

PAN AMERICAN SATELLITE

PAN AMERICAN SATELLITE TO EXPAND SERVICES TO PACIFIC RIM

GREENWICH, CT, August 9, 1990 -- Pan American Satellite has announced plans to develop, launch, and operate a communications satellite system to serve the Pacific Rim countries and Asia. Pan American Satellite has retained the services of Clay T. Whitehead to work together to establish a private international satellite system for the Pacific. This satellite will offer a full range of regional, domestic and trans Pacific international satellite communication services.

"This broadening of our horizons to the Pacific is a logical expansion of business," said Fred Landman, President, Pan American Satellite. "The benefits of a private international satellite system that users over the Atlantic have come to know with PAS-1, will now accrue to users over the Pacific."

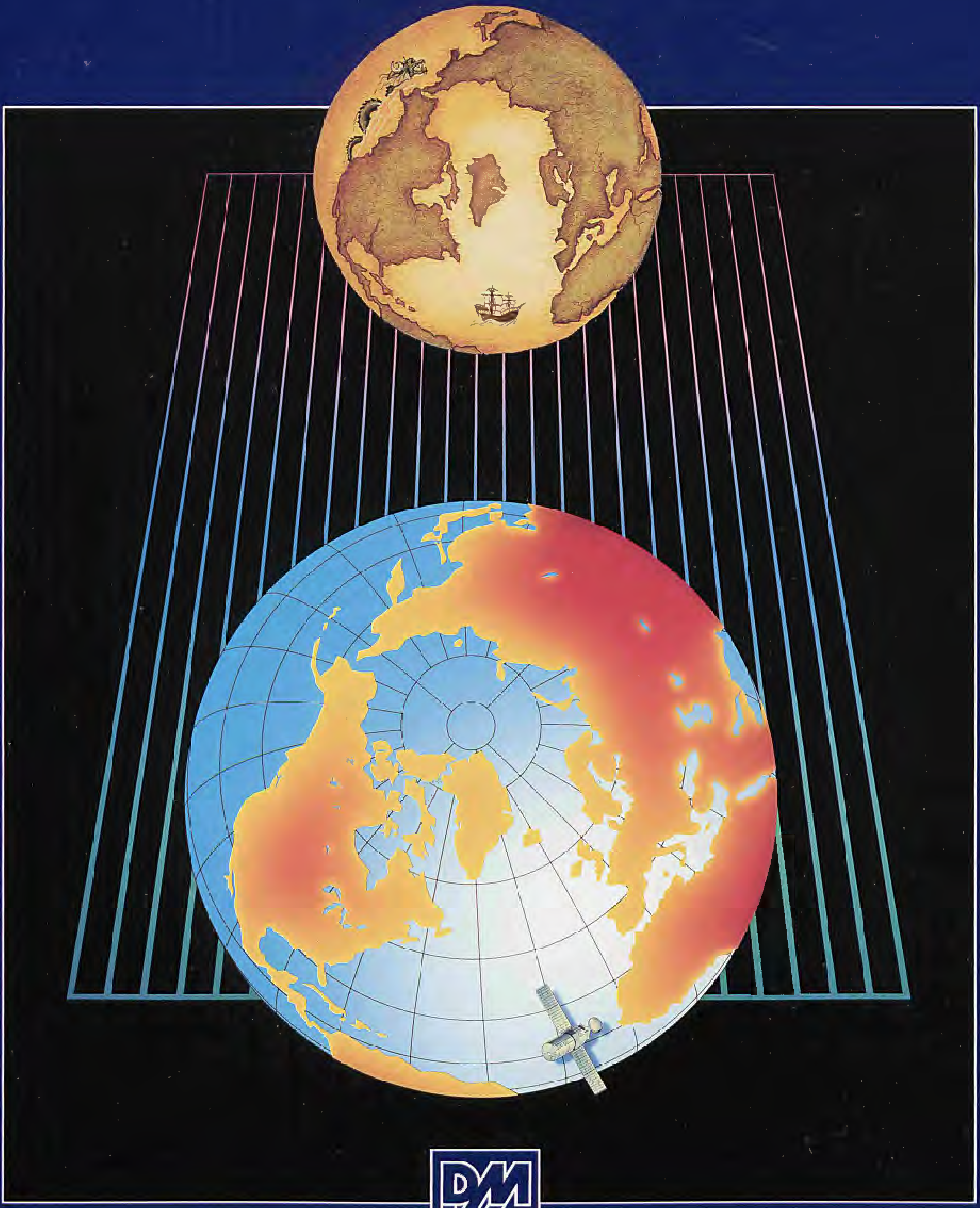
Mr. Whitehead is president of Clay Whitehead Associates and is responsible for several important milestones in the satellite business. He developed the "Open Skies" policy for U.S. domestic satellites while at the White House. As president of Hughes Communications, he developed the Galaxy satellites as the first "condominium" satellites on which transponders were sold rather than provided as a common carrier service. He also founded the Astra pan-European TV satellite service in Luxembourg.

PAS was the first private international satellite operating company with its PAS-1 satellite which connects North and South America and Europe. "Pan American Satellite has proven its foresightedness and ability to provide superior services in the demanding area of international communications," said Mr. Whitehead. "I look forward to working with them on the exciting opportunities in Asia and the Pacific Basin."

PAS-1, a GE Astro series 3000 satellite, was launched in June 1988 and currently provides extensive satellite communication services to over 50 countries throughout Europe, the Caribbean and North, Central and South America.

Telecommunications:

Creating the Future



The DMW Group

Information interchange has played a vital role throughout history. It is fundamental to our culture, the growth of trade, and the development of knowledge. The ability to communicate has shaped every aspect of our society.

Almost all improvements in communications have been driven by technology-based innovation. While we must not forget that technology is merely a means for conveying information, the development of modern society is measured by these enhancements. The beginnings of information interchange can be traced to Egyptian hieroglyphics and the evolution of written languages in Europe and Asia. The roads of the Roman Empire extended law and trade throughout Europe. Gutenburg's moveable type printing press in 1455 brought information within reach of the masses. Clipper ships linked Europe and the Americas closer together. The pony express, and then the telegraph, helped open the American west.

Modern communications began with the invention of the telephone in 1876. By the end of World War I, newspapers and broadcast radio had essentially brought the peoples of the world together. At each step in this evolutionary process, the more information made available, the greater the demand.

