

Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of
GE American Communications, Inc.
Application for Authority to Construct, Launch,
and Operate a Ka-band Satellite System in the
Fixed-Satellite Service
File Nos. 169 through 173-SAT-P/LA-95
54-SAT-AMEND-97

ORDER AND AUTHORIZATION

Adopted: January 30, 2001

Released: January 31, 2001

By the Chief, International Bureau:

I. INTRODUCTION

1. By this Order, we modify GE American Communications, Inc.'s ("GE Americom's) license to launch and operate a satellite system in the geostationary-satellite orbit ("GSO") to provide fixed-satellite service ("FSS") in a portion of the Ka-band. In particular, we modify GE Americom's license to allow it to operate inter-satellite links ("ISLs") and to specify downlink operating frequencies. These actions provide GE Americom with the opportunity to implement a variety of communications services to consumers in the United States and around the world.

II. BACKGROUND

The GE Americom License

2. In May 1997, as part of the first Ka-band processing round, the International Bureau ("Bureau") authorized GE Americom to launch and operate a GSO satellite system to provide fixed-satellite services in the Ka-band. GE Americom intends to use this system to provide high-speed data,

1 The term "Ka-band" generally refers to the space-to-earth (downlink) frequencies at 17.7-20.2 GHz and the corresponding earth-to-space (uplink) frequencies at 27.5-30.0 GHz.

2 ISLs are communication links between in-orbit satellites. ISLs operate in spectrum allocated to the inter-satellite service. International Telecommunication Union ("ITU") Radio Regulation S1.22.

3 See In the Matter of GE Americom Communications Galaxy Inc. Application for Authority to Construct, Launch, and Operate a Ka-band Satellite System in the Fixed Satellite Service, 12 FCC Rcd 6475 (1997) ("GE

video, audio, videoconferencing, medical imagery, online service and access to global databases.⁴ GE Americom's system consists of nine GSO FSS satellites at five orbital locations.⁵ The GE Americom license permits GE Americom to operate its service links--satellite transmission links to and from user units--in the 28.35-28.6 GHz and the 29.25-30.0 GHz bands for uplink transmissions and the 19.7-20.2 GHz band for its downlink transmissions.⁶ The *GE Americom Authorization Order*, however, did not include additional downlink spectrum requested by GE Americom.

Modification to Add Inter-Satellite Links

3. GE Americom did not request operating authority for ISL service in its underlying application. Six months later, in November 1997, GE Americom requested the Commission to modify its *Authorization Order* to permit use of inter-satellite links in its system.⁷ GE Americom proposed to operate its ISLs on 160 megahertz of spectrum in the 60 GHz band, but it did not specify particular frequencies. In addition, GE Americom requested that the Commission modify its milestone deadlines to conform with those applicable to other Ka-band licensees requesting ISLs.⁸ By employing ISLs, GE Americom's satellites will be able to communicate directly with each other, which, according to GE Americom, will extend the coverage regions of satellite systems from different orbit locations.

4. At the time GE Americom it filed its modification application for the 60 GHz band, the Bureau was not in a position to assign ISL frequencies to GE Americom. The Bureau recognized this in the first-round licenses it awarded to applicants requesting ISLs. Specifically, the Bureau noted that the 54.25-58.2 GHz and 59.0-64 GHz bands are shared on a co-equal basis with U.S. Government operations, including ongoing operations in the inter-satellite and Earth exploration-satellite services. The National Telecommunications and Information Administration ("NTIA") expressed concern regarding potential harmful interference between commercial ISL operations and these government services. In mid-1997, the United States presented proposals to the then-upcoming World Radiocommunication Conference ("WRC-97") concerning ISL operations in the 64.0-71.0 GHz bands.⁹ These proposals were designed to

Americom Authorization Order").

⁴ See *GE Americom Authorization Order*, 12 FCC Rcd 6475 at ¶ 3.

⁵ These locations are the 17° W.L., 85° W.L., 105° W.L., 114.5° E.L., and 56° E.L.

⁶ *GE Americom Authorization Order*, 12 FCC Rcd 6475 at ¶¶ 16 and 20.

⁷ See *Application for Modification of GE American Communications, Inc., File Nos. 169 through 173-SAT-P/LA-95, 54-SAT-AMEND-97* (dated November 18, 1997).

