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

APR 16 1990

Federal Communications Commission  
Office of the Secretary

In the Matter of the Applications of )  
 )  
AMERICAN TELEPHONE AND TELEGRAPH COMPANY )  
 )  
For Authority to Construct, Launch and )  
Operate Space Stations in the Domestic )  
Fixed-Satellite Service )  
 )

25/26/27-DSS-ML-90  
SAT-MOD-19900416-00013  
File Nos.  
6028-DSS-P/LA-87  
6029-DSS-P/LA-87  
6030-DSS-P-87

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Domestic Facilities Division  
Satellite Radio Branch

APPLICATION FOR MODIFICATION OF LICENSE

AMERICAN TELEPHONE AND TELEGRAPH COMPANY

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Dated: April 13, 1990

## SUMMARY

In response to customer requests for 27 MHz transponders and additional 54 MHz transponders, AT&T requests modification of its license for its TELSTAR 4 series satellites to make technical modifications designed to satisfy these customer needs. AT&T also requests extensions of a few months in which to complete construction and launch these satellites, in large part to accommodate the construction schedule for these technical changes.

None of the technical modifications will change any of the significant technical parameters (i.e. power flux densities and receive sensitivities) already on file with the Commission, and thus no additional interference with adjacent satellites is anticipated.

The delay requested in the remaining milestone dates -- 5 months to launch TELSTAR 401, three months to launch TELSTAR 402, and four months to complete construction of TELSTAR 403 (ground spare) -- is modest and should be granted. There is no issue of AT&T's "warehousing" orbital locations, because it has already started construction of these satellites, and because it must launch TELSTAR 401 and 402 in time to ensure

customers' service continuity from the TELSTAR 301 and 302 satellites they are intended to replace. Under these circumstances, the Commission should grant the modest license modifications requested by AT&T.

TABLE OF CONTENTS

	<u>Page</u>
SUMMARY . . . . .	i
TABLE OF CONTENTS . . . . .	iii
TECHNICAL CHANGES . . . . .	2
1. Ku-Band Bandwidth Changes . . . . .	3
2. Optional 27 MHz Transponders . . . . .	4
3. Extension of Power Boost Capability . . . . .	6
EXTENSION OF "MILESTONE" DATES . . . . .	7
CONCLUSION . . . . .	11

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APPLICATION FOR MODIFICATION OF LICENSE

Pursuant to Sections 214, 308, 309 and 319 of the Communications Act of 1934 as amended, 47 U.S.C. §§ 214, 308, 309 and 319, American Telephone and Telegraph Company ("AT&T") hereby requests modification of the licenses for its TELSTAR 401, 402 and 403 (ground spare) satellites to permit certain technical changes to be made to those satellites to respond to the demands of AT&T's satellite customers, and to extend by a few months the "milestone" dates to complete construction and launch those satellites. Construction of the satellites has already been commenced in compliance with the applicable "milestone" dates.

The licenses were issued in In re Application of AT&T, 3 FCC Rcd. 6980 (1988), which granted AT&T authority to construct all three, and launch and operate the first two, TELSTAR 4 series space stations in the domestic

fixed-satellite service. AT&T's TELSTAR 401 and 402 satellites represent replacements of the TELSTAR 301 and 302 satellites currently in operation.\*

#### TECHNICAL CHANGES

The Commission has observed:

"Given the two to three year construction period for a satellite, the Commission often receives requests from licensees to modify the technical design of their satellites while they are being built. If the proposed modification does not present any significant interference problems and is otherwise consistent with the Commission policies, it is generally granted."\*\*

This policy benefits not only the licensee, but also customers whose satellite needs may either evolve or be differently identified during the long satellite planning and construction period. Since its June 29, 1989 modification request, AT&T has received requests from both existing and potential customers for further technical modifications of its satellites. These include requests for more 54 MHz and 27 MHz transponders, in preference to

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\* AT&T's initial application for the TELSTAR 4 system was filed with the FCC on September 15, 1987. An amendment to the application was requested on June 29, 1989, which proposed certain modifications to the Ku-band frequency plan, the addition of a downlink spotbeam to Hawaii, and the introduction of an uplink interference control subsystem. Those modifications were authorized in American Telephone and Telegraph Company, Order and Authorization, DA 90-279 (March 2, 1990) ("Modification Order").