The advent of television, computers, and high-speed data communications are a continuation of this process. Information movement is now fundamental to everything we do. The ability of companies to compete is determined by it. The economies of nations are dependent upon it. Looking forward, this evolutionary process will only accelerate towards ever increasing information consumption and movement and ever greater demands upon our telecommunications systems. From sailing ships to communications satellites, this has been our history and will continue to be the challenge of our future.

Creating the Future

To be a competitive force in your industry, you must address the challenges the future holds. This increasingly means using telecommunications technology as an effective business weapon.

At The DMW Group, we eagerly anticipate the future. We are committed to providing the complete range of telecommunications architecture and network integration services—from CEO-level consultation to hands-on implementation assistance—with the most experienced group of international communications professionals anywhere. As the leader in using network systems to gain competitive advantage, we understand the use of information movement to realign markets, overcome geographic constraints, and create the efficiencies needed for profitable operations. And, while we cannot predict the future, DMW has helped our clients do something even better—to create it.

The DMW Group's worldwide organization is dedicated to making our clients' visions of the future the reality others must compete against. We have been assisting the world's largest organizations with their communications systems since 1971. We urge you to join them and let DMW help create your future.

Dixon R Doll

Dixon R. Doll
Chairman

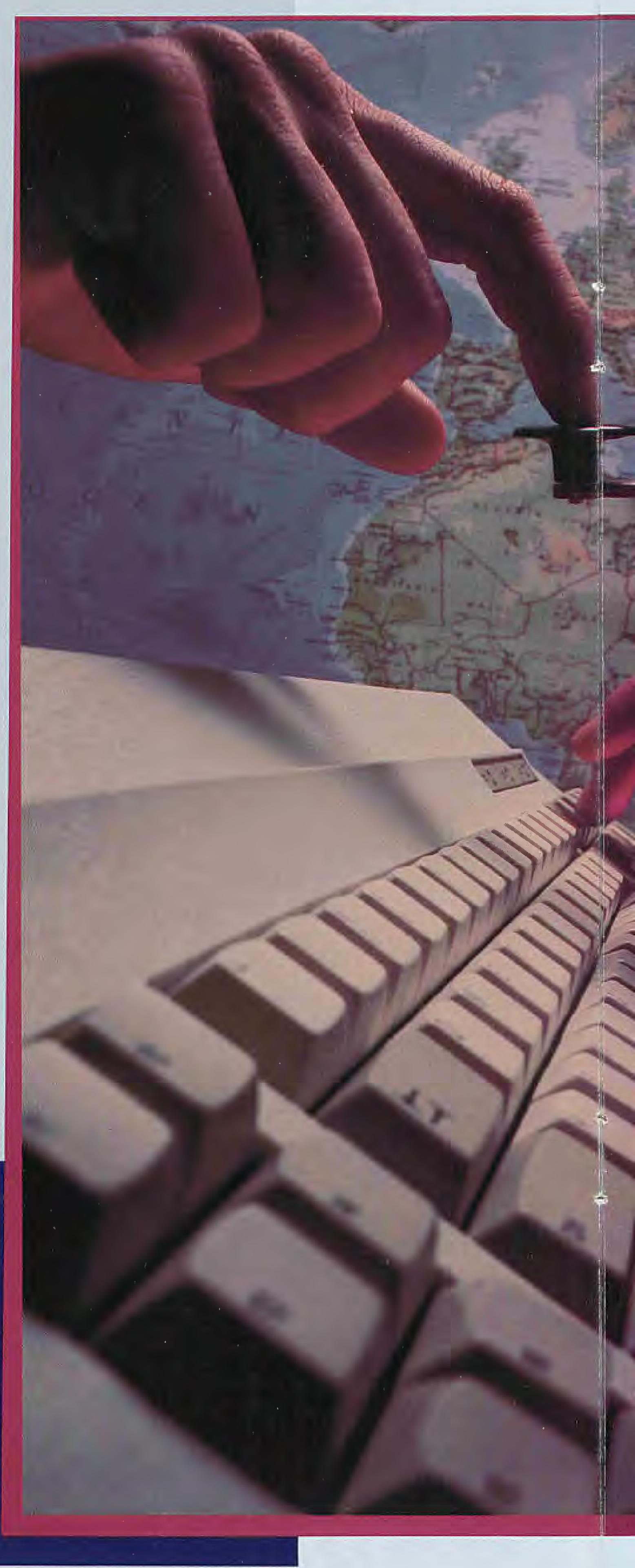
David M Rappaport

David M. Rappaport
President and CEO

The DMW professional staff is headed by two of the most respected figures in telecommunications. Dr. Dixon R. Doll (standing), founder and Chairman of The DMW Group, is a noted authority on telecommunications who has provided personal consultation to the senior managements of the world's leading computer and communications companies. David M. Rappaport, President and Chief Executive Officer, has extensive experience in planning and installing telecommunications networks in North America, Europe and Asia. Previously, he was founder and partner-in-charge of the telecommunications practice of a major international accounting firm.

The DMW Group stands proudly at the head of any list of telecommunications architects and network integrators. The reasons are simple:

- We are independent.
- We are a proven entity.
- We provide the complete range of telecommunications consulting.
- We work with you as a team.
- We provide assistance wherever in the world you need it.



Electronic communications, from the telegraph to high-speed data transmission, is central to every aspect of business. The DMW Group can assist in creating competitive advantage by using this technology to help you realign markets, overcome geographic constraints, and create operational efficiencies.

Helping You Meet the Challenges

Whether you view communication networks as fascinating webs of information movers or as complex, necessary evils, they are increasingly critical to business success. Trouble-free business operations, timely decision-making, and competitive customer service all hinge upon a dependable technological infrastructure. Your most aggressive business plans will fall short with a system that is poorly conceived or ineffectively implemented. Often telecommunications and data processing staffs know their current environments but stay busy keeping operations going. Only rarely do they take the time required to work with the business managers to plan for needs years down the road.

The DMW Group is the leader in developing and implementing communications network-based solutions to meet strategic business goals. We understand where technology is going and know how it is being used most effectively. We apply that knowledge daily in industries ranging from aerospace to electronics, from health care to government and from finance to transportation. We have the experience to look through problems and distill the myriad of technological details into crisp business solutions. These solutions help you meet the challenges the future holds.

