

C***1** Common Carrier, Cable Authorization

Submarine Cable

Commission Order and Authorization adopted granting application to construct and operate eighth transatlantic cable (TAT-8) which will provide digital, fiber optic capacity between the United States and both the United Kingdom and France.

--AT & T Co.

FCC 84-240

In the Matter of

American Telephone and Telegraph Co. FTC Communications, Inc. Hawaiian Telephone Company ITT World Communications Inc. RCA Global Communications, Inc. The Western Union Telegraph Company TRT Telecommunications Corporation Western Union International, Inc.

Application for authorization under Section 214 of the Communications Act of 1934, as amended, to construct and acquire a high capacity, digital, submarine cable system between the United States and both the United Kingdom and France.

File No. **I-T-C-84-072**

Memorandum Opinion, Order And Authorization

Adopted: May 24, 1984; Released: June 8, 1984

By the Commission: Commissioner Dawson concurring in the result.

1. The Commission has before it an application filed jointly on February 6, 1984, by certain common carriers, collectively referred to as the United States International Service Carriers ("USISC's") [FN1], for authority pursuant to Section 214 of the Communications Act, [47 U.S.C. § 214](#), to construct and operate the eighth transatlantic submarine telephone cable ("TAT-8"). TAT-8 will be owned jointly by the applicants, the telecommunications administrations of twenty European countries who are members of the CEPT [FN2], and one Canadian entity, Teleglobe Canada ("Teleglobe"). [FN3] The applicants propose to put the cable into service in 1988. It would be the first submarine cable to employ digital fiber optic technology and would serve the heavily-trafficked North Atlantic route.

2. Public notice of the filing of the captioned application was given on February 8, 1984. In response to the notice, Aeronautical Radio, Inc. ("Arinc") filed a petition to deny on March 9, 1984. GTE Sprint filed comments on the same date and the Communications Satellite Corporation ("Comsat") filed comments on March 13, 1984, accompanied by a motion for leave to file its pleading out of time. AT

& T and ITT filed oppositions to the petition to deny and responses to the comments on March 22, 1984. An opposition to the petition to deny was also filed on March 22 by Hawaiian. On March 30, 1984, Arinc filed a reply to the oppositions. On the same day, we received a "response" to the applications, the petition to deny and the comments listed above from the National Telecommunications and Information Administration ("NTIA") accompanied by a motion for leave to file a response. Arinc. replied to NTIA's pleading on April 12, 1984.

3. Based on our review of the application, the comments, and the policies and information developed in the North Atlantic facilities planning process, we have decided to grant the application, subject to certain conditions. [FN4]

*2 I. Description of Proposed Facilities

A. Cable Configuration and Technology

4. The cable proposed by this application will run between an existing cable station in Tuckerton, New Jersey to a point in the Atlantic just off the European continental shelf, at which the cable will branch into two legs, one 280 miles in length which terminates at an existing cable station in Widemouth, United Kingdom, and one 168 miles long terminating at an existing cable station in Penmarch, France. The division into two branches, and switching between them, will be accomplished by a "branching unit" installed at the point of division. This basic system configuration, with one North American and two European landing points, is referred to by the applicants as the "single-bident". This configuration is represented in schematic form in Appendix A to this Order.

5. The applicants, the CEPT entities, and Teleglobe (hereinafter "co-owners") propose to execute a Construction and Maintenance Agreement ("CMA") which describes the cable system's components in greater detail and sets forth the rights and obligations of the co-owners with respect to the ownership, construction, operation, maintenance and use of the cable. The co-owners have already initialed the CMA, and hope to formally execute the final agreement without any substantial changes in June of 1984. The applicants have included the CMA as Appendix B to their application.

6. As described in the CMA, the proposed TAT-8 system consists of four segments. The first three, segments A, B, and C, are the cable stations in Tuckerton, Widemouth, and Penmarch, respectively. The fourth segment, segment D, is the submarine cable portion of the system (including four 140 megabit per second ("Mbps") digital input/output ports at the cable ends) and the branching unit. This segment is further subdivided into subsegments D-1 through D-3. Subsegment D-1 runs between the Tuckerton station and the branching unit and includes the branching unit. Subsegment D-2 runs between the branching unit and the Widemouth station. Subsegment D-3 runs between the branching unit and the Penmarch cable station. The digital input/output ports at each cable station are included in

the relevant subsegment.

7. The co-owners requested, and AT & T, Standard Telephones and Cables, PLC, of the United Kingdom ("STC") and Cables de Lyon/CIT Alcatel of France ("Submarcom") each submitted, bids to construct Segment D in its entirety. Rather than selecting a single firm, however, the co-owners have decided to have each of the three bidders construct a portion of the cable. Although the price of AT & T's original proposal was 7.2% lower than the joint construction effort now proposed, the co-owners accepted the higher cost for multiple builders in order to accommodate certain countries' demands for participation by their domestic industries and to stimulate competition in cable construction. The applicants emphasize that, under the final proposal, U.S. companies will construct a portion of the TAT-8 system comprising approximately 75% of the total system cost.

*3 8. Subsegment D-1 will be constructed by AT & T. Using AT & T's "SL" design, the cable will consist of two working optical fiber pairs with associated regenerators and supervisory circuits. The cable will also contain a third fiber pair to serve as a standby transmission path to which a signal could be switched between repeaters if required for restoration purposes. [FN5] The cable structure itself consists of a king wire with nylon overjacket surrounded by six optical fibers in a helical path embedded in an extruded elastomer. A DC power conductor/strength member of a double layer of strength wires surrounds the fiber structure and the whole is overlaid with a swaged copper tube. Finally, the entire structure is insulated with polyethylene.

9. AT & T will also construct the branching unit using its SL design. The unit incorporates a shore-controlled power path switch through which the cable can be series powered from Tuckerton to either one of the European cable stations. The co-owners apparently are still considering an option to incorporate in the branching unit shore-controlled lightguide switching which would permit all traffic to be switched wholly to the U.K. leg or to the French leg.

10. AT & T's SL design provides for redundancy of the laser transmitter as well as regenerator section-by-section redundancy through the standby optical fiber pair, its associated regenerators, and the protection switching in the repeaters. In addition, the SL design uses redundant equipment with automatic protection switching for the terminal transmission equipment and the high voltage power feed equipment.

11. Subsegments D-2 and D-3 of the system will be constructed by STC and Submarcom, respectively. STC will use its NL-2 design which incorporates two fiber optic pairs with associated regenerators and supervisory circuits. The cable structure is composed of the optical fibers interleaved with nylon filaments and bound to a king wire with a helically wrapped cord. This structure is filled with a viscous compound and wrapped with a DC power conductor/strength member with a die-closed aluminum C-tube. The whole unit is then surrounded with two layers

of counter-wrapped strength wires with polyethylene insulation over the strength member. Submarcom will use its S280 design for subsegment D-3. The design employs two fiber optic pairs with associated regenerators and supervisory circuits. The cable structure consists of the optical fibers embedded in a helically grooved plastic member which is filled with a viscous compound and over-wrapped with a plastic sheath. This element is paired with a DC power conductor/strength member of a double layer of strength wires and both are overlaid with a swaged copper tube which is covered in turn with polyethylene insulation.

12. Both the NL-2 design and the S280 design use redundant equipment with automatic protection switching for the terminal transmission equipment and the high voltage power feed equipment. Both designs also use laser transmitter redundancy with the NL-2 using two transmitters per regenerator while the S280 design uses four transmitters per regenerator.

*4 13. The entire cable system will be armored in shallow water and, to protect the cable from fishing activities, will also be buried on the continental shelves off the New Jersey, U.K., and French coasts.

14. At each of the three cable stations, the cable will be interconnected with the domestic networks in the host country. The system's capacity will also be extended via requisite transiting facilities to the borders of countries participating in the TAT-8 system or to the terminals or earth stations of other international cable or satellite systems. Thus, TAT-8 capacity will be used for services between countries beyond those in which the cable lands.

B. Digital Technology

15. The TAT-8 cable will be the first transatlantic use of digital fiber optic technologies. Previous transatlantic cables all have been analog cables. Digital fiber optic technology produces a transmission system which differs significantly from conventional analog cables. In a digital system, communications are converted from a wave function into a series of binary digits or "bits". (Obviously, in the case of data communications, no conversion is necessary since data communications by definition are those which consist of such a series.) These bits correspond to discrete differing states that can be induced in a given transmission medium. Fiber optic digital systems use light waves as the transmission medium. In an analog system, on the other hand, communications are represented in their original wave form. They are transmitted as continuous electrical signals which carry information by means of variations in amplitude or frequency. [FN6]

16. Because of the change in technology from analog to digital, the co-owners have defined the capacity of the system in terms of bit rate rather than circuits. That is, capacity in the TAT-8 system is defined in terms of the number of information "bits" which can be transmitted per unit of time. For purposes of assessing the system's capacity, and of defining and allocating ownership in-

terests in the cable, the applicants have developed the concept of a "fundamental unit of ownership." A fundamental unit of ownership is a theoretical unit consisting of one bit per second ("bps") in each direction. These units are grouped in sets of 73,684.656 which are called Minimum Assignable Units of Ownership ("MAUO's"). The number 73,684.656 represents a basic usable bit stream of 64,000 bps plus an additional 9,684.656 bps necessary for multiplexing purposes. Each fiber pair in the cable system has a capacity of two 140 megabits per second ("Mbps") streams or 3,780 MAUO's. Since there are two fiber pairs, the total system capacity is 7,560 MAUO's.