⁸ GE Americom is required to complete construction of its first satellite by April 2002, the first satellite at remaining orbit locations by April 2002, and its co-located satellites by October 2004 and to launch its first satellite by May 2002, the first satellite at remaining orbit locations by May 2002, and the co-located satellites by November 2004. *GE Americom Authorization Order*, 12 FCC Rcd 6475 at ¶ 32. In its modification application to add ISLs, GE Americom seeks, in effect, to extend the date by which it must launch a satellite into each of its assigned orbit locations until the 2005 timeframe. We will consider GE Americom's milestone request in a separate order.

⁹ See *United States Proposals for the Work of the [WRC-97] Conference*, Document USWRC-97.10-E, dated July 24, 1997, Proposals for Agenda Item 1.9.4.3, entitled "The Existing Frequency Allocations Near 60 GHz and, if Necessary, Their Respective Allocation, with a View to Protecting the Earth Exploration-Satellite

allow us to assign ISLs to all first-round Ka-band system applicants requesting them, while addressing NTIA's interference concerns.

5. The WRC-97 allocated an additional band at 64.0-71.0 GHz for ISLs for both non-geostationary orbit ("NGSO") and GSO systems, including those operating in the FSS.¹⁰ The WRC also limited ISL operations in the 54.25-59.3 GHz band to communications between GSO satellites.¹¹ Additionally, ITU Radio Regulation S5.556A states that satellites operating in the 54.25-56.9 GHz, 57-58.2 GHz and 59-59.3 GHz bands shall meet the specified power flux-density limit at all altitudes from 0 km to 1000 km above the Earth's surface.¹² In June 1998, the Bureau requested that each Ka-band FSS licensee requesting ISL spectrum update its ISL request in light of the actions taken at WRC-97.¹³ In addition, the Bureau asked each licensee to provide the Bureau with the specific frequency bands on which it proposes to operate its ISL service and to coordinate its proposed frequency bands with the other Ka-band licensees requesting ISL spectrum before it presented its proposal to the Commission. In response, the GSO FSS Ka-band licensees, including GE Americom, submitted a report in October 1998 (hereinafter the "*GSO FSS Sharing Report*"), concluding that ISLs of the licensed GSO FSS systems could share the same frequencies with few constraints.¹⁴

6. At the same time, Teledesic L.L.C. ("Teledesic"), the only NGSO licensee employing ISLs in the same frequency bands, also submitted a sharing report (hereinafter the "*Teledesic Sharing Report*").¹⁵ The *Teledesic Sharing Report* concluded that Teledesic's ISLs could operate on the same frequencies as the GSO FSS system ISLs, except for possible mutual interference in the limited case of GSO FSS networks using ISLs between satellites that are separated by 157 to 162 longitudinal degrees.

7. After reviewing the *GSO FSS Sharing Report*, the Bureau concluded that it needed additional information to support the report's findings. Accordingly, the Bureau sent a letter to the parties, including GE Americom, requesting a description of the ISL arrangement, including which satellites at which licensed orbital locations will communicate with each other through the ISLs, the amount of ISL spectrum

(passive) Service Systems Operating in the Unique Oxygen Absorption Frequency Band from About 50 GHz to About 70 GHz. (A Consequential Allocation to the Inter-Satellite Service in the 65-71 GHz Bands) (JPDP 12)."

¹⁰ See Final Acts of the 1997 World Radiocommunication Conference, Geneva (1997); ITU Radio Regulations Article S5 (frequency allocations).

¹¹ See ITU Radio Regulation S5.556A ("Use of the bands 54.25-56.9 GHz, 57-58.2 GHz and 59-59.3 GHz by the inter-satellite service is limited to satellites in the geostationary-satellite orbit.").

¹² *Id.* ("The single-entry power flux-density at all altitudes from 0 km to 1000 km above the Earth's surface produced by a station in the inter-satellite service, for all conditions and for all methods of modulation, shall not exceed -147dB(W/m²/100 MHz) for all angles of arrival.").

¹³ See, e.g., Letter from Thomas S. Tycz, Chief, Satellite and Radiocommunication Division, FCC to Karis Hastings, Counsel for GE Americom (June 10, 1998).