Blue Chip Client List

Since 1971, the DMW Group staff has worked with some of the leading international companies in the following industries:

Financial Services, including Citicorp • Bank of America • Goldman Sachs • Merrill Lynch • Shearson Lehman • John Hancock • Equitable

Manufacturing, including Ford Motor Company • Chrysler Corporation • Hughes Aircraft • 3M • Eastman Kodak • Johnson & Johnson • Upjohn Pharmaceutical

Energy and Petrochemicals, including Mobil Oil • British Petroleum • Sun Oil • American Cyanimid • Borg-Warner Chemicals

Communications and Electronics, including AT&T • GTE • MCI • Tymnet • Nynex • Apple Computer • Siemens • Toshiba • N.V. Philips • IBM • ICL • DEC

Transportation, including American Airlines • United Airlines • Ward Air • Hertz • North American Van Lines • Union Pacific Railroad

Consumer and Professional Services, including J.C. Penney • Burger King • University of Michigan • Harvard Medical School • Humana Inc. • Hershey Chocolate • Hallmark Cards • Procter & Gamble • Mervyn's

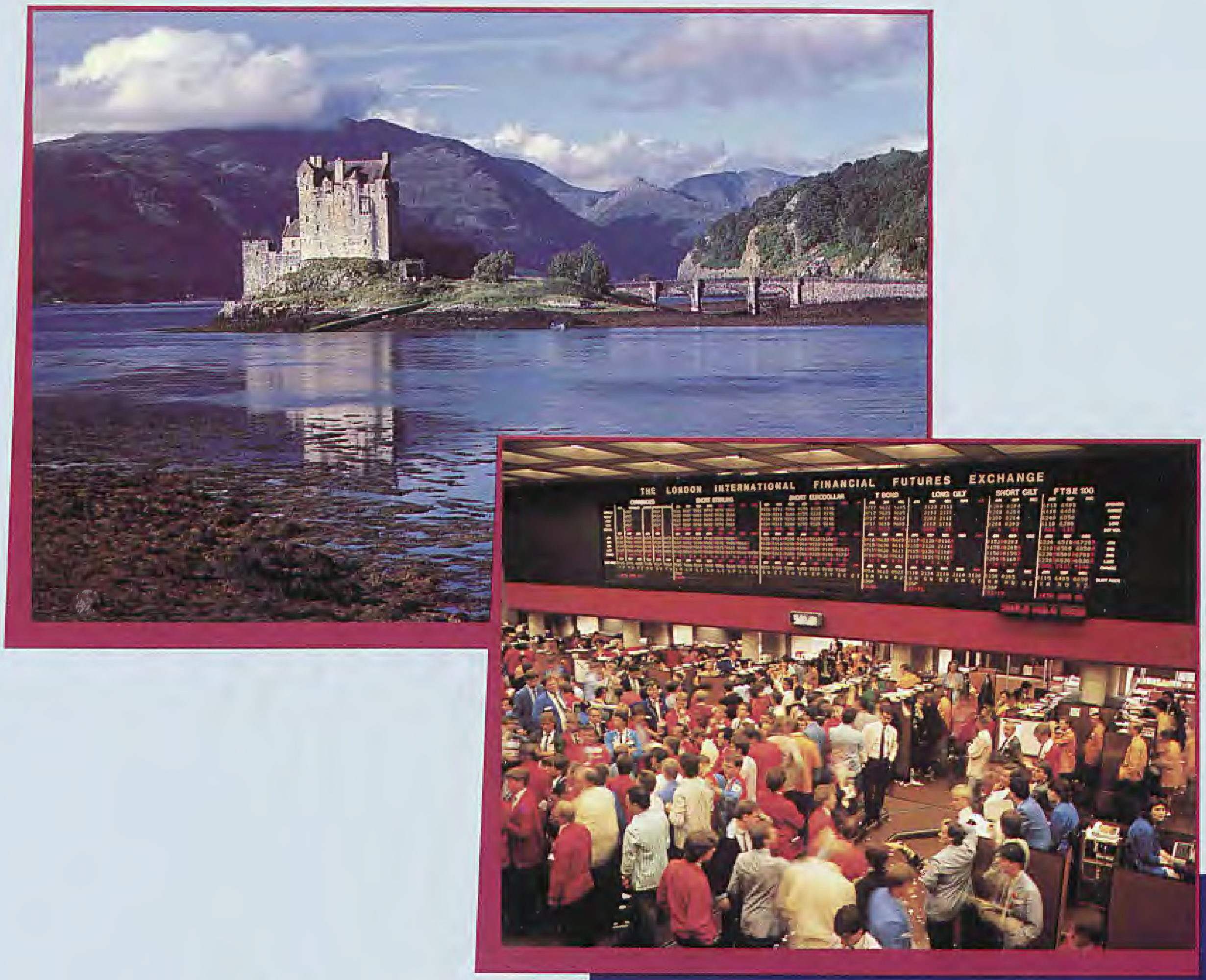
Government, including States of California, Connecticut, Michigan and Minnesota • U.S. Departments of Agriculture, Defense and Treasury • NASA • British Department of Health and Social Services

The DMW Group has been the world's leading telecommunications architecture and network integration firm for almost two decades.

We are independent.
DMW offers the freedom, imagination, and objectivity that comes only with complete corporate independence from any products or other lines of business. Our consulting practice is dedicated to information interchange and we focus exclusively upon finding the best solution for your communications needs.

We are a proven entity.
DMW has worked with a broad cross section of the Fortune 500, the financial industry, major vendors and carriers, local and federal governmental agencies, and health care organizations. We have provided expert, independent counsel for hundreds of clients since our start in 1971. DMW's staff combines business and management expertise with the in-depth understanding of technology demanded by those whose communications networks are the lifeblood of their business.

We provide the complete range of telecommunications consulting. DMW provides CEO-level consultation to hands-on implementation assistance for both users and providers of telecomm products and services. We can address your voice, data, and image networking needs within a single building or around the globe. Whether your needs include strategic planning, network architectures, competitive procurements, telecommunications management, network integration, or communications product planning, DMW has the expertise required.



The beautiful tranquility of the Scottish countryside stands in sharp contrast to the frenzied pace of the London Futures Exchange. Yet, both have been shaped by the availability and timeliness of information—whether invading marauders or the price of financial instruments. Many of the leading international corporations have used the expert, independent counsel of The DMW Group to address the telecommunications architecture and network integration necessary for making information available when and where required.