17. A MAUO also represents the unit of measure for ownership purposes, similar to the single circuit of analog cables. The capacity of the system has been assigned to the co-owners in MAUO's, according to a schedule which appears as Schedule C of Appendix B to the [Section 214](#) application. We have attached the schedule to this Order as Appendix B.

*5 18. In addition to changes in the method of defining and allocating capacity, the use of digital fiber optic technology has prompted the development of new circuit multiplication techniques. For the TAT-8 system, the applicants propose to use "digital circuit multiplication equipment" ("DCME"), a new technology developed by AT & T which currently can derive 5 voice paths per MAUO. Thus, the maximum number of voice paths which the TAT-8 system could produce, if its capacity were devoted solely to voice services, would be 37,800. The application does not state whether the applicants will provide the requisite DCME or whether carriers or users will be expected to supply their own. [FN7] The application estimates the capital cost of the DCME to be \$75,000 per DCME terminal and \$3,000 per 2 Mbps terminal for multiplex equipment.

19. A digital transatlantic cable requires an additional technical innovation. The digital standards of North American and Europe differ from each other as to the bit rate of the four multiplexing levels and the use of Mu-law versus A-law encoding for voice signals. In order to interconnect differing digital networks via TAT-8, the applicants propose to use a hybrid hierarchy of multiplexing that uses three levels. To implement this arrangement, the TAT-8 system will rely upon a "multiplex system converter" and the digital multiplex to be installed at both ends of the cable. The result of this arrangement is that both the North American and European co-owners will incur the costs of making the two digital systems compatible. The applicants maintain that their interworking arrangement complies with CCITT Recommendation G.711 which provides that paths between countries with differing speech encoding laws should carry signals encoded in accordance with the A-law, which, in the case of TAT-8, is that used by CEPT. The details of the inter-working arrangement are set forth in Attachment G to the application.

C. Allocation of Capacity, Costs, and Ownership Interests

20. The CMA (referenced in paragraph 4, supra) provides for the allocation of capacity, ownership interests, and the capital, operating, and maintenance costs of the system. Segment A (the Tuckerton cable station) will be owned by AT & T; Segment B (the Widemouth cable station) by British Telecommunications ("BT"); Segment C (the Penmarch cable station) by the Ministere des Postes, des Telecommunications et de la Telediffusion of France ("French PTT"). Each party to whom the CMA assigns capacity has an indefeasible right of use ("IRU") in each of the cable stations. Segment D (the cable) will be owned in common by the co-owners in undivided shares. The ownership shares of the co-owners as well as their shares of the capital, operating, and maintenance costs of Segment D are allocated in the same proportions as the capacity assigned to them. Schedule B-1 of the CMA lists in percentages each co-owner's ownership share of Segment D and its costs according to the capacity allocations listed in Schedule C of the CMA. Schedule B-1 provides that 50 percent of the cable will be owned by, and 50 percent of the costs allocated to, the "Western parties": Teleglobe (1.35582%), AT & T (36.68651%) [FN8], FTCC (1.28307%), HTC (0.19180%), ITT (3.09524%), RCA (1.50132%), TRT (1.28968%), Western Union (1.53439%) and MCI International, Inc. ("MCII") (3.06217%). [FN9] The other 50% of the cable and its costs will be allocated to the Eastern parties. In addition, Schedule B-2 of the CMA sets forth the allocation of Segment A (the Tuckerton cable station) to the Western Parties in percentages as follows: Teleglobe--2.71164%; AT & T--73.37302%; FTCC--2.56614%; HTC--0.38360%; ITT--6.19048%; RCA--3.00264%; TRT--2.57936%; Western Union--3.06878%; MCII--6.1243%. [FN10]

*6 21. The applicants estimate that the cost of the TAT-8 system will be approximately \$335.4 million, including cable station common plant (land and buildings) but excluding interest during construction, which is estimated to be approximately \$27 million. The applicants claim that they will bear approximately 97% of the \$0.6 million estimated capital costs of segment A and approximately 49% of the \$333 million estimated capital costs of segment D [FN11] for a total investment by the applicants of approximately \$162.6 million. The capital cost per half-MAUO for the applicants would be approximately \$22,000. If the cable capacity were devoted exclusively to voice services, the cost for half of a derived voice path for the applicants would be approximately \$5000. [FN12]

22. The allocation of capacity, upon which the ownership and cost shares described above are based, is set forth in Schedule C of the application. Each MAUO is shared jointly by a Western party and an Eastern party for use in providing service between the two countries involved, whether to points within the countries or to points reached by transiting them. Thus, each co-owner owns a half-interest in its respective MAUO's.

23. The application proposes two methods for making system capacity available to non-owners. For service to certain non-CEPT countries listed in Appendix E to the application [FN13], BT and the French PTT will purchase MAUO's jointly with

the applicants on behalf of administrations in those countries and will convey IRU's to the non-owners. For all other non-owners who may wish to use the TAT-8 system, be they PTT's in countries not party to the CMA or U.S. carriers not party to the application, the application notes that TAT-8 capacity in excess of that required to meet the co-owners' "aggregate requirements" will be available to accommodate non-owners' needs. This capacity has been allocated to the owners in proportion to their facilities requirements forecasted for the period 1988-95. The CMA contains a provision [FN14] permitting owners to make any of their assigned capacity available to other telecommunications entities, on a basis "other than by transfer of an ownership interest" (i.e., on an IRU or lease basis only), subject to the consent of the party with whom the capacity is jointly held.

24. The applicants do not propose the creation of a commonly held pool of U.S. MAUO's for later distribution as IRU's (such as that formed for TAT-6 in [American Telephone & Telegraph Co., 35 FCC2d 801 \(1972\)](#)) nor do they commit themselves to a policy of voluntarily providing IRU's to existing or potential carriers (such as that provided for in the TAT-7 authorization, [AT & T Co., 73 FCC2d 248 \(1979\)](#)). Instead, they rely on the availability of excess capacity as described above to meet the needs of additional carriers or countries.

II. Background

25. This application raises a number of issues which we dispose of below. Before doing so, however, we wish to point out that there are some issues, such as those relating to projected traffic volume, timing, configuration, and the introduction of a digital versus an analog cable, which we have previously considered in our on-going facilities planning proceedings. In addition, as part of our on-going facilities planning effort in Policies for Overseas Common Carriers, CC Docket No. 79-184, we previously determined that construction of a TAT-8 fiber optic cable as early as 1988 would serve the public interest. We received in that proceeding much of the empirical data relevant to our analysis of this application. Our prior deliberations are pertinent to our consideration of the application now before us. Accordingly, we will begin our analysis of this application with a brief review of the facilities planning process which preceded it and the issues considered therein.

*7 Facilities Planning Context

26. On August 1, 1979, we released a Notice of Inquiry ("NOI") initiating CC Docket No. 79-184. [Policies for Overseas Common Carrier Facilities, 73 FCC 2d 193 \(1979\)](#). The purpose of the inquiry was to begin the process for developing guidelines and policies for the construction and use of cable and satellite facilities in the North Atlantic region, which we could use in acting upon applications proposing specific facilities for the period 1985-1995. [FN15] On April 13, 1980, we issued a second NOI specifying the procedures for our inquiry and requesting the detailed information required to formulate our policies and guidelines.

[Policies for Overseas Common Carrier Facilities, 76 FCC 2d 522 \(1980\).](#)

27. On November 7, 1980, we released a Notice of Proposed Rulemaking ("NPRM") in Docket 79-184 ([Policies for Overseas Common Carriers, 82 FCC 2d 407 \(1980\)](#)) in which we offered for public comment the results of our initial review of the information and alternative proposed plans submitted by carriers in response to the second NOI. We had received a wide range of alternative proposed facilities construction and use plans for the 1985-95 period which contemplated the phased-in introduction of a variety of satellite and cable transmission facilities, including a high-capacity, digital, fiber-optic cable with branching capacity permitting multiple landing points for a single cable.

28. Our evaluation of the various plans was based, inter alia, upon an analysis of the available traffic forecasting data and the demand flexibility of the plans themselves. A staff plan had been designed to show the minimum facilities that would be required to meet the demand forecasted for the planning period. It indicated that no new cable facility would be needed to meet the forecasted demand until 1991. The plan submitted by the USISC's (Plan 1) indicated that capacity would exceed demand by an amount ranging from 39 to 117 percent during the 1985-95 planning period if a fiber optic cable were introduced in 1988 and a second in 1992. [FN16]

29. As a result of our analysis of the empirical data on future demand, and the proposals regarding facility capacity submitted to us, we came to a number of tentative conclusions. First, we thinned out the field of alternative plans we would continue to review by identifying those with significant deficiencies and eliminating them from further consideration. Second, we concluded that there was no discernible need for the introduction of an analog cable prior to the availability of a fiber optic digital cable which we assumed would have a lower per circuit cost. We also concluded that, even with the deployment of lower capacity Intelsat satellites, circuit demand nevertheless would be met if introduction of a fiber optic cable were delayed by as much as three years, until 1991.

30. We also noted that we needed more detailed information on the cost of introducing a fiber optic cable in order to weigh those costs against the benefits of pursuing the Commission's policy of encouraging the development and use of new technologies. Finally, on a cautionary note, we emphasized the vagaries inherent in long-range forecasting of traffic, costs, and system capacities. Accordingly, we decided to focus our attention in the rulemaking upon the early part (1985-92) of the planning period with particular emphasis on our decisions regarding design (capacity) of the Intelsat VI satellite series and the initial operation date for a fiber optic cable. We delegated authority to our staff to convene public meetings of the parties as a vehicle for the early generation and exchange of basic planning information.