\*\* Modification Order, at ¶ 7.

the 36 MHz transponders which AT&T had planned previously. Incorporating these changes will cause only modest delay in completing construction and subsequent launch of these satellites. AT&T requests the Commission to authorize the following technical modifications to the TELSTAR 4 application.

1. Ku-Band Bandwidth Changes

AT&T requests a change in the Ku-band frequency plan at 12/14 GHz to include sixteen transponders with 54 MHz bandwidth channels, in lieu of the previous plan which included eight 54 MHz transponders and twelve 36 MHz transponders. The new plan will have the 54 MHz transponders in both the vertical and horizontal antenna polarizations.\*

Cross-strapping capability between the Ku-band and C-band frequencies would be retained, although only 16 combinations of transponders would be cross-strapped because of the reduction in the total number of transponders in the Ku-band. Filtering and switching would be modified appropriately to permit cross-strapping between Ku-band and C-band transponders of different bandwidth.\*\*

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\* A frequency plan is attached as Figure 1 hereto.

\*\* A cross-strapping schematic is attached as Figure 2 hereto.

This modification to the frequency plan would result in increased flexibility in coordinating TELSTAR 4 Ku-band services with adjacent satellite operators. Several carriers have already applied for licenses to build, launch, and operate satellites with 54 MHz Ku-band transponders. These include the Hughes GALAXY-IV (formerly GALAXY C), assigned adjacent to TELSTAR 401 at 99° W.L., and GTE's SPACENET-IIIIR, proposed for future assignment adjacent to TELSTAR 402 at 87° W.L.\* AT&T has previously commented on the coordination benefits that could be derived from a standardization of the Ku-band frequency plan.\*\* AT&T expects its proposed frequency plan, which is more compatible with other satellites in the nearby orbital arc, will be easier to coordinate than the existing, approved plan.

## 2. Optional 27 MHz Transponders

AT&T seeks authorization to incorporate the capability to convert independently any of the upper four

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\* See Memorandum Opinion and Order, FCC 89-364 (January 11, 1990) at 10; In the Matter of Application of GTE Spacenet Corp. for Authority to Construct a Satellite in the Domestic Fixed-Satellite Service, File No. 6020-DSS-P/LA-87 (September 15, 1987). AT&T anticipates that SPACENET-IIIIR, when launched, will be located at the same orbital position as the SPACENET-III satellite it is to replace.

\*\* Comments of American Telephone and Telegraph Company, Report No. DS-684 (January 19, 1988), at 26-27; Reply Comments of American Telephone and Telegraph Company, Report No. DS-684, File Nos. 6028-DDS-P/LA 87, 6029-DSS-P/LA, and 630-DSS-P-87 (February 23, 1988) at 17-18 n.\*\*.



Ku-band 54 MHz transponders in either polarization into two transponders of 27 MHz each.\* Allowing independent 27 MHz channels, rather than requiring a customer to place two carriers in a single 54 MHz channel, affords more efficient use of power resources because intermodulation does not occur.

In order to provide more guard bandwidth to allow AT&T to enhance overall filter characteristics where the dual 27 MHz transponder feature would be available, the guard bands between the upper four 54 MHz Ku-band transponders of each polarization would be set at 8 MHz. The guard bands between the lower four 54 MHz transponders of each polarization would be fixed at 6 MHz, and those between transponders 7 and 9, and between transponders 8 and 10, would be set at 7 MHz.