¹⁴ *Sharing of Various Frequency Bands Allocated to the Inter-Satellite Service* (October 9, 1998). The study did not examine sharing between GSO and NGSO systems sharing the same ISL frequencies. See also Letter from Karis Hastings, Counsel for GE Americom to Magalie Roman Salas, Secretary, Federal Communications Commission (October 9, 1998) where GE specified ISL bands for operation.

¹⁵ *Interference between Teledesic and GSO Inter-Satellite Links* (October 8, 1998).

required by each satellite, and the justification for the amount of the ISL spectrum requested.¹⁶ In its letter, the Bureau noted that there are additional requests from applicants requesting ISL spectrum in the 40 GHz band, and that several of the applicants in the second Ka-band processing round also proposed systems using ISLs.¹⁷ To maximize the number of systems that could operate in the bands available for ISLs, the Bureau said it would only authorize first round Ka-band licensees for the specific amount of ISL spectrum actually required for ISL operations. In response, in January 2000, GE Americom requested to use 1500 MHz within the 54.25-55.0 GHz, 55.25-55.5 GHz, 57.0-57.25 GHz and 57.8-58.20 GHz frequency bands for ISLs.¹⁸

Service Downlink Bands

8. In its original application, GE Americom requested 1000 MHz of spectrum at 18.55-18.8 GHz, 19.45-19.7 GHz and 19.7-20.2 GHz bands for its service downlink bands.¹⁹ The Ka-band arrangement, however, at that time, designated only a portion of these bands -- specifically the 17.7-18.8 GHz and 19.7-20.2 GHz bands -- for GSO FSS downlink operations.²⁰ Consistent with the band arrangement in effect at the time we authorized GE Americom to operate on 500 MHz at 19.7-20.2 GHz for its service downlinks. We stated that GE Americom could make up the remaining 500 MHz by operating in a portion of the 17.7-18.8 GHz frequency band. Nevertheless, because GE Americom had not applied for 500 MHz of spectrum in this band, and because the Ka-band arrangement in effect at that time required GSO FSS operations in the 17.7-18.8 GHz band to be conducted on a co-primary basis with other services, we found it was premature to grant GE Americom operating authority in any portion of this band.²¹ Rather, we directed GE Americom to file a license modification application when it determined which 500 MHz it wished to use in the 17.7-18.8 GHz band.²² Since that time, the Commission has released the *18 GHz Report and Order*, which designates the 18.3-18.8 GHz portion of the 17.7-18.8 GHz band for downlink GSO FSS operations.²³ Consequently, we are now in a position to assign the additional

¹⁶ See e.g. Letter from Thomas S. Tycz to Karis Hastings, Counsel for GE Americom Communications (December 9, 1999).

¹⁷ These parties include four from the second Ka-band processing round and five from the 40 GHz processing round. The 40 GHz service links are in segments contained in the 36-51.4 GHz band.

¹⁸ See Letter from Karis Hastings, Counsel for GE Americom to Magalie Roman Salas, Secretary, Federal Communications Commission (January 19, 2000).

¹⁹ *GE Americom Authorization Order*, 12 FCC Rcd 6475 at ¶ 19.

²⁰ *Rulemaking to Amend Parts 1, 2, 21 and 25 of the Commission's Rules to Redesignate the 27.5 GHz Frequency Band, to Reallocate the 27.5-29.5GHz Frequency Band, to Establish Rules and Policies for Local Multipoint Distribution Service and for Fixed Satellite Services*, First Report and Order and Fourth Notice of Proposed Rulemaking, 11 FCC Rcd 19005 (1996).

²¹ *GE Americom Authorization Order*, 12 FCC Rcd 6475 at ¶ 20.

²² *Id.*

²³ See *Redesignation of the 17.7-19.7 GHz Frequency Band, Blanket Licensing of Satellite Earth Stations in the 17.7-20.2 GHz and 27.5-30.0 GHz Frequency Bands, and the Allocation of Additional Spectrum in the 17.3-*