*8 31. In January of 1981, we adopted a report and order in Docket 79- 184,

[Policies for Overseas Common Carriers, 84 FCC 2d 760 \(1981\)](#) ("January Order"), in which we provided the USISC's and Comsat with general policy guidelines defining a range of acceptable alternatives for major facilities construction. Of significance to the TAT-8 application was our conclusion that no new cable facility was likely to be needed prior to 1988 but that the public interest would be served by the introduction of a fiber optic, digital cable as early as 1988. We determined that a fiber optic cable was preferable to introduction of an analog cable because (1) it would provide considerably greater capacity at a lower cost per circuit; (2) as a digital transmission medium, it would be a superior technology; and (3) it would accommodate a greater range of services than the conventional analog design cable.

32. We then discussed the proposed timing of the fiber optic cable's introduction. On the one hand, the USISC's argued that early introduction of a fiber optic cable would increase demand flexibility, provide better service reliability through added capability to restore service following a facilities failure, enhance development of new services through added wideband data and video capability, be compatible with developing domestic switched digital networks, and encourage AT & T to maintain its world leadership in submarine cable technology development. In addition, CEPT and Teleglobe had stated their position that such factors as diversity, cable satellite circuit balance, flexibility to accommodate delay and implementation of new facilities, traffic growth, and the high risks of simultaneous implementation of new, untried technologies in both cable and satellite systems, augurred in favor of introducing a fiber optic cable in 1988. We did not dispute these benefits.

33. On the other hand, we noted that introduction of a fiber optic cable could be delayed until the end of 1990 and there would still be approximately 20% excess capacity in North Atlantic facilities. In addition, we estimated the rough, "upper-bound" cost savings to U.S. carriers (and thus U.S. ratepayers) accruing from delay in the introduction of the fiber optic cable until year-end 1991 to be about \$28 million. Weighing against these two concerns was what we identified as a technological risk that the Intelsat VI satellite series would not be operational on schedule or would not use advanced modulation technologies, which would increase capacity, on both the 6/4 and 14/11 GHz frequency bands. Our analysis of available capacity had assumed the existence and advanced modulation of Intelsat VI satellites on schedule. We determined that a delay in the fiber optic cable would leave only a one year "safety margin" (basically, the period from early 1987 to 1988) between the scheduled operation of the Intelsat VI's and the point at which demand would outstrip existing capacity. Given the small safety margin available, the level of technological development risk, and the inherent uncertainty of our long-range forecasts, we concluded that the risk reduction of an early fiber optic cable introduction far outweighed the projected cost savings from delaying introduction. Accordingly, we determined that, based on then-current information, the public interest would be served by introduction of a

fiber optic cable as early as 1988.

*9 34. In addition to our formal proceedings in Dockets 18875 and 79-184, we have participated with our foreign counterparts in a series of meetings in the United States, Canada and Europe to discuss facility requirements for the North Atlantic region. These North Atlantic Consultative Process meetings, attended by Comsat, the USISC's, Commission staff, representatives of the State Department and NTIA, and our foreign partners, have focused since 1979 on the cable and satellite facility needs for the 1985-95 period. The underlying logic of these international meetings, which we continue to endorse, is that the rationale, planning, construction and use of international facilities are not within the jurisdictional sovereignty of any one country and must, in a collegial atmosphere, be coordinated among the potential owners and appropriate government agencies.

35. Topics discussed at these consultative process meetings include traffic forecasts, new services, impact of technology on facility requirements, submarine cable technology, satellite technology, satellite launch options, restoration principles, loading plans, decision timetables and facility options. All parties in the consultative process support the process and recognize that facilities have become too expensive to permit ad hoc review of facility needs on a case-by-case basis.

36. In the initial planning meetings for the 1985-95 period, the participants in the consultative process recognized the economic and technological benefits of a fiber optic cable system. Teleglobe and the CEPT countries generally favored the introduction of such a cable as soon as possible but also supported the introduction of a TAT-8 analog cable if the fiber optic cable could not be placed in service by 1988. The United States' position, as enunciated in the 1981 January Order, was that an additional analog cable would be desirable only if a fiber optic cable could not be placed in service by 1988 and if the INTELSAT VI series of satellites was delayed beyond 1988. Since a fiber optic cable system will be available for service in 1988, the CEPT/Teleglobe parties have now terminated their support for an additional analog cable. (The INTELSAT VI series of satellites are now scheduled to be launched in the 1986/87 time frame). The United States, Teleglobe and CEPT positions are therefore now in harmony. We believe that the consultative process has been an invaluable vehicle for the reasoned planning of new facilities. We anticipate that future meetings with our foreign colleagues will continue to be productive and provide a forum for an open exchange of information and views.

III. Discussion

37. The net result of our efforts in facilities planning is that the overarching question of whether the public convenience and necessity would be served by construction of a fiber optic digital cable between the U.S. and Europe has been answered in the affirmative. The circumstances upon which we based our conclu-

sions in the proceedings in Dockets 18875 and 79-184 have not changed significantly to date. We wish to emphasize, however, that our prior decisions do not constitute a determination under [Section 214](#) of the Communications Act that the public convenience and necessity require a grant of the particular application before us now. Our task in deciding the present application is to determine "whether the specific facility chosen and the use to be made of that facility are required by the public convenience and necessity." [AT & T Co. \(TAT-7\), 73 FCC 2d 248, 256 \(1979\)](#) (emphasis added). To do so, we will consider the following aspects of the application:

- *10 A. Allocation of capacity among co-owners and to non-owners
- B. Configuration of TAT-8 System
- C. Projected demand for TAT-8 capacity
- D. Availability and costs of digital circuit multiplication equipment
- E. Facility loading and activation schedule

A. Allocation of Capacity Among Co-Owners and to Non-Owners

38. The application (in keeping with the CMA) proposes to assign TAT-8's capacity to the co-owners according to the allocation scheme described in paragraphs 13 to 16, *supra*. That allocation scheme raises two issues which we address below.

1. Availability of Capacity for Additional Parties or Countries

39. The first issue concerns the method by which the applicants propose to make TAT-8 capacity available to parties or countries other than those participating in the construction of the cable. The issue may arise in at least three instances: where non-carriers seek capacity; where additional U.S. carriers seek capacity; and where the applicants or other service providers seek capacity to serve countries with no ownership interest in TAT-8. Each of these instances raises differing policy concerns.

a. Non-Carriers

40. In the case of non-carriers who seek capacity, the Commission's concerns are those set forth in the Notice of Inquiry in International Communications Policies Governing Designation of Recognized Private Operating Agencies, Grants of IRU's in International Facilities and Assignment of Data Network Identification Codes, CC Docket No. 83-1230, FCC 83-516, 48 Fed.Reg. 57620 (December 30, 1983). While we pointed out in that Notice that non-carrier ownership of IRU's could produce significant benefits (including possible lower rates to users, more service flexibility, alternative financing sources for carriers, and the introduction of competition for certain services), we also noted a number of possible disadvantages, such

as problems in coordinating and retaining control of the underlying facilities, which are particularly complex in the international arena. We do not believe it appropriate to resolve these matters as part of our determination of this application. The issues are complex and will require a careful exercise of our judgment, informed by input from carriers, facilities owners, non-carriers who seek IRU's, end-users, and other interested persons. Since we have initiated a proceeding on this issue which we hope will prompt the production of precisely that input, we will not resolve the issue here. [FN17] However, in light of the significance of this issue, and given the fact that the TAT-8 cable will not be placed in service until some time after the likely conclusion of our proceeding on the IRU issue, we have decided to condition our authorization here upon compliance with the policy developed in that proceeding. No party will be prejudiced thereby and the potential rights of non-carriers will be preserved.

b. Additional Carriers

41. As we pointed out in paragraph 20, supra, the applicants have not proposed a specific mechanism for making capacity available to additional U.S. carriers who would seek capacity in TAT-8 beyond stating that the existence of capacity in excess of the co-owners' aggregate requirements will be sufficient "to enable them to accommodate reasonably the needs of any additional U.S. carriers to obtain capacity in the TAT-8 cable system." The applicants further state that the Commission's authority under [Section 214](#) of the Communications Act over transfers of capacity "among U.S. carriers", coupled with "the reservation of the right to reallocate capacity", will permit us to enforce our future policies "concerning the manner in which the needs of additional U.S. carriers will be met" (emphasis added). We agree. [FN18] However, we are concerned not only with the manner in which additional U.S. carriers will be accommodated but with whether they will be accommodated at all. In its comments on the application, GTE Sprint states that, "without an explicit condition in the TAT-8 [Section 214](#) authorization assuring the availability of TAT-8 IRUs, the U.S. TAT-8 co-owners would have no express obligation to make capacity available to competing carriers and the Commission may lack authority to compel the availability of IRU capacity." Comments of GTE Sprint, p. 3. GTE maintains therefore that the Commission should condition the applicants' authorization upon compliance with some ownership arrangement which ensures the availability of IRU's for additional carriers.