We work with you as a team. Your project will be a joint effort of DMW professionals and your own personnel. DMW helps synthesize CEO-level concerns and priorities with the needs of your end-users or customers. Every decision is made jointly and your staff will be prepared to adopt and support the results upon project completion.

We provide assistance wherever in the world you need it. DMW has extensive experience in the planning and installation of worldwide communications networks. Our personnel have worked on projects from London to Tokyo and New York to Singapore gaining expertise in both local and international communications issues. The DMW worldwide organization can address your global needs.

Case Studies

International Financial Services Organization
A major financial services organization with global operations needed to consolidate its many help desks in order to speed up problem resolution, reduce user frustration, and facilitate information interchange. The consolidation necessitated decisions on a vast array of inter-related management, customer, and technical issues. The environment consisted of branch office LANs, interfaces to T1, application databases, and Tandem systems. DMW's recommendations included corporate standards, service level agreements, automation and expert systems, a management reporting system, an integrated, multi-vendor communication system, and a detailed implementation plan for consolidating help desks. DMW then assisted this client to successfully execute the consolidation plan.

Major Hospital Group
A regional hospital group needed help designing and implementing a metropolitan area network linking five hospitals. Their communications environment consisted of optical fiber among buildings, T-1 links, Timeplex TDM equipment, IBM 4381s, System/36s and System/38s, and Burroughs, Wang, and DEC machines. DMW and the hospital identified the key applications and determined the network requirements for patient care systems, material management, and payroll/general ledger. DMW defined a broadband network architecture, a wiring strategy, network management and control guidelines, and a training program.

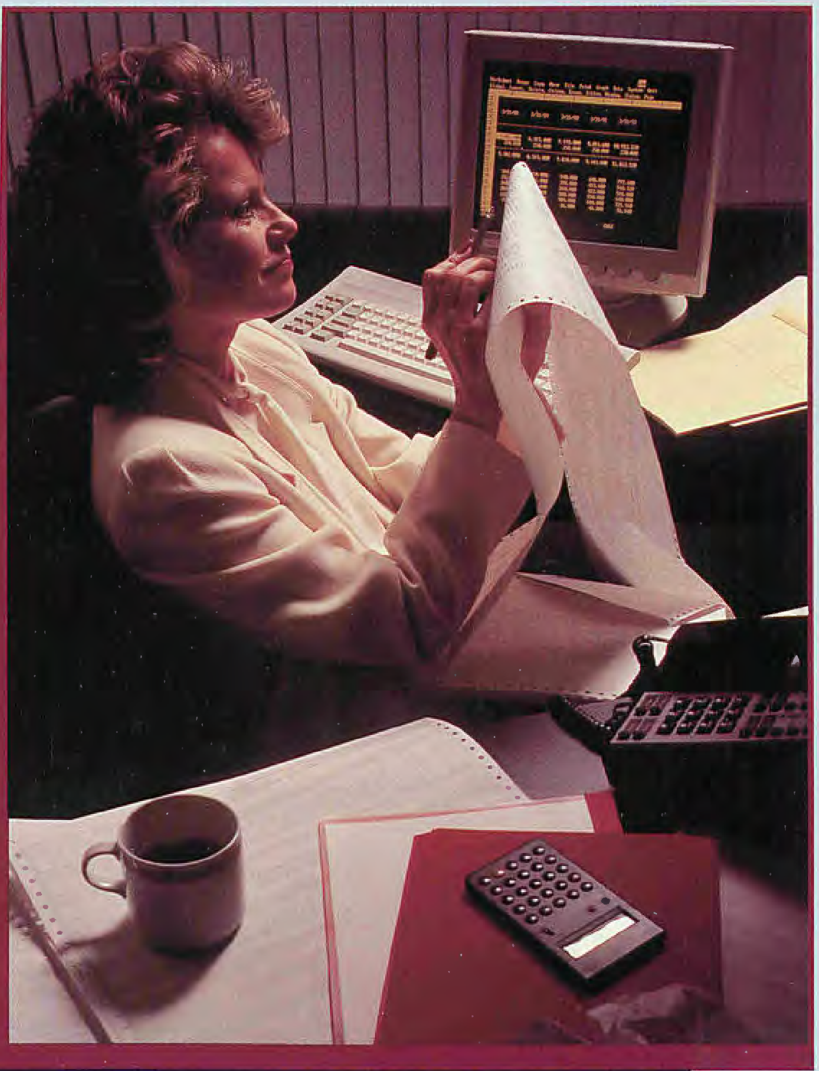
Major Manufacturer
A leading manufacturer of office furniture with a worldwide customer base needed a plan for its local area networks; metro-area voice, data, and

(continued on next page)

The Assistance You Desire

The DMW Group provides the full range of communications consulting and implementation services for both end-users and vendors. Whether you desire high-level consultation or assistance in installing the latest telecommunications technology, DMW can help. Our services encompass:

Telecommunications Strategic Planning is a key facet of The DMW Group's end-user consulting services. DMW works with you to develop a three- to five-year telecommunications technology strategy, based on your company's business plan. By gaining a thorough understanding of your business plans and directions, we



The Personal Computer has become as regular a fixture in the office as the telephone. DMW possesses the expertise needed to design, cable and maintain the voice and data local area networks necessary for efficient office operation.

help develop a long-range telecommunications plan that inherently supports your business goals. Often, this process also identifies opportunities for short-term cost savings and system improvements.

Telecommunications Architecture Services build upon your telecommunications strategic plan to design network systems which integrate into your business and information technology infrastructure. DMW's unparalleled practical experience with advanced architectures, based upon both OSI and proprietary standards, ensure your systems will communicate effectively today and into the future.

Competitive Procurement Services assist you in the purchase of telecommunications technology that best meet your needs. The DMW Group's in-depth knowledge enhances your ability to select equipment and services; such as telephone systems, multiplexers, network management systems, and domestic and international carrier facilities. The DMW Group is also the demonstrated leader in managing large-scale procurement of equipment and services in the United States under FCC carrier bulk tariffs and in Europe under EC/GATT regulations.

Network Integration is a major service of The DMW Group, resulting in the creation of local-, metropolitan- and wide-area networks tailored to the price/performance characteristics of your users' applications. DMW works with you to design, cable and implement LANs, file servers, and gateways. We coordinate the installation and end-to-end testing of your network equipment, systems, and carrier facilities. As these voice, data and video networks increasingly must accommodate multi-vendor environments and conform to international communications standards, the expertise of our worldwide organization will provide you unfettered connectivity down the hall or across international boundaries.