500 megahertz of downlink spectrum to GE Americom.²⁴

III. DISCUSSION

A. *Inter-Satellite Service*

9. Given the sharing studies conducted by the licensees and the actions taken at WRC-97, we can now assign specific ISL spectrum to GE Americom's system. First, the ISL sharing analyses performed by the GSO FSS licensees and Teledesic reasonably accommodate all of the first round licensees that requested ISLs. Second, the technical issues with respect to GE's requested ISL bands at 54.25-55.0 GHz, 55.25-55.5 GHz, 57.0-57.25 GHz and 57.8-58.20 GHz bands have been resolved. Specifically, the WRC-97 adopted a provision to limit these bands to GSO satellite transmissions and to establish a power flux density ("p.f.d.") limit for ISL operations in these bands.²⁵ These p.f.d. limits are to protect Government and non-Government NGSO satellites operating in the space research (passive) and Earth exploration-satellite (passive) services. Any non-Government systems requesting to operate ISLs in these bands will be required to coordinate with U.S. Government systems through NTIA's Interdepartment Radio Advisory Committee's Frequency Assignment Subcommittee ("FAS"). The Commission recently implemented the WRC-97 provisions domestically.²⁶

10. GE Americom requests to use 1500 MHz within the 54.25-55.0 GHz, 55.25-55.5 GHz, 57.0-57.25 GHz, and 57.8-58.20 GHz frequency bands for ISLs. GE Americom's constellation will consist of nine satellites located at five different orbital locations, with a single satellite operated at 56° E.L., and two co-located satellites operating at each of the following locations: 105° W.L., 85° W.L., 17° W.L. and 114.5° E.L. Each satellite will require two 250 MHz channels to transmit to the adjacent GE Americom spacecraft, one channel for the antenna facing east, and one channel for the antenna facing west. In addition, to these two transmit channels, the co-located satellites at the 105° W.L., 85° W.L., 17° W.L., and 114.5° E.L. will each require a third 250 MHz transmit channel, which implies that each satellite at these locations will require three 250 MHz transmit channels and three 250 MHz receive channels for a total of six 250 MHz channels. Thus, each satellite will require 1500 MHz of spectrum. Each of the 250 MHz ISL transmit and receive channels requested by GE Americom will be required to support a data rate of 360 Mbps using QPSK modulation. With the use of dual polarization each satellite will be capable of reusing the same frequency assignments at different orbital locations. GE Americom asserts that the 1500 MHz of ISL spectrum will allow better coordination among the GE Americom satellites, improving the efficiency of the system and the quality of transmissions.

17.8 GHz and 24.75-25.25 GHz Frequency Bands for Broadcast Satellite-Service Use, IB Docket No. 98-172, Report and Order, 15 FCC Rcd 13430 (2000) ("*18 GHz Report and Order*"), *petition for review pending*, *Teledesic LLC v. FCC*, D.C. Cir. No. 00-1466 (filed November 6, 2000).

²⁴ We note that GE Americom has filed an application in the second Ka-band processing round to add additional spectrum to its licensed first-round system.

²⁵ ITU-RR 5.556A establishes a single entry p.f.d. at an altitude between 0 km to 1000 km above the Earth's surface produced by a space station in the inter-satellite service.

²⁶ *See Amendment of Part 2 of the Commission's Rules to Allocate Additional Spectrum to the Inter-Satellite, Fixed, and Mobile Services*, *ET Docket No. 99-261, Report and Order*, FCC 00-442, at ¶ 45 (rel. December 22, 2000).

11. Based on GE Americom's representations, we find that its request for 1500 megahertz of ISL spectrum is reasonable. We will therefore authorize GE Americom to conduct ISL operations on 1500 MHz of spectrum within its requested 54.25-55.0 GHz, 55.25-55.5 GHz, 57.0-57.25 GHz and 57.8-58.20 GHz bands. Although GE Americom did not specify its preferred operating frequencies within these ranges, we will assign GE Americom specific ISL frequencies in this Order so as not to delay system implementation. Recognizing GE Americom's plans to use 250 MHz ISL channels we authorize it to conduct its ISL operations in the 54.25-55.0 GHz, 55.25-55.5 GHz, 57.0-57.25 GHz and 57.8-58.05 GHz bands subject to coordination among the licensees pursuant to the *GSO FSS Sharing Report* and the *Teledesic Sharing Report*. If GE prefers to operate on a different 1500 MHz within its requested bands, it may file a request for license modification.