*11 42. Of the responses to GTE's comments, those of ITT and NTIA specifically address this issue. [FN19] [ITT notes that GTE suggested three possible conditions: the "AT & T ownership option" developed for the TAT-7 authorization \(AT & T Co., 73 FCC 2d 248, 260-61 \(1979\)\), the circuit pool used in the TAT-6 cable authorization \(AT & T Co., et al., 35 FCC 2d 801, 823-24 \(1972\)\), or a new mechanism of the Commission's choice.](#)

43. The "AT & T ownership option" refers to a condition in the TAT-7 authorization which required AT & T to supply TAT-7 circuits on an IRU basis to non-owning

carriers who seek them. The original TAT-7 proposal had been silent on this issue, proposing no mechanism for accommodating additional carriers' requests for IRU's. In response to a staff inquiry as to whether the applicants would be using a circuit pool arrangement like that used for TAT-6, AT & T volunteered to make IRU's in TAT-7 circuits available to carriers at the request of the Commission. AT & T's commitment was embodied in paragraph 43 of the TAT-7 order wherein we required that AT & T "make available, at the request of the Commission, interest in TAT-7 circuits to present and future U.S. carriers...." ITT maintains that the same condition should be applied to TAT-8. Furthermore, ITT urges that, as was the case for TAT-7, the condition should be applicable only to AT & T, not to the other applicants, because (1) AT & T has the lion's share of capacity; and (2) most additional carriers, like GTE, would be potential international MTS providers, and would be competing solely with AT & T. Carriers like ITT that do not provide international MTS, "should not be faced with a compulsory loss of capacity as a result of potential competition between AT & T and a third party." ITT Opposition at p. 3, n. * * *.

44. ITT rejects the alternative of a circuit pool arrangement as too cumbersome and maintains that such an agreement could be impractical administratively and could deprive smaller co-owners of technological efficiencies because of the unique circumstances of TAT-8. ITT also points out that no party advocates a pool arrangement nor has any party introduced into the record information on, or support for, such an arrangement.

45. NTIA also addressed this issue in its pleading. While it supports "broader IRU ownership", NTIA urges that we require IRU's to be conveyed only on a voluntary basis once a cable is placed in service. NTIA would support a condition in our authorization requiring that a limited number of IRU circuits be available on a mandatory basis before that time.

46. After considering these comments as well as the applicants' representations, we have concluded, for the reasons set forth below, that some mechanism is necessary for providing TAT-8 capacity on an IRU basis to additional carriers and that a method similar to that used for the TAT-7 cable would be most appropriate in this instance. Accordingly, we will authorize this cable on condition that the applicants make IRU interests in TAT-8 capacity available to carriers who receive authority from the Commission pursuant to [Section 214](#) to acquire such capacity. We will also reserve the right to reallocate capacity to the extent necessary to enforce our future policies regarding the accommodation of additional carriers. This condition does not conflict with the applicants' obligations under the CMA since the CMA expressly contemplates the use of the co-owners' capacity by third parties. See [§ 214](#) Application, App. B, p. 31, ¶¶ 11(h) and (i).

*12 47. We have decided to make the former condition applicable to all of the applicants. We find unpersuasive ITT's argument that the condition should apply solely to AT & T, as it did in TAT-7. We have rejected ITT's position for two

reasons. First, as we noted above, the TAT-8 application states that all of the applicants, including ITT, have been allocated capacity in excess of their requirements. Thus, AT & T is not the only applicant with excess capacity initially. Every applicant's excess capacity should be available if more efficient use can be made of it by another carrier. Second, ITT's argument in essence is that AT & T is better situated than the other applicants to give up capacity to additional carriers. It is not necessary for us to make such a determination now. We expect that, in virtually all cases, additional carriers will be able to purchase IRU's from willing sellers. The cases in which we will be called upon to compel a sale by a particular applicant will be rare. As to those instances where Commission intervention is required, by imposing a condition applicable to all applicants, our determination as to which applicant is best suited to give up capacity will be made in the context of applications by additional carriers for authority under § 214 of the Communications Act to acquire capacity in TAT-8. Under the Act, we cannot grant such authority without first determining that the requested transfer of facilities serves the public convenience and necessity both in terms of the additional carrier who seeks capacity and the carrier who gives up capacity. Thus, our condition will enable us to consider precisely those issues which ITT claims justify the application of the condition only to AT & T but our consideration will be on a case-by-case basis with specific needs, usage patterns, and carriers before us to inform our decision.

48. We agree with NTIA that IRU transfers should be voluntary; indeed, we would strongly encourage voluntary transfers of IRU interests. However, the TAT-8 system is a major new pipeline for international telecommunications in the North Atlantic region. It will be the only alternative to satellite services for end users and new carrier entrants once existing smaller cables serving the region are saturated or retired from service. Given the size of this facility, we expect it to have capacity available for some time after all other cables in the area have been saturated. To insure access to so important a facility, we will retain jurisdiction to reallocate capacity to the extent necessary to enforce our policies regarding the accommodation of additional carriers. NTIA suggests that we condition this authorization by specifying now a limited amount of capacity to be made available for IRU's to additional carriers. However, the applicants, in conjunction with the other co-owners, have already allocated all of their capacity. Rather than reallocating capacity among the applicants and making a single judgment now of the capacity necessary to meet future and as yet undeterminable needs, we prefer to reserve the right to intervene at a later date should such be necessary. This approach gives carriers an opportunity to proceed on a voluntary basis first while not foreclosing the possibility of Commission intervention later should a voluntary system break down.

***13 c. Additional Countries**

49. The final situation which raises the issue of the applicants' method for al-

locating capacity to non-owners is that in which the applicants or other service providers seek to serve countries in Europe, Asia or Africa with no ownership interest in TAT-8. According to the application, the co-owners have provided for this contingency by permitting BT and the French PTT to purchase capacity in TAT-8 on behalf of the non-owning countries listed in Appendix E to the application. This capacity will be conveyed to the listed countries on an IRU basis as the need arises. Countries on the list are those that have identified a need to use TAT-8 capacity. The applicants state that the listed countries have reached agreements in principle with BT and the French PTT to purchase on an IRU basis a majority of the capacity indicated.

50. This arrangement is problematic for several reasons. First, the arrangement provides no assurance that capacity will be available for service to unlisted non-owning countries. Second, no circuits wholly under U.S. control are available for providing service between a U.S. carrier and a non-owning country, listed or not. Thus, U.S. entities can exercise no structural control over the price and terms under which capacity will be made available for such service. On the other hand, this arrangement insures that U.S. carriers will pay less of the carrying costs for excess capacity since they will not be paying for both "halves" of a MAUO. Moreover, we are confident that BT and the French PTT will act in good faith in providing the dedicated capacity to listed non-owning countries in a fair and business-like manner. The application notes that there is sufficient additional capacity in TAT-8 to provide for such countries. Finally, the abundance of transatlantic circuits, both cable and satellite, which will be available in the foreseeable future reduces our concern that there will be insufficient overall capacity to meet service needs fully. In light of these factors, we find the proposed arrangement to be a reasonable attempt to avoid the problems of carrying cost allocation, circuit availability, and cumbersome procedures associated with the alternatives employed in the past. However, to assure that carriers' needs are met for capacity to individual non-owning countries, we will condition the authorization to permit us to reallocate--or require the cooperative use--among U.S. carriers of unused capacity dedicated to service to non-owning countries. We will also monitor with our foreign partners the success or failure of this scheme so that we can decide whether such arrangements should be employed in the future.

2. Allocation in Half-"Circuits"

51. In its petition to deny the application, ARinc challenges the allocation of TAT-8 capacity in half-circuits, or jointly-held MAUO's. [FN20] We conclude that Arinc's proposed alternative of allocating circuitry on a whole-circuit rather than a half-circuit basis requires a profound change in the ownership of international telecommunications services without a showing that the changes are efficacious or feasible. While we are not opposed to consideration and discussion of Arinc's general ideas, in, for example, one of our planning dockets, the present [Section 214](#) application for a specific facility is not the best forum for imple-

menting them. [FN21] Nevertheless, the parties here have addressed the issue in their pleadings, giving us an adequate record upon which to base a decision on the merits. Based on that record, and our experience in the international arena, as detailed below, we conclude that Arinc's proposal lacks substantive merit. We are therefore denying its petition.

*14 52. In its petition, Arinc states that it has no objection to the technology, configuration or timing of TAT-8. In fact, it favors construction of the cable because of the potential downward pressure on rates the cable could exert. What Arinc seeks is a condition requiring the applicants to allocate ownership interests in the cable on a whole circuit basis only, meaning that co-owners would own complete MAUO'S rather than owning each jointly with a foreign co-owner. Under this arrangement, each CEPT entity would own a complete circuit terminating on North American soil and each North American carrier would own a circuit terminating in Europe. This arrangement would be coupled with a requirement that foreign entities grant non-discriminatory access to their domestic network as a condition of obtaining access to ours. Arinc argues that this alternative ownership arrangement would introduce competition and its concomitant benefits into the international telecommunications market and would allow greater flexibility in the terms and conditions under which transatlantic cable circuitry is provided.

53. Arinc's premise is that the control over a transatlantic circuit vested in the PTT's by virtue of their one-half share permits them to prevent any extension of the Commission's pro-competitive policies to the entire circuit. The result of this "intolerable interference with the Commission's pro-competitive actions" [FN22] is the foreclosure of any competition in international circuits. Arinc also claims that new entrants' difficulties in obtaining operating agreements are a direct result of the half-circuit scheme.