Telecommunications Management Services from The DMW Group helps you more effectively control your communications resources. DMW undertakes detailed organizational studies, recommends tools and procedures for optimal telecommunications management, and assists in staff development and training. In addition, DMW helps you address issues such as international transborder data flow restrictions, the organizational impact of telecommunications strategies, and the performance and cost implications of new communications intensive applications.

Product Planning and Market Assessments are The DMW Group's high-level consultation services to vendors of telecommunications equipment and facilities. We help these vendors to identify emerging markets, and plan new products and services for these markets. This special perspective keeps The DMW Group on the leading edge of telecommunications and network integration solutions and further enhances the expertise we bring to our end-user clients.

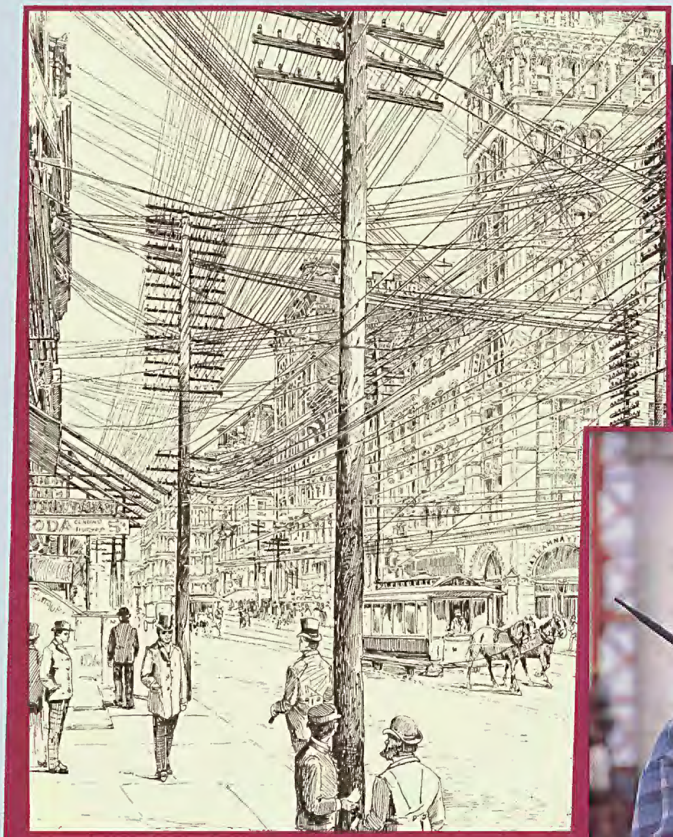
video; and nationwide data networks. The manufacturer needed more accurate orders, faster response on orders, and improved service on order status inquiries. DMW defined an integrated backbone network that provided high availability and flexible bandwidth management. We developed wiring and distribution plans for new and renovated buildings, a nationwide implementation plan, and the methodology and procedures to maintain and update the strategic plan. DMW worked with the manufacturer and its hundreds of dealerships to implement the plans.

Federal Government Agency

A large U.S. federal agency connecting 3,000 IBM System/36s in state and county offices needed to improve the network's efficiency, operation, and management. DMW evaluated architectural alternatives including dialup, leased line, packet switching, and satellite transmission. We based our recommendations upon management and technical requirements, vendor and common carrier strategies and directions, and OSI/GOSIP standards. We also addressed the organizational structure, staffing requirements and tools necessary for the network management and control function.

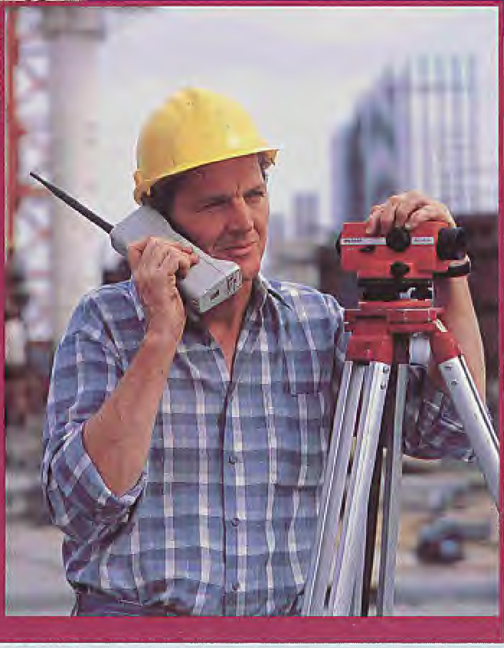
International Electronics Corporation

A major European-based electronic components manufacturer needed to address their rapidly changing business requirements for international communications and the linking of customers and suppliers to their computer systems. DMW evaluated alternative network architectures and defined a communications strategy that addressed both OSI and vendor proprietary architecture directions, the evolution of ISDN internationally, the optimization of existing network traffic, network management and calamity planning.



Historical Pictures Service, Chicago

While it is easier to communicate today than it was a century ago, this appearance of simplicity is deceiving. Technological advances have merely hidden the complexity from the user. The DMW professional staff understand this and can help implement the organization, tools, procedures and training to manage the complexities of modern networks.



DMW—The Experience You Seek

Telecommunications is the most important enabling technology available to corporations today. By effectively utilizing this technology, you can leverage your fundamental business strategies across broader markets to achieve your long-term goals. The DMW Group translates this enabling technology directly into network systems that provide worldwide competitive advantage for our clients.

DMW has lead in the application of telecommunications to business needs since 1971. Whether to install a local area network, plan an integrated voice and data system that spans the globe, or assess market directions, The DMW Group's worldwide organization has the experience you seek. Call the DMW office nearest you to learn how we can help in creating your future.

"Since before the era of the sailing ship, timely information interchange has been an important business weapon. Today's challenge is to take advantage of rapidly changing technology to gain a competitive edge. Those who meet this challenge will be Creating the Future others must compete against."

—David M. Rappaport
President and CEO

Designed and produced by Synthesis Concepts Inc.

The DMW Group
WORLDWIDE

telecommunications architecture and network integration

Ann Arbor, MI • Chicago, IL • London, U.K. • New York, NY • San Francisco, CA • Washington, DC

Location courtesy of Farson-Mills House, Oak Park, Illinois

Pan American Satellite

Rubin, Bednarek and Associates, Inc.