B. Downlink Frequency Bands

12. Recently, the Commission adopted rules for the deployment of services in the 17.7-20.2 GHz band ("18 GHz band").²⁷ These rules are designed to reduce potential interference among the terrestrial fixed service and satellite services allocated in the band. The new band arrangement redesignates much of the spectrum that had been designated for co-primary satellite and terrestrial use as exclusive spectrum for either service. This should reduce the need to coordinate with other services. Under the band arrangement adopted in the *18 GHz Report and Order*, the Commission retained the 19.7-20.2 GHz band for GSO FSS primary use, and split the 17.7-18.8 GHz band, originally shared on a co-primary basis by GSO FSS and fixed service ("FS"), into three designations. Specifically, the Commission designated 500 megahertz to FS for primary use in the 17.7-18.3 GHz band, 280 megahertz for co-primary use by GSO FSS and FS in the 18.3-18.58 GHz band, and 220 megahertz to GSO FSS for primary use in the 18.58-18.8 GHz band.²⁸ In adopting this band arrangement, the Commission stated that a total 720 megahertz of unshared GSO FSS downlink spectrum (the 18.58-18.8 GHz band along with the 19.7-20.2 GHz band), plus the flexible rules that permit sharing of 280 megahertz at 18.3-18.58 GHz, will provide ample spectrum to satellite systems and allow multiple systems to operate.²⁹

13. In its application, GE Americom requested 1000 MHz of downlink spectrum.³⁰ We authorized GE Americom for 500 MHz at 19.7-20.2 GHz.³¹ At that time, we stated that the Bureau was not in a position to grant the additional 500 MHz that it requested in the 18.55-18.8, 19.45-19.7 GHz band.³² First, the requested 250 MHz of spectrum at 19.45-19.7 GHz was inconsistent with the 18 GHz band arrangement then in effect. Second, because the 18 GHz band arrangement designated the 17.7-18.8 GHz

²⁷ See *18 GHz Report and Order*, 15 FCC Rcd 13430.

²⁸ *Id.* at ¶ 28.

²⁹ *Id.* at ¶ 30.

³⁰ See *GE Americom Authorization Order*, 12 FCC Rcd 6475 at ¶ 19.

³¹ See *GE Americom Authorization Order*, 12 FCC Rcd 6475 at ¶ 20.

³² See *GE Americom Authorization Order* at ¶ 20. Where the Bureau requested GE Americom to determine exactly which 500 MHz it wishes to use in the 17.7-18.8 GHz band and file a modification application to operate in these frequency bands.

band for shared FSS and FS use, we requested FSS operators to file applications for the specific 500 MHz band segment they wished to use. The *18 GHz Report and Order* designated 500 MHz of spectrum at 18.3-18.8 GHz for downlink GSO FSS operations. We assign this 500 MHz to GE Americom on our own motion to satisfy its request for 1000 MHz of downlink spectrum for its service links. Operations in the shared 280 megahertz at 18.3-18.58 GHz are, of course, subject to the sharing rules adopted in the *18 GHz Report and Order*.³³

14. In addition, GE Americom must coordinate with the U.S. Government systems operating in the 17.7-18.8 GHz band in accordance with footnote US 334 to the Table of Frequency Allocations.³⁴ We note that Government GSO and NGSO FSS networks are presently operating in the 18.3-18.6 GHz and 19.7-20.2 GHz bands, and plan to operate in accordance with the power flux-density limits contained in the current ITU Radio Regulations.³⁵ Additionally, we note that GE Americom must also comply with footnote US 255 to the Table of Frequency Allocations which contains additional power flux-density limits in the 18.6-18.8 GHz to protect the Earth exploration-satellite service (passive) operating in that band.³⁶

IV. CONCLUSION

15. Accordingly, upon review, we modify GE Americom's Ka-band system license to include ISL frequencies and additional downlink frequencies. These actions provide GE Americom with the opportunity to provide a variety of advanced broadband communication services to businesses and consumers around the world.

V. ORDERING CLAUSES

16. Accordingly, IT IS ORDERED that the license granted by *Order and Authorization*, 12 FCC Rcd 6475 (Int'l Bur. 1997) IS FURTHER MODIFIED to assign the 54.25-55.0 GHz, 55.25-55.5 GHz, 57.0-57.25 GHz and 57.8-58.05 GHz bands for inter-satellite link operations, in accordance with

³³ *18 GHz Report and Order*, 15 FCC Rcd at 13446-54 ¶¶ 34-49.