54. Arinc claims that several benefits would flow from a whole-circuit scheme. Whole circuits would create competition between the owners on either end which would produce lower rates. Whole circuits would permit carriers to obtain access to foreign markets "merely by purchasing an IRU in a cable." [FN23] Both the US-ISC's and foreign entities would offer more flexible terms and conditions as they competed with each other for transatlantic cable traffic, unlike the current situation where foreign joint owners can negate USISC concessions by conditioning the foreign entity's half of the circuits. In support of its arguments, Arinc includes an extensive description of international relationships and negotiation methods in the commercial aviation industry and asserts that the telecommunications and air transport industries are analogous for purposes of selecting negotiating tactics.

55. In its opposition to Arinc's petition, AT & T disputes Arinc's claim that whole circuits will lead to competition in international telecommunications and open markets. AT & T claims that Arinc ignores the fact that U.S. entities cannot gain access to foreign markets simply by obtaining a whole circuit in international facilities because the U.S. entity will still need an agreement with the

foreign administration to interconnect with the foreign network. As for Arinc's suggestion that the necessary concessions could be coerced by imposing reciprocal limitations on access to the U.S. network, AT & T argues that such "strong-arm tactics" fail to recognize the cooperative nature of international telecommunications. AT & T cites testimony of the Secretary of State to demonstrate the current commitment of the United States to a cooperative approach. [FN24]

*15 56. ITT filed an opposition in which it objects to Arinc's proposal on four grounds. First, ITT claims that the CMA would have to be renegotiated should Arinc's proposal be implemented. The delay involved in renegotiating the CMA, if it could be renegotiated at all, would disserve the public interest which the Commission, in the January Order in Docket 79-184, found would be served by timely implementation of a TAT-8 cable. Second, ITT argues that Arinc's proposal is without merit because it will not cure the problem it purports to address, namely, the reluctance of foreign telecommunications entities ("PTT's") to enter into operating agreements with U.S. carriers. "Foreign operating agreements are required because foreign administrations, which are generally monopoly [sic] government entities, insist as a matter of their own national law or policy that they participate in the provision of services to their own citizens for communications originating or terminating in their own countries." ITT opposition, at p. 8. ITT maintains that the control which a sovereign nation exercises over the telecommunications originating or terminating within its borders is not affected by changes in the point at which it exercises control, be it at a theoretical midpoint in the cable or at the cable's end. To the extent that a foreign entity's control over operating agreements creates a bottleneck, ARinc's proposal would change only its location, not the foreign entity's ability to create one.

57. Third, ITT argues that the issues raised by Arinc involve broad policy questions, beyond the scope or the record of this proceeding, which can be addressed only in a rulemaking. Finally, ITT states that Arinc had ample opportunity to propose its policy change in the Commission's planning proceeding in Docket 79-184. It failed to do so, the Commission developed its policy accordingly, and the carriers relied on the Commission's action. For the Commission to now adopt Arinc's proposal "changes the rules in the middle of the game," according to ITT, and would constitute unreasonable retroactive policymaking.

58. Hawaiian Telephone Company raises three objections to Arinc's petition in its opposition. First, HTC urges that the TAT-8 application is not the proper forum for serious consideration of Arinc's proposal given the considerable delay of the TAT-8 project which would be required to consider properly such a change in policy. Second, HTC points out that Commission acceptance of Arinc's proposal would not expedite PTT acceptance of it and would most likely make it more difficult to obtain, especially "if viewed as an effort by the U.S. to impose its policies on foreign entities." HTC petition at p. 3. Finally, like ITT and AT & T, HTC argues that Arinc's proposal would not achieve the stated objective of injecting competition into the international telecommunications market. Rather

than eliminating the need for operating agreements, HTC argues that Arinc's proposal would simply shift the point at which one is required from the cable mid-point to the cablehead.

*16 59. In its opposition to Arinc's petition, NTIA states that Arinc's proposal will not obviate the need for operating agreements. In addition, NTIA argues that whole circuits will not encourage PTT's to admit additional U.S. carriers into their markets, since the stated reason for their reluctance to do so is the alleged additional technical and administrative requirements and associated costs involved with additional interconnections. These costs would not necessarily be changed by a switch to whole-circuit ownership. NTIA also questions whether Arinc's suggestion that PTT adoption of pro-competitive policies can be coerced through reciprocity arrangements is realistic or in this country's best interest.

60. In response to the oppositions, Arinc claims that none of them questioned its premise that whole circuits would encourage greater competition in international telecommunications. Arinc reiterates that whole circuits plus negotiated non-discriminatory access to foreign networks would allow intramodal competition and that new carriers would need only to purchase IRU's "to be assured of a complete circuit from the U.S. to foreign shores." Arinc rejects claims that adoption of its proposal would cause delay in the TAT-8 effort by arguing that only minimal changes in the CMA are required. Arinc characterizes its pleading as a request to the Commission and the State Department to use "diplomatic process" to effect its proposal. As for objections to the timing of its proposal, Arinc emphasizes that we can authorize the cable without delay subject to a condition that the whole circuit plan be adopted or that the applicants comply with any policy we may develop on the issue.

61. Arinc filed a separate reply to NTIA's pleading in which Arinc stated that NTIA's position as set forth in its pleading was inconsistent with policy statements previously made by that agency. Arinc reiterates its support for negotiation of foreign agreement with a whole-circuit policy and maintains that NTIA's fears of foreign opposition to whole-circuits can only be speculative at this point. Emphasizing the reciprocity requirement in its proposal, Arinc disputes NTIA's claim that foreign administrations who are reluctant to interconnect with additional carriers would not be prone to do so on a whole circuit basis. Finally, Arinc urges that we should give its proposal a try since, even if it fails to produce additional competition, no harm would result to the public or any party.

62. After reviewing the various pleadings, we are persuaded that adoption of Arinc's proposal at this time will not serve the public interest. We find no reason to conclude that whole circuits alone can produce the competitive benefits Arinc seeks or avoid any of the disadvantages of half-circuits. The power exercised by each PTT results from its sovereign authority over the telecommunications system within its own borders. This authority would exist regardless of the own-

ership method for international circuits and regardless of the point (mid-cable or cablehead) at which ownership begins. Without a foreign correspondent's agreement to permit a cable to land and to access its domestic network, a switch to whole circuits would serve no pro-competitive purpose. To require that TAT-8 capacity be made available solely by whole circuits would do nothing more than to shift the point of interconnection, and thereby shift the locus of the foreign correspondent's exercise of its sovereign authority, from a theoretical midpoint in the Atlantic to the cablehead where the transatlantic cable lands. Thus, under a whole-circuit scheme, the PTT's would still be able to require operating agreements, to limit the number of carriers granted access to the PTT's network, or to impose other conditions upon the USISC.

*17 63. It is the second half of Arinc's equation that is crucial to securing the alleged benefits of a whole-circuit scheme--namely, Arinc's suggestion that PTT's be required to grant access to whole-circuit owners as a condition for foreign access to the U.S. network. [FN25] Without such a requirement, no change would necessarily result from a whole-circuit approach. We agree with the oppositions to the petition which point out that such an approach is inconsistent with our practice of the past thirty years which has been to approach international telecommunications as a cooperative venture between sovereign nations. Arinc has provided us with no justification for unilaterally abandoning our cooperative approach in this instance. In addition, Arinc makes no showing that the PTT's have ever considered or would agree to unilateral demands for a whole circuit approach or that such an approach would be workable--that is, that the PTT's would agree to more liberal entry policies as a result--while the oppositions point out that such pressure might produce the opposite effect. Arinc in effect is asking us to initiate a radical and antagonistic change in our international communications policy on the basis of a record which indicates that no benefits would necessarily enure to the public. In light of the delay and disruption to TAT-8 that adoption of Arinc's proposal would cause, and the, at best, dubious possibility that it would produce any benefits, we deny Arinc's petition. [FN26]

B. Configuration of TAT-8 System

64. As noted above, the application proposes a cable with one landing point in the U.S. and two in Europe, or a "single-bident." At the time of the January Order, summarized in paragraphs 30-32, supra, the co-owners had not yet selected the single-bident configuration but were considering five possible alternatives. [FN27] Each configuration presented differing options as to cost and ability to meet the volume and distribution requirements of forecasted traffic. Information regarding the five possible configurations was provided to the Commission as part of AT & T's submissions in Docket 79-184. Using the single-bident configuration as a baseline, those submissions indicated that the costs for the other four alternatives exceeded that for the single-bident by a range of 25-53%.

65. Of the five alternative configurations, the co-owners narrowed the serious

candidates to two: the single-bident and the single-trident. The single-trident appeared particularly promising to U.S. participants since it would have added a third European branch, landing at Estepona, Spain. The advantages of such a third leg are several. It would provide a direct transmission path for traffic going to Mediterranean Basin countries that presently must transit France or other European countries. By reducing the need for such transiting, the third leg could significantly reduce costs and could increase service reliability. In addition, a third leg would provide a relatively cheap transmission path. Finally, it could stimulate the development of digital networks in the mediterranean Basin by making international digital capacity available.