TECHNICAL MEMORANDUM

Date: **July 31, 1990**

To: **Tom Whitehead/Henry Goldberg**
Fm: **Philip Rubin**

Sb: **Assigned Pacific Satellites and Coverages**

Using as limits those called out in the table I provided to you yesterday (just reaching from San Francisco to Honolulu on the east), the list of assigned satellites of interest to us is in the second half of the Table 1 below. In the first half are those satellites further to east. Two types of maps are provided to orient you to the possible coverages.

<u>Table 1</u>

<u>East of 190ºWL</u>

160WL - USSR at 12 and 14GHz
165WL - USASAT-14L
168WL - USSR at 12 and 14GHz
170WL - USSR at 4 and 6GHz
171WL - USASAT-14E
172.5WL - Tongasat at 4 and 6GHz
174WL - TDRS
175WL - PACSTAR-2 at 4, 6, 12 and 14GHz
178WL - USASAT-13K
180EL - Intelsat at 4, 6, 12 and 14GHz
177EL - Intelsat at 4, 6, 12 and 14GHz
174EL - Intelsat at 4, 6, 12 and 14GHz
170.75EL - Tongasat at 4 and 6GHz

<u>190WL (170ºEL) onward</u>

170EL - USASAT-13M at 12 and 14GHz
167.45EL - PACSTAR-1 at 4, 6, 12 and 14GHz
164EL - Aussat 3

164EL - Tongasat
162EL - Superbird at 12 and 14GHz
160EL - Aussat 1 at 12 and 14GHz
160EL - Tongasat at 4 and 6GHz
158EL - Superbird at 12 and 14GHz
157EL - Tongasat at 4 and 6GHz
156EL - Aussat 2 at 12 and 14GHz
154EL - Tongasat at 4 and 6GHz
154EL - JCSAT at 12 and 14GHz
154EL - ETS (Japan) at 4 and 6GHz
151EL - Tongasat at 4 and 6GHz
150EL - JCSAT at 12 and 14GHz
148EL - Tongasat at 4 and 6GHz
145EL - USSR at 4 and 6GHz
142.5EL - Tongasat at 4 and 6GHz
140EL - USSR at 4 and 6GHz and 12 and 14GHz
138EL - Tongasat at 4 and 6GHz
136EL - Japan at 4 and 6GHz
134EL - Tongasat at 4 and 6GHz

Table 2 is a list of the Intelsat Pacific Ocean satellite locations.

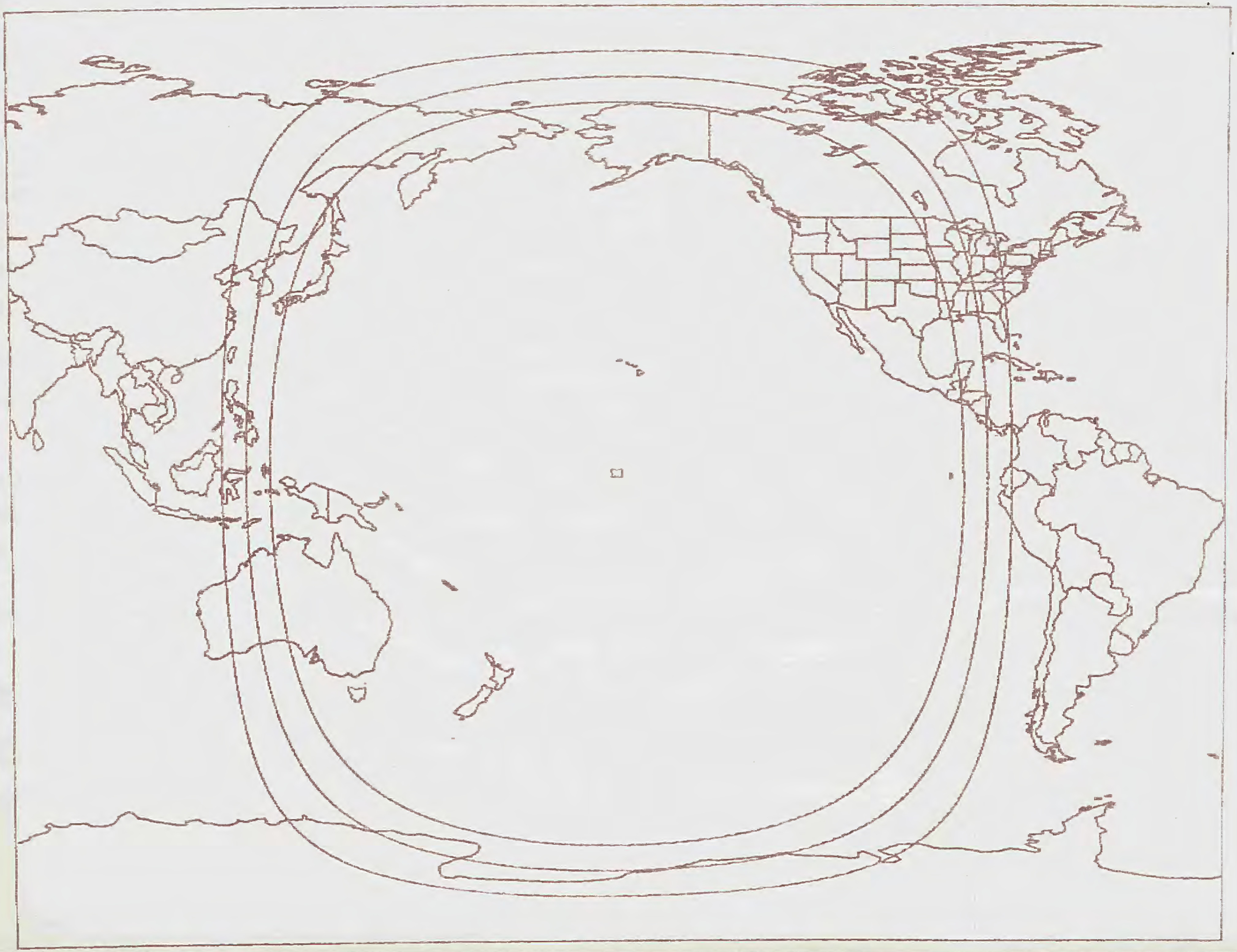
Three flat maps are provided for the easternmost coverage, the westernmost coverage and the ideal 190°WL coverage assigned to USASAT-13M. In addition, three normal earth view maps as seen from geosynchronous orbit showing both ends of the coverage are also provided.