Because this change would allow capacity to be used either as 54 MHz transponders or as 27 MHz transponders, it should give AT&T additional flexibility to meet the evolving needs of its customers. Moreover, the change will allow AT&T to better coordinate services with adjacent satellite operators such as Hughes and GTE, both of whose applications propose the inclusion of similarly sized transponders in the upper Ku frequency band.

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\* This feature would be accomplished via onboard switching under ground control.

3. Extension of Power Boost Capability

AT&T seeks authorization to modify the power boost capability of its TELSTAR 4 satellites to include all 24 C-band transponders and the upper six 54 MHz Ku-band transponders of each polarization. Previously this feature was proposed for six C-band and six Ku-band transponders. The purpose of the requested modification is to make the power boost capabilities of the satellite consistent with the revised frequency plan, and provide additional capabilities to customers.

At C-band, this capability would provide for increasing the power allocated to each transponder from the nominal 10 watt level to a maximum of 20 watts. At Ku-band, power could be similarly increased from 60 watts to 120 watts. The high power mode would make use of excess power derived from transponders carrying traffic that does not require the nominal transponder power. Total power consumption on the TELSTAR 4 satellites would remain unchanged. When a 54 MHz Ku-band transponder is replaced by two 27 MHz channels, one of the channels could be operated in the power boost mode at up to 120 watts, while the adjacent channel could be operated simultaneously at 60 watts.

None of these alterations would change any of the significant technical parameters already on file and approved by the Commission, because no changes are

proposed in the power flux densities or receive sensitivities associated with interference between the TELSTAR 4 system and other satellite networks.

EXTENSION OF "MILESTONE" DATES

Construction of the TELSTAR 4 series satellites was timely commenced in July 1989.\* AT&T requests an extension of the "milestone" date to complete construction of TELSTAR 401 from September 1992 to March 1993, and an extension of the "milestone" launch date from December 1992 to May 1993.\*\*

AT&T also requests an extension of the remaining "milestone" dates for TELSTAR 402 and 403. It requests that the Commission extend (i) the "milestone" date to complete construction of TELSTAR 402 from September 1993 to January 1994; (ii) the "milestone" launch date from December 1993 to March 1994; and (iii) the "milestone" date for completed construction of the TELSTAR 403 satellite from March 1993 to July 1993.

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\* Affidavit of Jeffrey M. Friedman dated March 1, 1990, attached to Letter from Leonard J. Monize (AT&T) to James R. Keegan (Chief, FCC Domestic Facilities Division), dated March 2, 1990.

\*\* The vendor has a contractual obligation to review with AT&T the detailed workplan schedule after it is prepared, for the purpose of reducing the delay.

The extensions are necessary in part because AT&T's satellite vendor requires additional time to incorporate the technical changes to the satellite, described above, in response to marketplace demand, and in part because of unanticipated schedule delays since AT&T first filed its milestone dates with the Commission 2 1/2 years ago.\* The schedule changes for TELSTAR 402 and 403 are necessary because testing and quality inspection schedules for TELSTAR 402 and 403 are affected by the delayed construction and launch of TELSTAR 401, as the same technical personnel that are responsible for TELSTAR 402 and 403 are also responsible for the construction and launch of TELSTAR 401.

The rationale underlying the Commission's policy of requiring adherence to the milestone schedule is to "prevent[] orbital locations from being 'warehoused' by licensees who have not yet decided whether to proceed with their plans."\*\* In this case, AT&T has already commenced construction of the satellite and is contractually obligated to pay its satellite vendor. In addition, AT&T is contractually obligated to provide continued satellite service to a large customer after the end of the useful

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\* AT&T did not quantify these delays until after the prior modification request was filed in June 1989.