*18 66. The co-owners rejected the single-trident option. The applicants state that this decision was based on a determination that no digital submarine cable network acceptable to the TAT-8 co-owners would be available in the Mediterranean Basin in the near future which could be connected to TAT-8 at the Spanish landing point. The applicants emphasize that administrations in the Mediterranean made every effort to obtain agreements and commitments "as to the participation, pricing and timely availability of such a connecting digital submarine cable network acceptable to the TAT-8 co-owners" [FN28] but were unable to develop such agreements by the time the co-owners made their selection of TAT-8's configuration. The lack of such agreements also prevented the co-owners from making a "final, detailed analysis of the pros and cons of the single-trident configuration." [FN29]

67. While the co-owners selected the single-bident configuration, they were mindful of the potential benefits of a third branch. Rather than foreclose that option, the CMA includes a provision which would permit modification of TAT-8 at a later date to add a branch landing in Spain, subject to the agreement of all parties to the CMA. The provision provides that such an agreement may not be unreasonably withheld "by a party provided that his interest in this Agreement suffered no prejudice by such a change in configuration." [FN30] Should this option be exercised within one year after TAT-8 is placed in service, the estimated cost would be \$6 million more than the cost of building the third branch into the system initially plus the costs of three days of down time for the cable.

68. We have concluded that preservation of the third branch option best serves the public interest at this time. We expect the co-owners to continue to consider the third branch a viable option. The U.S. has a strong national interest in direct, secure transmission channels to the Mediterranean Basin countries. The third branch presents at this point in time the least costly method of vindicating that interest. We take seriously the language in paragraph 19 of the CMA which provides that no party would unreasonably withhold agreement to add a third leg at some later date. While we acknowledge the proviso that no party suffer prejudice by reason of a change in configuration, we emphasize that we would be gravely concerned if the proviso were to be used to deny to the U.S. the direct circuitry to Mediterranean Basin countries in which it has so strong a national interest. In light of the uncertainty surrounding the time by which there will

be sufficient digital capacity in the Mediterranean Basin to justify a third branch, we do not believe that the single-trident configuration must be constructed initially. Therefore, we will require at this time only that the applicants insure that any effort or equipment required to permit later addition of a third branch be provided at the time of initial construction. We expect that the issue of a third branch will remain the subject of discussion in the North Atlantic Consultative Process.

***19 C. Projected Demand for TAT-8 Capacity**

69. In its comments regarding the need for a facilities use plan, Comsat has questioned whether current demand projections justify placing the TAT-8 cable in service in 1988 as the applicants propose. As part of the facilities planning process, we have received projections of the traffic volume anticipated by service providers (both cable and satellite) during the first seven years that TAT-8 will be in operation (from 1988 to 1995). These projections indicate that capacity will substantially exceed demand during this period and that even the most optimistic demand forecasts could be met without introducing TAT-8's capacity until 1992. If projected demand were the only justification for the introduction of this particular facility, we would have difficulty approving the 1988 introduction date for TAT-8. However, after analyzing the traffic forecasts in light of the factors discussed below, we conclude that TAT-8 should nevertheless be placed in service during the time frame proposed by the applicants.

70. We begin our analysis by emphasizing that long-range traffic forecasting is an inherently uncertain undertaking. As we stated in our Docket 79-184 NPRM (see paragraphs 26-29, supra), predictions as to traffic, projected costs, and system capacities are especially difficult in an industry as technologically volatile as telecommunications. For example, according to the staff's calculations, forecasts in the Docket 18875 facilities planning proceeding for end of year 1983 deviated from actual circuit use by as much as 17%. In the 1981 January Order in Docket 79-184, we recognized the uncertainty inherent in long-range forecasts and concluded that the public interest would be served by introduction of a fiber optic, digital cable as early as 1988 despite the fact that the traffic projections then before us indicated that, if TAT-8 were introduced as late as 1990, capacity could still exceed demand by as much as 20%.

71. In the NPRM, we reviewed traffic forecasts developed by the USISC's, NTIA, CEPT, Teleglobe, and the Commission Staff. The differences between the USISC, CEPT, and Teleglobe plans were so small that we treated them as a common forecast. By 1988, the USISC's projected a need for 37,000 circuits in the North Atlantic Region to meet projected demand. NTIA's forecast set the level in 1988 at about 33,000 circuits. At the same time, the staff's facilities plan estimated capacity in that year to be approximately 50,000. If TAT-8's probable multiplexed capacity were to be included, capacity in 1988 would total nearly 80,000 circuits or from 43,000 to 47,000 circuits in excess of projected demand.

72. The USISC's forecast was updated in September 1983 in a joint AT & T/Comsat submission for use by the North Atlantic Consultative Working Group meeting in January of 1984. The applicants have included that submission as Appendix H to the application. The submission forecasts traffic through 1995 and compares the updated forecast with previous projections. The updated forecast projects a need for fewer circuits than that projected in 1980. The update forecasts demand for 19,516 circuits in 1985 and 45,190 in 1990 compared with the 1980 projections for the same years of 23,461 and 50,152, respectively. The update did not break out separately figures for 1988. CEPT updated its projected facility requirement in January, 1984. The CEPT forecast differs somewhat from the USISC's forecast. CEPT projects a need for 20,861 circuits in 1986 between the U.S. and CEPT countries (no figure is given for 1985) and 37,559 in 1990.

*20 73. Capacity in existing facilities for the same years exceeds these projections. Based on the known capacity of existing and authorized facilities serving the North Atlantic region, the staff estimates that total existing capacity in 1985 will be approximately 44,000 circuits and that in 1988, absent TAT-8 and with the introduction of the high capacity INTELSAT VI series of satellites, total capacity will be approximately 60,000 circuits. [FN31] The year by which the forecasted demand will exceed the capacity available without TAT-8 is 1992.

74. While these numbers by themselves would favor a later introduction date for TAT-8, there are several countervailing considerations. The demand flexibility analysis contained in the Docket 79-184 January Order indicated that a later introduction date for TAT-8 was tenable only if the Intelsat VI satellite series is operational on schedule and is utilizing advanced modulation techniques on both frequency bands. These technologies are still in the developmental stage. Moreover, they will require a separate development effort for ground equipment and a significant purchase commitment by several countries. These factors present a risk of some delay in utilizing advanced modulation techniques on the planned dates of operation for the satellites. Such a delay would result in a lack of sufficient capacity to meet demand in 1988 if TAT-8 is delayed. This risk is aggravated by the fact that the Intelsat VI program and TAT-8's fiber optic digital technology are both introducing development risks simultaneously and by the historical experience of delays in the Intelsat V and VA programs.

75. In addition to the uncertainties inherent in long-range traffic projections and the technological development risks outlined above, we have several concerns which also run counter to the results of the demand projections. First, introduction of TAT-8 will mean the introduction of digital fiber optic technology with its attendant service benefits (see footnote 6, supra). Besides providing improved service characteristics, TAT-8's digital technology will provide an important interconnection between the various developing domestic digital networks in the countries linked by TAT-8. By accommodating new services, we believe this international digital capability will spur the development of domestic digital systems. The development of, and demand for, new digitalized services could very

well stimulate circuit demand beyond that projected in our traffic forecasts. Moreover, the lower circuit costs of TAT-8 should exert a beneficial downward pressure on the rates for international circuitry. In addition, TAT-8's fiber optic technology can transmit video and other broadband services now available efficiently only over satellite. By making video services available with more efficient transmission technologies, TAT-8 may stimulate the development of international broadband services. Finally, a delay in the introduction date for the cable would require the co-owners to rebid the project and scrap the current arrangements under which U.S. firms' participation totals some 75% of the cost. After weighing these benefits against the arguments for delaying the cable until projected demand would require it, we conclude that the benefits of introducing the cable in 1988 outweigh the comparatively speculative benefits of delay.

***21 D. Availability and Costs of Digital Circuit Multiplication Equipment**

76. As we noted above, the use of TAT-8 to connect two differing digital hierarchies has required the use of new equipment to implement the interworking arrangement. In addition, the digital nature of TAT-8 has required the development of new circuit multiplication technology for voice services. At this stage in the development of the interworking equipment and the circuit multiplication technology, the applicants have no final cost information for the DCME and multiplex system conversion equipment which they will be using for TAT-8. They have estimated costs to be \$75,000 per DCME terminal and \$3,000 per 2 Mbps terminal for the multiplex equipment. They estimate that these costs will result in an additional cost of approximately \$500 per derived voice grade half-circuit.

77. There remain many unknowns in addition to the lack of final cost data. The applicants have not yet determined the exact methodology by which the transmissions of system users will be combined into the format required by the 140 Mbps digital input/output ports. No mention is made in the application of the method by which the applicants will make DCME and other multiplexing services or equipment available to users. Thus, we have no information as to how the equipment will be made available to the applicants and other carriers and who will provide such technology. The application does not indicate whether the applicants would oppose making the technology available to carriers who might wish to perform their own compression, conversion, and multiplexing to provide a bit stream compatible with the 140 Mbps ports. Alternatively, carriers might wish to take a multiplexed stream directly from the 140 Mbps input/output points at the Tuckerton cablehead and perform their own digital hierarchy conversion, de-compression, and de-multiplexing. The information currently available does not permit us to determine whether DCME, multiplexing, and interworking functions should necessarily be provided only on a "bundled" basis if it is technically feasible to unbundle them and permit users the choice of supplying their own.