Table 2 - <u>INTELSAT Pacific Ocean Region Satellite Locations</u>

SATELLITE LOCATION	SATELLITE TYPE		
	V	VA	VII
186°W / 174°E	1989-1990	1990-1992	1992
183°W / 177°E	1989-1991	1991-1993	1993
180°W / 180°E	1989-1996	N/A	N/A

<u>Note</u> - The IESS documents indicate that their are no current plans to deploy INTELSAT VA(IBS) and INTELSAT VI satellites in the Pacific.

100° WL
200° EL

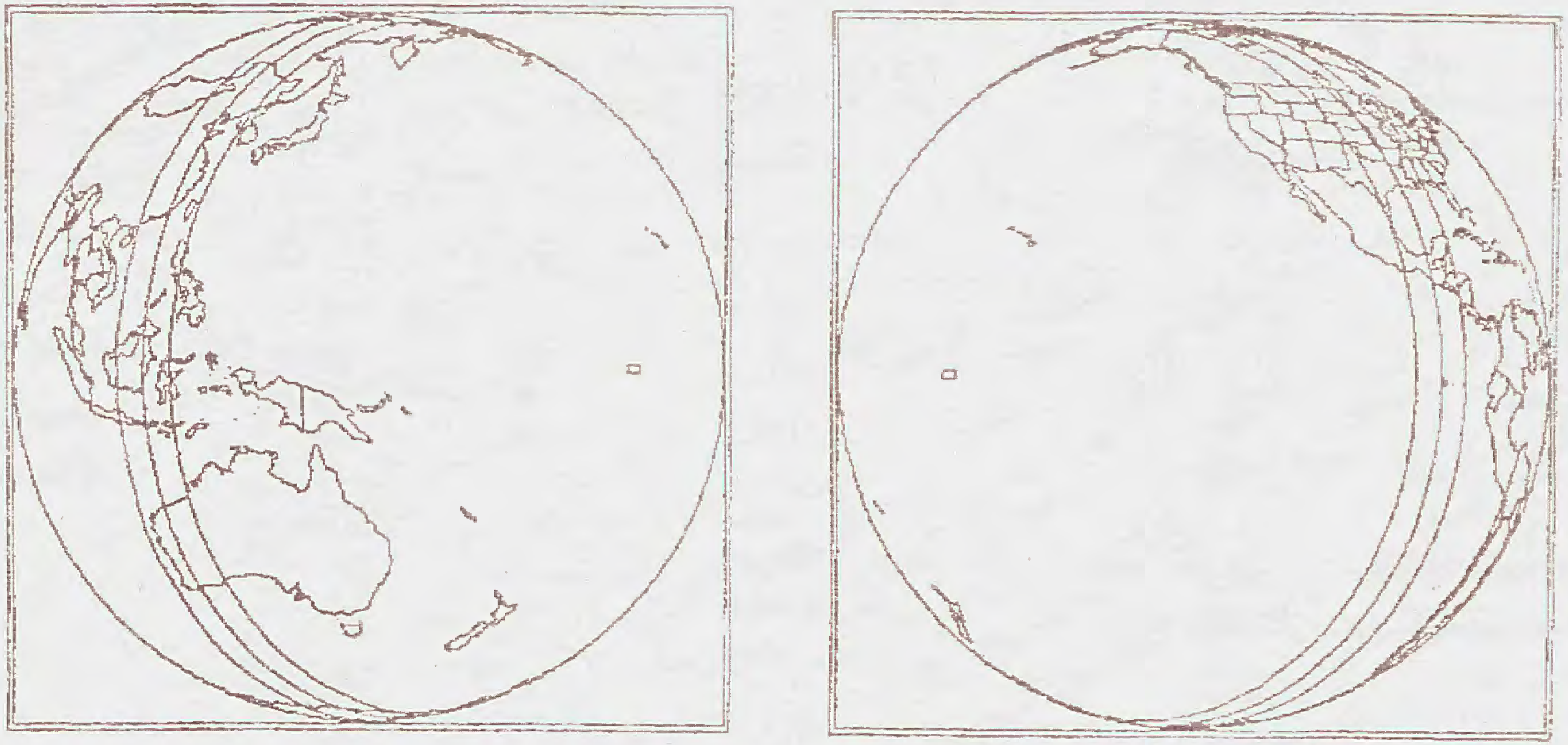


190 [illegible]L

170 EL

133° EL