\*\* MCI Communications Corp., 2 FCC Rcd. 233 (1987), at ¶ 5.

life of the TELSTAR 301 and 302 satellites.\* Thus, there is no doubt that AT&T will proceed with its satellite plans, and the few months requested delay do not amount to "warehousing" orbital locations to the detriment of other satellite operators. Rather, this modest delay will permit AT&T to incorporate technical features requested by actual and potential customers, and accommodate appropriate time for testing, thus serving the public interest. In similar situations where, as here, "warehousing" was not an issue, the Commission has granted licensees much longer delays.\*\*

In keeping with its overall policy, the Commission has traditionally granted requests for milestone extensions "when delay in implementation is due to circumstances beyond the control of the licensee."\*\*\* In this case, much of the requested delay is caused by changes in marketplace demand, as evidenced by requests

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\* TELSTAR 301 (which TELSTAR 401 is to replace) will run out of fuel as early as fall 1993; TELSTAR 302 (which TELSTAR 402 is to replace) will run out of fuel as early as the fall of 1994. AT&T's requested schedule revisions will allow its TELSTAR 301 and 302 customers to transfer to TELSTAR 401 and 402 without loss of continuous service.

\*\* For example, Contel's ASC-2 satellite was granted a four-year launch delay (from 1987 to 1991) when the licensee had difficulty contracting for launch services, after the satellite was constructed. See Letter from James R. Keegan (Chief, Domestic Facilities Division) to Joan M. Griffin (CONTEL ASC) dated December 29, 1987, concerning File No. 765-DSS-MP/ML-88.

\*\*\* MCI Communications Corp., supra, at ¶ 5.

for a changed frequency plan by potential customers. Such changes, which are beyond AT&T's control, require additional work (and associated delay) in the manufacturing process. The remainder of the delay was caused by schedule slippage due to unforeseen events, including the unexpected length of time the satellite manufacturer needed to construct the satellite\* and the unexpected length of discussions with the satellite vendor and the launch provider (the latter still in progress), which have been complicated as a result of recent launch failures.

AT&T provided its best projections of construction and launch dates when it filed its application 2 1/2 years ago; the delays now requested are modest. They represent the best balance of schedule management and feature enrichment requested by the marketplace, and are consistent with the Commission's commitment, recently affirmed by Chairman Sikes, "to providing licensees the flexibility to respond to changes in the market."\*\*

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\* Despite the bids of the vendors which were consistent with AT&T's scheduled milestone dates, as stated in the Letter from Kenneth G. Ingram (AT&T Network Architecture & Technology Planning) to Donna R. Searcy (Commission Secretary) dated December 22, 1988, the satellite vendor has since required a construction schedule going beyond the milestones for TELSTAR 401.

\*\* Satellite News, January 15, 1990, p. 4.

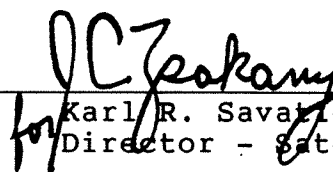
CONCLUSION

For the reasons stated above, the Commission should authorize a modification of AT&T's license to incorporate the technical changes requested herein, and should extend the milestone dates as requested.