78. Much of the uncertainty can only be resolved when AT & T completes its research and development effort for the technology and equipment involved. Accord-

ingly, we will require AT & T to keep us apprised of their technical progress in this area. We will reserve the right to 1) review the attribution of DCME, multiplexing, and interworking costs as well as the terms and conditions of their use once current uncertainties as to costs and availability have been resolved, and 2) require such changes in the offering of these services and equipment as may become necessary. [FN32]

E. Facility Loading and Activation Schedule

79. Comsat objects to the lack of an activation schedule for the capacity in the TAT-8 system and the absence of a facility loading policy applicable to facilities placed in service after the expiration of the current 1975-1985 planning period. Comsat claims to reject the applicants' position that, since "[f]acility loading principles for the North Atlantic, including TAT-8, will be the subject of the Commission's ongoing CC Docket No. 79-184 and the North Atlantic Consultative Process" [FN33], the Commission need only condition this authorization upon compliance with the outcome of those proceedings. Comsat observes that, previously, the loading policy and activation schedule for a given facility would be developed through the facilities planning process before or concurrently with Commission consideration of the § 214 application for the facility and that such is not the case for this facility. Therefore, Comsat is concerned that the market power of the co-owners, particularly AT & T, which enables them to determine the relative loading of satellites and cables, and their incentive to prefer cable which is fostered by their investment interests, will work to Comsat's disadvantage absent a facilities use plan for the 1985-1995 period. Thus although Comsat purports to reject the applicants' position favoring a condition requiring compliance with the facility loading policy developed in the future by the Commission, Comsat concludes by requesting that the Commission reaffirm a commitment to the development of a facilities use plan for the 1985-1995 period and condition our grant of authority upon the outcome of that effort. [FN34]

*22 80. In their replies to Comsat's comments, AT & T, NTIA, and ITT agreed with Comsat's request that any grant of authority be conditioned upon compliance with the facilities use policies developed in our Docket 79-184 proceeding and the North Atlantic Consultative Process. AT & T and ITT also pointed out that the applicants themselves had requested the same action in their application. NTIA urged that we not delay approval of the application pending development of a use plan.

81. We perceive no substantial difference in the positions of the parties. As to a comprehensive facilities use and circuit activation plan, we expect the consultative process and our Docket 79-184 to produce a use plan addressing a variety of facility use issues, before TAT-8 is placed in service. As for Comsat's concern that we develop a facility loading policy, we will have completed a rulemaking on the policy to be applied in the future before the expiration of the current facility loading policy. We will condition our grant of authority upon compli-

ance with such policies as we may develop in those proceedings. [FN35]

82. We also grant the applicants' request that we authorize by this order activation of TAT-8 capacity in conformance with the policies we develop in Docket 79-184 and any other pertinent Commission proceedings so that a second application seeking authorization to activate circuits will not be necessary. No public interest would be served by requiring such separate paperwork. Should the timing of these various events fail to coincide, we will revisit this area and address the issues specifically in the context of this application when it becomes necessary to do so.

IV. Miscellaneous Considerations

83. TAT-8 presents new and unique problems of restoration because it is capable of handling traffic of unprecedented magnitude. Possible failures of either working fiber pair are not as great a problem since traffic can be switched to the third spare pair between repeaters. Restoration becomes problematic if the entire cable should fail. No existing cable facility could carry the traffic TAT-8 is capable of carrying when full. Restoration of the entire cable would require most, if not all, of the capacity of the Intelsat VI Atlantic Ocean Region in-orbit-spare satellite. However, Intelsat is considering making such capacity available only on a preemptible basis with a relatively high, fixed, annual charge. Further, Intelsat currently prefers to charge on a full or half transponder, rather than a voice circuit, basis.

84. The applicants have proposed certain measures (armoring and burying the cable) to protect against damage to the cable from outside forces. Nevertheless, the risks of implementing any new technology, certainly present for the TAT-8 system, raise the possibility of cable failure. The staff plans to address these issues in both the North Atlantic Consultative process and in a rulemaking proceeding which will result in the issuance of facilities planning guidelines for the time period in which TAT-8 will be placed in service. As a result of these proceedings, the difficulties of insuring adequate restoration of TAT-8 should be minimized.

*23 85. Grant of this application will not constitute a major action within the meaning of Section 1.1305 of the Commission's Rules and Regulations implementing the National Environmental Policy Act of 1969, 42 U.S.C. §§ 4321-4347 (1976). See *Report and Order*, 49 FCC 2d 1313, 1320 (1974) (laying of submarine cable and installation of additional cable over existing routes not "major action"). Consequently, no environmental information is required as part of the application.

V. Conclusion

86. In view of the foregoing, we herein find that the public interest will be served by a grant of the U.S. carriers' application for a TAT-8 cable. We au-

thorize the applicants to activate MAUO's in TAT-8 in accordance with such comprehensive facilities plan as is developed in the North Atlantic Consultative process and the North Atlantic facilities planning proceeding in Docket 79-184.

Order and Certificate

87. IT IS HEREBY CERTIFIED, that the present and future public interest, convenience and necessity require the construction and operation of the TAT-8 cable system described in application **I-T-C-84-072**. IT IS ORDERED that the application be GRANTED, subject to the following terms, conditions, and limitations. The applicants are authorized to:

- (1) acquire on an ownership basis the half-interests in TAT-8 MAUO's, indicated in Appendix B, Schedule C of the application and appended hereto as Appendix B to this order, and use same for the provision of regularly authorized services between the United States and the indicated countries and beyond;
- (2) activate that capacity in accordance with the comprehensive facilities construction and use plan to be developed in the Commission's Docket 79-184 and the facilities loading policies then in effect;
- (3) subdivide the MAUO's authorized herein in accordance with any Commission orders authorizing applicants to utilize digital circuit multiplication equipment to derive additional voice paths from authorized capacity;
- (4) lease interests in, and operate, necessary domestic connecting circuits between the Tuckerton, New Jersey cable terminal and points of service in the U.S.;
- (5) lease interests in or acquire by IRU, and operate, necessary connecting circuits between the TAT-8 terminals located in the United Kingdom and France and the borders of the countries specified in paragraph (1) above.

88. IT IS FURTHER ORDERED, that the petition to deny the application herein, filed by Aeronautical Radio, Inc. is DENIED.

89. IT IS FURTHER ORDERED, that when a given applicant seeks to acquire or transfer an ownership or IRU interest in TAT-8 capacity, the reimbursement it receives shall be on the basis of depreciated original cost (or the pro rated accumulated cost of such circuit if the system is not then operational) or in conformance with such policy as the Commission may develop in the future regarding the price at which IRU's will be made available.

90. IT IS FURTHER ORDERED, that the applicants make available half-interests in TAT-8 capacity to such present and future U.S. carriers as may be authorized by the Commission to acquire such capacity.

*24 91. IT IS FURTHER ORDERED, that the applicants shall make capacity in the TAT-8 system available to non-carriers in conformance with the policies developed in the Commission's CC Docket 83-1230.

92. IT IS FURTHER ORDERED, that the Commission retains jurisdiction to reallocate U.S. carriers' interests in capacity herein authorized, as the public interest may require to accommodate additional carriers or otherwise, with, where required, the concurrence of the foreign administration or carriers concerned, and, further, jurisdiction is retained by the Commission over all matters relating to the applicants' ownership, management, maintenance, and operation of this cable as authorized herein, to assure the most efficient use not only of this cable but of all means of communications between the U.S. and Europe.

93. IT IS FURTHER ORDERED, that the applicants shall ensure that any construction effort or equipment now required to permit later addition of a third branch be provided or installed at the time of initial construction.

94. IT IS FURTHER ORDERED, that the Commission retain jurisdiction to review the DCME, multiplexing, and interworking arrangements and attribution of the costs thereof and to require such changes in the provision of these services and equipment as may be necessary.

95. IT IS FURTHER ORDERED, that no applicant herein shall dispose of any interest in any TAT-8 capacity it is authorized to acquire in any way without prior authorization by the Commission.

96. IT IS FURTHER ORDERED, that the applicants shall include TAT-8 facility use in the monthly Circuit Status Reports filed pursuant to the Commission's Orders. These reports shall be filed no later than the 20th day of each month providing the information for the preceding month.

97. IT IS FURTHER ORDERED, that this authorization is issued subject to the terms and conditions of any license issued to the applicants herein under the act entitled "An Act relating to the landing and operation of submarine cables in the United States " (47 U.S.C. §§ 34-39), covering the subject submarine cable, and shall become effective upon the acceptance of the aforementioned license by all such parties.

FEDERAL COMMUNICATIONS COMMISSION

WILLIAM J. TRICARICO, Secretary

FN1. The applicants are the American Telephone and Telegraph Company ("AT & T"), FTC Communications, Inc. ("FTCC"), Hawaiian Telephone Company ("HTC" or "Hawaiian"), ITT World Communications, Inc. ("ITT"), RCA Global Communications, Inc. ("RCA"), the Western Union Telegraph Company ("Western Union"), TRT Telecommunications Corporation ("TRT"), and Western Union International, Inc. ("WUI").

FN2. Conference European des Administrations des Postes et des Telecommunications, an association of the state owned and operated postal and telecommunications entities in 26 European nations.

FN3. With the exception of WUI, the applicants also jointly filed an application for a license to land and operate the TAT-8 cable pursuant to [47 U.S.C. §§ 34-39 \(1980\)](#) (the submarine cable landing licensing act). WUI's parent company, MCI International, Inc., joined in the license application.

FN4. After reviewing both Comsat's and NTIA's motions, we have decided to grant them and admit their pleadings. With respect to Comsat's pleading, we note that our acceptance of the late filing prejudices no applicant's rights since those who responded to the comments addressed Comsat's as well. With respect to NTIA's late filing, we note that Arinc was the only party entitled under our rules to reply to NTIA's opposition to Arinc's petition. By letter dated April 9, 1984, the Chief, International Facilities Division, authorized Arinc to file its April 12 reply in advance of a ruling on NTIA's motion so that the pleading cycle precipitated by NTIA's opposition would be complete in any case.