³⁴ 47 C.F.R. § 2.106 US 334 (as revised in the *18 GHz Report and Order*, 15 FCC Rcd at 13489). This footnote requires coordination of non-Government systems with U.S. Government GSO and NGSO FSS systems in the 17.8-20.2 GHz band.

³⁵ See *18 GHz Report and Order*, 15 FCC Rcd at 13473 ¶ 90. These power flux-density limits in the 18.3-18.6 GHz band are -115/-105 dB (W/m²) in any 1 megahertz, depending upon the angle of arrival. There are currently no power flux-density limits in the 19.7-20.2 GHz band. See Letter from William T. Hatch, NTIA to Dale Hatfield, Chief, Office of Engineering and Technology, FCC (March 29, 2000).

³⁶ 47 C.F.R. § 2.106 US 255 (as revised in the *18 GHz Report and Order*, 15 FCC Rcd 13489) states:

In addition to any other applicable limits, the power flux-density across the 200 MHz band 18.6-18.8 GHz produced at the surface of the Earth by emissions from a space station under assumed free-space propagation conditions shall not exceed -95 dB (W/m²) for all angles of arrival. This limit may be exceeded by up to 3 dB for no more than 5% of the time.

Amendment of Part 2 of the Commission's Rules to Allocate Additional Spectrum to the Inter-Satellite, Fixed, and Mobile Services and to Permit Unlicensed Devices to Use Certain Segments in the 50.2-50.4 GHz and 51.4-71.0 GHz Bands, ET Docket No. 99-261, Report and Order, FCC 00-442 (rel. December 22, 2000).

17. IT IS FURTHER ORDERED that GE American Communications must coordinate its inter-satellite link operations in accordance with the reports submitted to the Commission entitled, "Sharing of Various Frequency Bands Allocated to the Inter-Satellite Service" (October 9, 1998) and "Interference Between Teledesic and GSO Inter-Satellite Links" (October 9, 1998), with the other Ka-band licensees that are included in the referenced reports.

18. IT IS FURTHER ORDERED that GE American Communications, Inc. is authorized for an additional 500 MHz for its downlink operations in the 18.3-18.8 GHz band in accordance to the Report and Order, *In the Matter of Redesignation of the 17.7-19.7 GHz Frequency Band, Blanket Licensing of Satellite Earth Stations in the 17.7-20.2 GHz and 27.5-30.0 GHz Frequency Bands, and the Allocation of Additional Spectrum in the 17.3-17.8 GHz and 24.75-25.25 GHz Frequency Bands for Broadcast Satellite Use*, Report and Order, 15 FCC Rcd 13430 (rel. June 22, 2000) ("18 GHz Report and Order").

19. IT IS FURTHER ORDERED that GE American Communications shall coordinate the inter-satellite link operations in the 54.25-55.0 GHz, 55.25-55.5 GHz, 57.0-57.25 GHz and 57.8-58.05 GHz band through NTIA's Interdepartment Radio Advisory Committee's Frequency Assignment Subcommittee.

20. IT IS FURTHER ORDERED that GE American Communications, Inc. must coordinate all of its Ka-band downlink operations with the U.S. government systems in accordance with footnote US334 to the Table of Frequency Allocations, 47 C.F.R. § 2.106.

21. IT IS FURTHER ORDERED that GE American Communications, Inc. is subject to all terms and conditions in its original *Authorization Order*, 12 FCC Rcd. 6475 (1997).

22. IT IS FURTHER ORDERED that the license term for a space station is ten years and that each license will begin to run on the date GE American Communications, Inc. certifies to the Commission that a satellite has been successfully placed into orbit and the operations fully conform to the terms and conditions of this authorization.

23. IT IS FURTHER ORDERED that GE American Communications, Inc. is afforded thirty days from the date of the release of this order and authorization to decline this authorization as conditioned. Failure to respond within that period will constitute formal acceptance of the authorization as conditioned.

24. This Order is issued pursuant to Section 0.261 of the Commission's rule on delegations of authority, 47 C.F.R. § 0.261, and is effective upon release. Petitions for reconsideration under Section 1.106 or applications for review under Section 1.115 of the Commission's rules, 47 C.F.R. §§ 1.106, 1.115, may be filed within 30 days of the date of public notice of this Order (*see* 47 C.F.R. § 1.4(b)(2)).

FEDERAL COMMUNICATIONS COMMISSION

Donald Abelson
Chief, International Bureau