Respectfully submitted,

AMERICAN TELEPHONE AND TELEGRAPH COMPANY

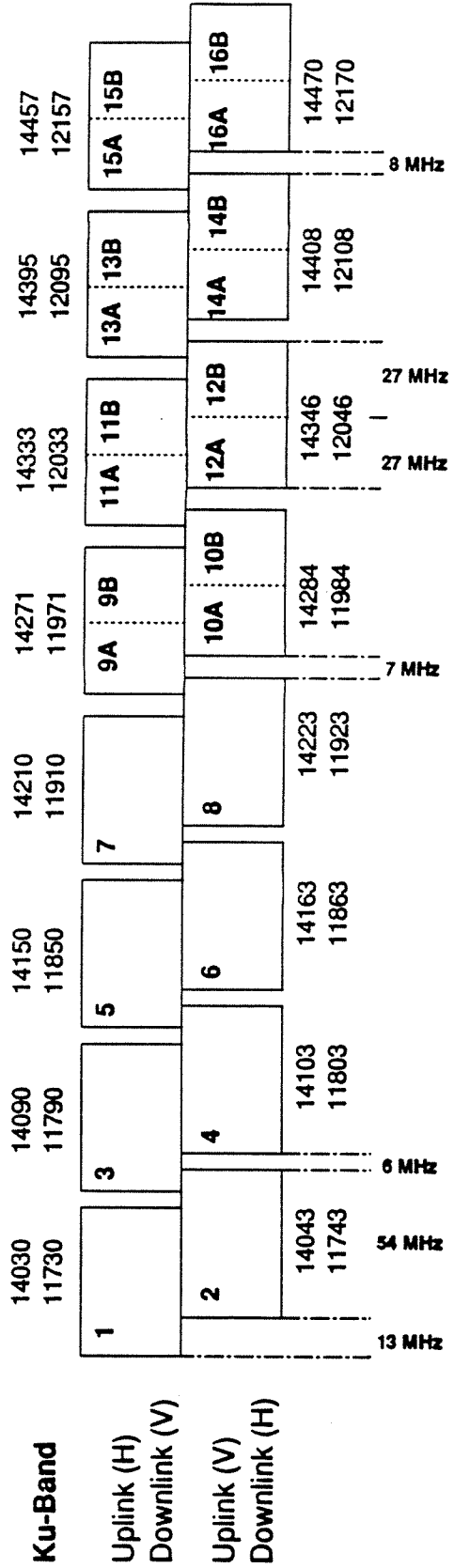
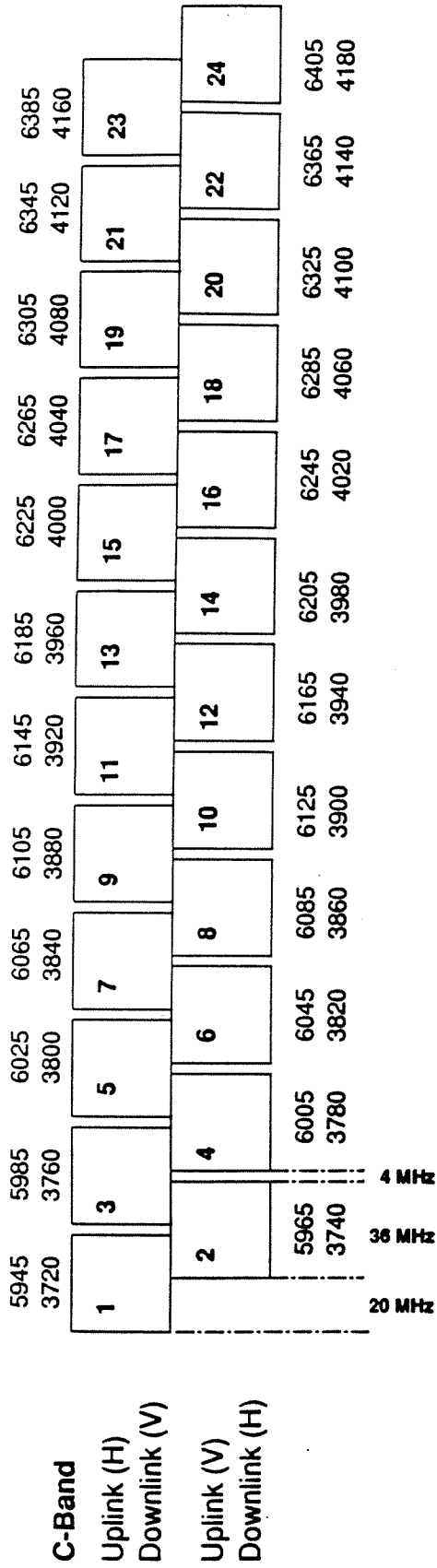
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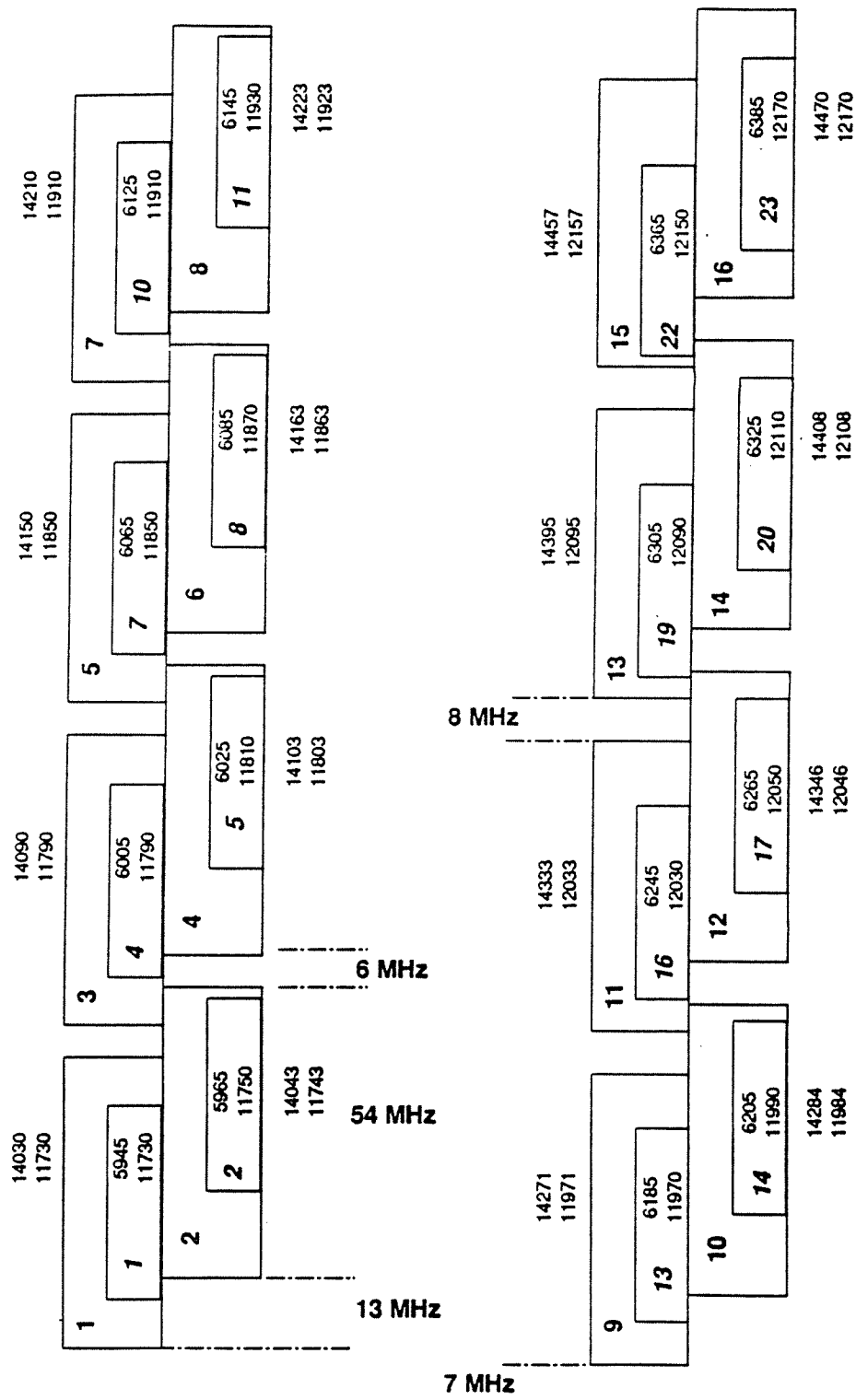
Dated: April 13, 1990



Frequencies In MHz

Figure 1: TELSTAR 4 Transponder Frequency Plan





Frequencies In MHz

C-band Transponders Shown In  
Interior of Ku-band Transponders

FIGURE 2

# TELSTAR 4 C-to-Ku Band Cross-Strapping Plan 60 & 62 MHz Transponder Spacing