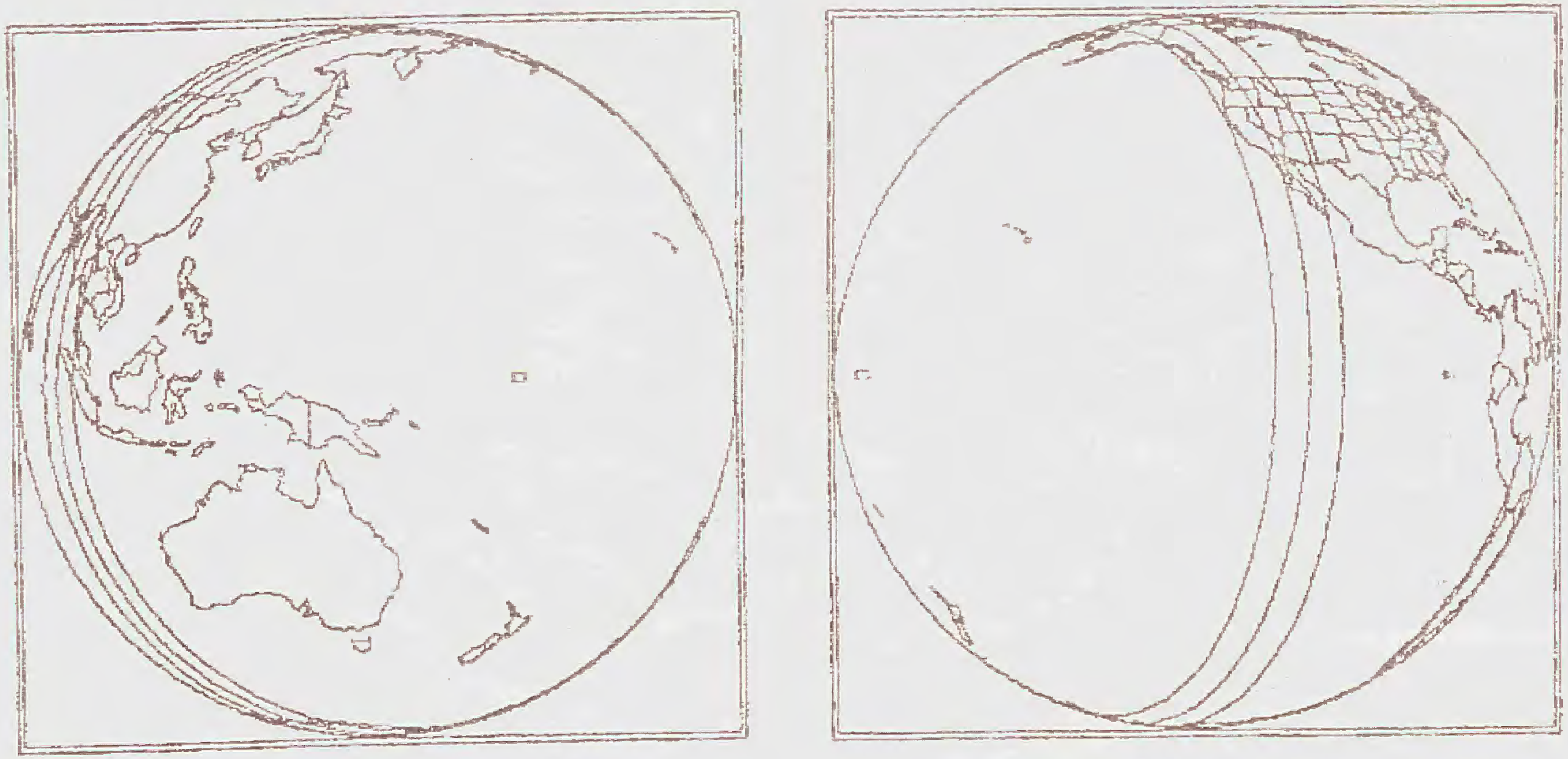
Figure 1 - COVERAGE PROVIDED FROM 168°W LONGITUDE



(View Center = 150°E)

(View Center = 130°W)

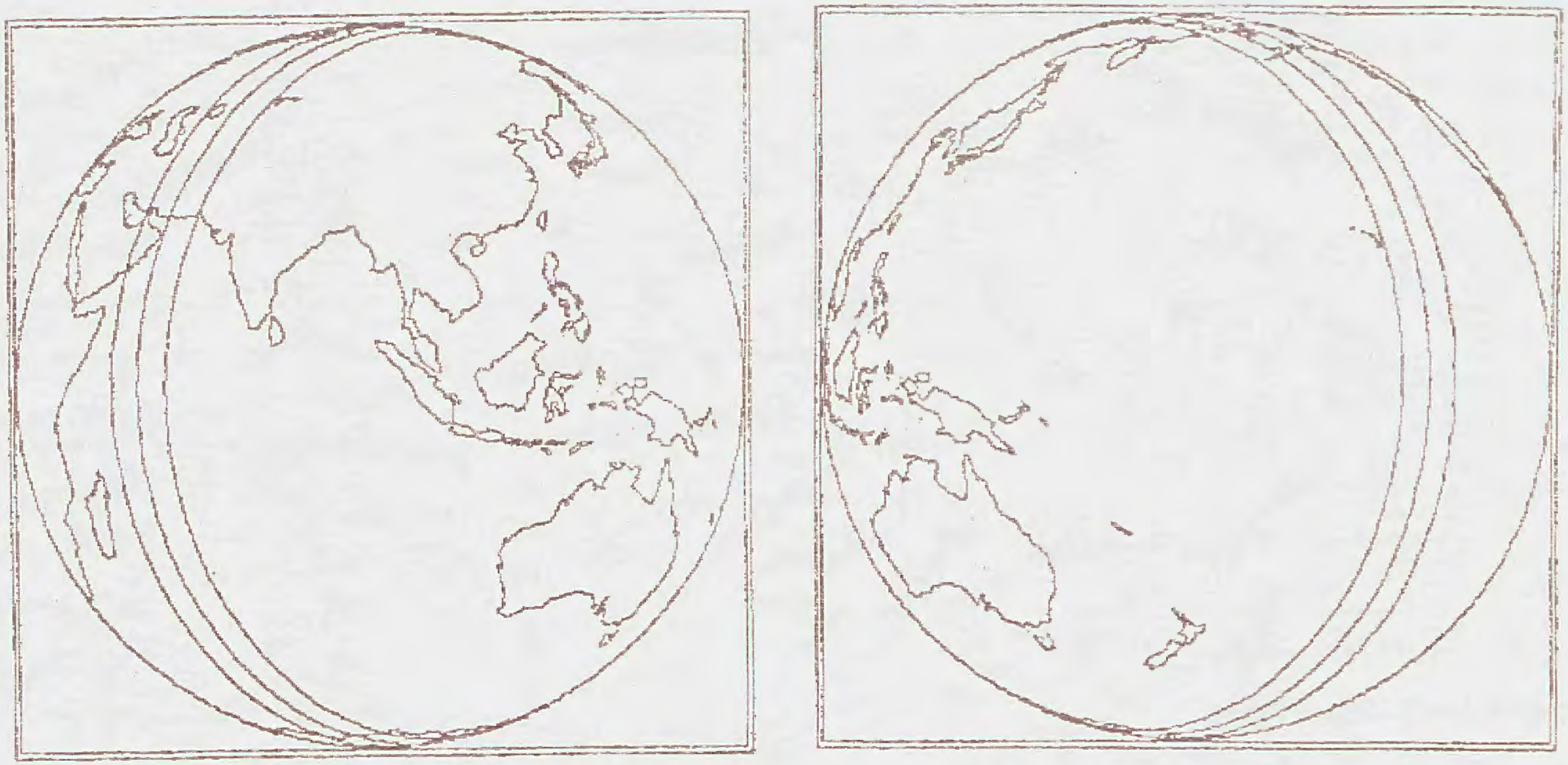
Figure 2 - COVERAGE PROVIDED FROM 190°W (170°E) LONGITUDE



(View Center = 150°E)

(View Center = 130°W)

Figure 3 - COVERAGE PROVIDED FROM 225°W (135°E) LONGITUDE



(View Center = 95°E)

(View Center = 175°E)

AUTOMATIC COVER SHEET

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