FN5. Although this third fiber pair does not appear in the schematic diagram of the system which is included as appendix C to the [Section 214](#) application, it is reflected in the description of the system at page 8 of the application.

FN6. As a result of its technical characteristics, a digital fiber optic system can have lower noise levels, lower data error rates, and accommodate a greater range of services, including wide-band data and video services, than can an analog system. See [Policies for Overseas Common Carriers, 84 FCC 2d 760, 766-768 \(1981\)](#).

FN7. According to ¶ 11(i) of the CMA, DCME, if used, will not be considered part of the TAT-8 system.

FN8. In a footnote to Schedule B-1, the CMA states that Transpacific Communications, Inc. (an AT & T subsidiary) will "own and be responsible for the capital, operating and maintenance costs of 36.68651% of segment D ... within the United Kingdom and France, including their terrestrial waters" while AT & T will "own and be responsible for the ... costs of the remainder of the 36.68651% of Segment D."

FN9. According to footnote 4 to Schedule B-1 of the 214 application, MCII will own and be responsible for the costs of that portion of the cable allocable to the capacity assigned to MCII's subsidiary, WUI.

FN10. Footnote 1 to the schedule imposes the same condition regarding MCII's share of Segment A costs as that described in n. 9, supra.

FN11. We assume that the difference between the \$335.4 million figure for total system cost and the \$333.6 million figure for segments A and D is attributable to

the costs of segments B and C.

FN12. These figures were arrived at as follows. For costs per half-MAUO, we divided the total cost allocated to the applicants (\$162,600,000) by the number of half-MAUO's assigned to them (7,560). For costs for one half of a derived voice path, we divided total cost by the number of possible voice paths derivable using current DCME technology (37,800) and added our estimated costs for DCME and MSC equipment per derived channel. At p. 25 of their application, the applicants refer to "the capital cost of a basic voice grade half-circuit (MAUO) in TAT-8 (\$22,000)." We assume that the parenthetical MAUO refers to a half-MAUO.

FN13. The countries are Algeria, Bangladesh, Bulgaria, Czechoslovakia, Egypt, German Democratic Republic, Hungary, India, Israel, Ivory Coast, Kuwait, Lebanon, Liberia, Malta, Morocco, Oman, Pakistan, Poland, Romania, Saudi Arabia, Senegal, Syria, Tunisia, and the USSR.

FN14. See application, Appendix B, Paragraph 11(h).

FN15. The planning process got its start in June of 1970, when we initiated Docket No. 18875, Inquiry into Policies to be Followed in Future Licensing of Facilities for Overseas Services, through the release of a Notice of Inquiry, Overseas Communications, FCC 70-620, 35 Fed.Reg. 10166 (June 16, 1970). In that docket, we noted that an ad hoc review of international facilities needs, which results from authorization solely on an application-by-application basis, was no longer adequate to meet the statutory mandates of the Communications Act of 1934, 47 U.S.C. §§ 151, et seq. and the Communications Satellite Act of 1962, 47 U.S.C. §§ 701, et seq. We also affirmed a belief that our licensing procedures should be employed in furtherance of efficient facilities planning based on information supplied by the carriers and integrated into a comprehensive facilities plan. Docket 18875 focused on the 1970-1985 time-frame and the facilities needs arising therein.

FN16. The plan also assumed the use of larger-capacity B-7 Intelsat VI satellites.

FN17. We note that this deferral to our proceedings in Docket 83-1230 is consistent with the Applicants' position at p. 18, n. * * * of their application and with the position of Petitioner Arinc at p. 16, n. 35 of its Petition to Deny and p. 3, n. 5 of its Reply to Oppositions.

FN18. In a rulemaking we will initiate in the near future, we will propose policies governing the price at which IRU's will be made available to purchasers. We expect this proceeding to be completed before TAT-8 is placed in service. We expect future transfers of IRU's in TAT-8 capacity to comply with the policy developed therein and will so condition this authorization.

FN19. AT & T also filed a response to GTE's comments but focused its pleading on the issue of the price which the applicants would charge carriers for IRU in-

terests. As we stated at note 18, *supra*, this matter will be addressed in a separate proceeding.

FN20. The use of the term "circuit" is somewhat anachronistic in the context of a digital, fiber optic cable. For the sake of convenience, however, we will use the term in this discussion to refer to a MAUO.

FN21. We wish to emphasize that broader-based proceedings, such as the facilities planning process in Docket No. 79-184 and the North Atlantic Consultative process, are far more appropriate forums for proposing changes in the ownership of facilities on the scale proposed in Arinc's petition. The planning process was specifically created to enable participants to express their views and propose policies far enough in advance of facilities authorization to permit implementation without major disruption of the sensitive negotiated arrangements which underlie an application. The docket was initiated in 1979 and has provided numerous opportunities during the five years since for interested persons to participate in the development of guidelines and policies for the construction and use of North Atlantic transmission facilities. The consultative process provides similar opportunities for interested parties to participate as well as providing an opportunity for foreign administrations to exchange their views. We encourage interested persons to avail themselves of such opportunities. We trust that, in the future, Arinc will take advantage of these proceedings to present its views in a more timely fashion and in a more appropriate forum.

FN22. Arinc petition at p. 17.

FN23. Arinc petition at p. 21.

FN24. AT & T opposition at pp. 15-17, citing International Communications and Information Policy, 1983: Hearings Before the Subcomm. on Arms Control, Oceans, International Operations and Environment of the Senate Comm. on Foreign Relations, 98th Cong., 1st Sess., 6-7 (1983).

FN25. Arinc petition at pp. 28 and 30.

FN26. We do not mean to suggest by our denial of Arinc's petition that we have rejected irrevocably the approach it proposes. On the contrary, we believe the idea of whole circuits and reciprocal access is worth pursuing further but in a more appropriate forum. See note 21, *supra*.

FN27. Those configurations were the single-bident, a single-trident (adding a landing point in Spain), a double-trident (adding a landing point in Canada), a trident-trident (adding a second landing point in the U.S.) and a trident-bident (eliminating the landing point in Spain). AT & T submitted bids for construction of all five alternatives as follows:

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These bids were the lowest of those submitted. However, during the bid selection process, several co-owners raised the issue of national content, preferring to compromise price for participation by their domestic industries. The co-owners final decision was to award three contracts to three different firms for construction of the three subsegments of the cable. (See paragraphs 5-11, supra.) As a result, the actual system cost was raised from \$312.8 million as bid by AT & T to \$335.4 million, excluding interest during construction. We note the contrast between this approach and that taken by the U.S. towards the ANZCAN cable in which the U.S., despite being a heavy user of the ANZCAN system which has a landing point in Hawaii, did not demand participation in the cable construction effort. The U.S. position was based on our understanding that the winning bid of STC was the lowest and therefore preferable.

FN28. Application at p. 13, ¶ 10.

FN29. Id. at n. *.

FN30. Application, Appendix B [CMA], ¶ 19.

FN31. The staff arrived at these estimates by adding up the total capacity of cables and satellites that will still be in service in those years plus the capacity of facilities that have already been authorized for introduction by that time.

FN32. Based on the information provided to us in the application, it does not appear that the interworking arrangement or the equipment to be developed to implement it will effect changes in the code or format of the information transmitted so we do not believe that it will trigger the restrictions developed in the "Computer II" inquiry, Amendment of Section 64.702 of the Commission's Rules and Regulations ([Second Computer Inquiry](#)), 77 FCC 2d 384 (1980) ("Final Decision"), on reconsideration, 84 FCC 2d 50 (1980), further reconsideration, 88 FCC 2d 512 (1981), aff'd sub nom. [CCIA v. FCC](#), 693 F.2d 198 (D.C.Cir.1982), cert. denied, 103 S.Ct. 2109 (1983). To the extent that any waiver of our Computer II rules would be necessary to permit the applicants to provide the DCME and related services or equipment, however, we hereby grant such a waiver.

FN33. Application at p. 26.

FN34. The current loading policy is a "balanced loading" policy under which circuits are distributed among satellite and cable facilities in a manner which results in nonsaturated facilities carrying equal numbers of circuits. See [Policies for Overseas Common Carriers](#), 82 FCC 2d 407, 431, n. 18 (1980). The policy was developed in the Docket 18875 planning proceedings in conjunction with negotiations between the U.S. and the PTT's. The policy expires by its own terms at year-end 1985.

FN35. Our loading policy is continuing to evolve as the international telecommu-

nications environment moves towards a more competitive structure. We have stated on many previous occasions our intention in the future to remove the Commission from the task of allocating traffic between cables and satellites and to give greater discretion to carriers in their facilities-use decisions. See, e.g., our decision in American Telephone and Telegraph Company, FCC File Nos. I-P-C-83-043, et al., Mimeo No. 33719, released August 26, 1983. While we prefer to rely upon competition between the two mediums, we recognize that such competition does not yet exist. We intend to monitor the situation to assure an equitable transition to a competitive environment.

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***25** Notes for Schedules C

NOTE 1 Intended for use between the Eastern party and the indicated Western party.

NOTE 2 Intended for use between entities not parties to this agreement and the indicated Western party.

NOTE 3 Intended for use between Teleglobe and the indicated Eastern party.

NOTE 4 Intended for use between entities not parties to this agreement and the indicated Eastern party.

NOTE 5 For the purposes of this schedule each country listed under "Eastern Parties" shall be construed to mean the Eastern party identified with that country in Schedule A.

FCC

1984 WL 251099 (F.C.C.), 98 F.C.C.2d 440

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