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March 8, 2002

Via Electronic Filing

William F. Caton
Acting Secretary
Federal Communications Commission
445 12th Street, S.W., Room TW-B204
Washington, D.C. 20554

Re: **EX PARTE**
IB Docket No. 01-185; ET Docket No. 95-18

Dear Mr. Caton:

Representatives of ICO Global Communications (Holdings) Limited ("ICO") met on March 5, 2002 with Commission staff to discuss ICO's proposal to implement an ancillary terrestrial component ("ATC") to supplement its mobile satellite service ("MSS") in the 2 GHz frequency band. A list of the participants is attached as Exhibit A.

ICO briefed the FCC staff on its views as to whether, on a purely technical basis, MSS operations in the 2 GHz band could be "severed" from terrestrial operations in that band. ICO noted that independent terrestrial operations in MSS spectrum raise such significant spectrum interference issues that a sharing approach is technically infeasible. Specifically, ICO noted that such operations would impose the following constraints on the provision of MSS services: dramatic coverage gaps; significantly reduced operational capacity; inability to maintain feature-rich platforms in roaming mode; and additional costs to enable dual use of the spectrum. ICO noted that these limitations would apply to terrestrial as well as satellite operations.

Consequently, any attempt by the Commission to authorize an independent terrestrial mobile service in MSS spectrum would make it impossible for MSS networks to operate existing constellations or deploy new ones. This would deprive the American public of the only technology that can address the unmet needs of rural Americans and of those specialized users who require a consistent, feature-rich suite of services that is available in both urban and rural areas. ICO emphasized that its ATC proposal is intended to make MSS services better able to address the unmet needs of these users (who may reside in either rural or urban areas) rather than to "poach" current PCS subscribers whose needs are fully met by an urban-only service.

ICO otherwise relied on the attached presentation materials during the discussion. See Exhibit B.

In accordance with section 1.1206(b) of the Commission's rules, I am submitting an electronic copy of this letter. If you have any questions concerning this matter, please do not hesitate to contact me.

Very truly yours,

/s/ Cheryl A. Tritt
Cheryl A. Tritt
Counsel to ICO Global Communications (Holdings) Ltd.

Attachments

cc: Meeting participants listed on Exhibit A

Exhibit A

FCC

International Bureau

Don Abelson, Chief
Jim Ball
Breck Blalock
Richard Engelman
Howard Griboff
Trey Hanbury
Paul Locke
Ronald Repasi
Thomas Tycz
Douglas Webbink

Wireless Telecommunications Bureau

David Furth
Kathleen Ham
William Lane
Blaise Scinto
John Spencer
Martha Stancill
Thomas P. Stanley
Margaret Wiener
Mary Woytek

Office of Engineering and Technology

Ed Thomas, Chief
Tom Derenge
Bob Eckert
Julius Knapp
Geraldine Matise
Gary Thayer

Office of Plans and Policy

Robert Pepper, Chief
Evan Kwerel

ICO

Cheryl Tritt (Morrison & Foerster LLP)
Lawrence Williams
Suzanne Hutchings
Paul Regulinski
Mark Grannis (Harris, Wiltshire, and Grannis)

Mobile Satellite Ventures Subsidiary LLC

Carson Agnew
Bruce Jacobs (Shaw Pittman LLP)
Peter Karabinis
David Konczal (Shaw Pittman LLP)
Lon Levin
Serge Nguyen

FCC Meeting

5 March 2002

Paul L Regulinski

Topics

- ICO Status
- MSS with Integrated ATC
  - can the terrestrial (ATC) business be severed from the traditional MSS (SC) business from a technical point of view?

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ICO

ICO System Status

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ICO Background

- **Space and ground segments originally contracted in 1997**
  - 12 ground Satellite Access Nodes (SANs)
  - 12 MEO Satellites
  - GSM based core cellular infrastructure
    - telephony, low speed CSD, fax.
- **Basic ground system essentially complete**
  - 11 SANS complete
    - 5 large C Band feeder link antennas (RFTs) installed at each SAN
    - Switches, Radio Base Stations, etc
    - Legal Intercept, HLRs, VLRs, etc.
  - Primary and Backup Network Management Centers (NMS)
  - Primary and Backup Satellite Control Centers (SCC)
- **Space Segment largely complete**
  - One satellite in orbit, six others basically complete, remainder in various stages of construction

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System Status - System and Ground Segment

- Decision made to upgrade system in 2000
  - upgrade ground segment (only)
  - richer suite of services; packet IP data and higher data rates
  - improved voice quality; Web access, VPN, messaging, PTT, etc.
  - SC / ATC Spectrum Sharing; sharing technologies
- Additional satellites and satellite options ordered in 2000
- RFP for new IP system (ground segment) issued Dec. 2001
  - responses in April 2002
  - down-selection and negotiations 2 quarter 2002, contract possible mid 2002 **pending FCC ATC approval.**

Completion of the ICO System awaits further funding, which hinges on timely FCC approval of ICO's ATC petition.

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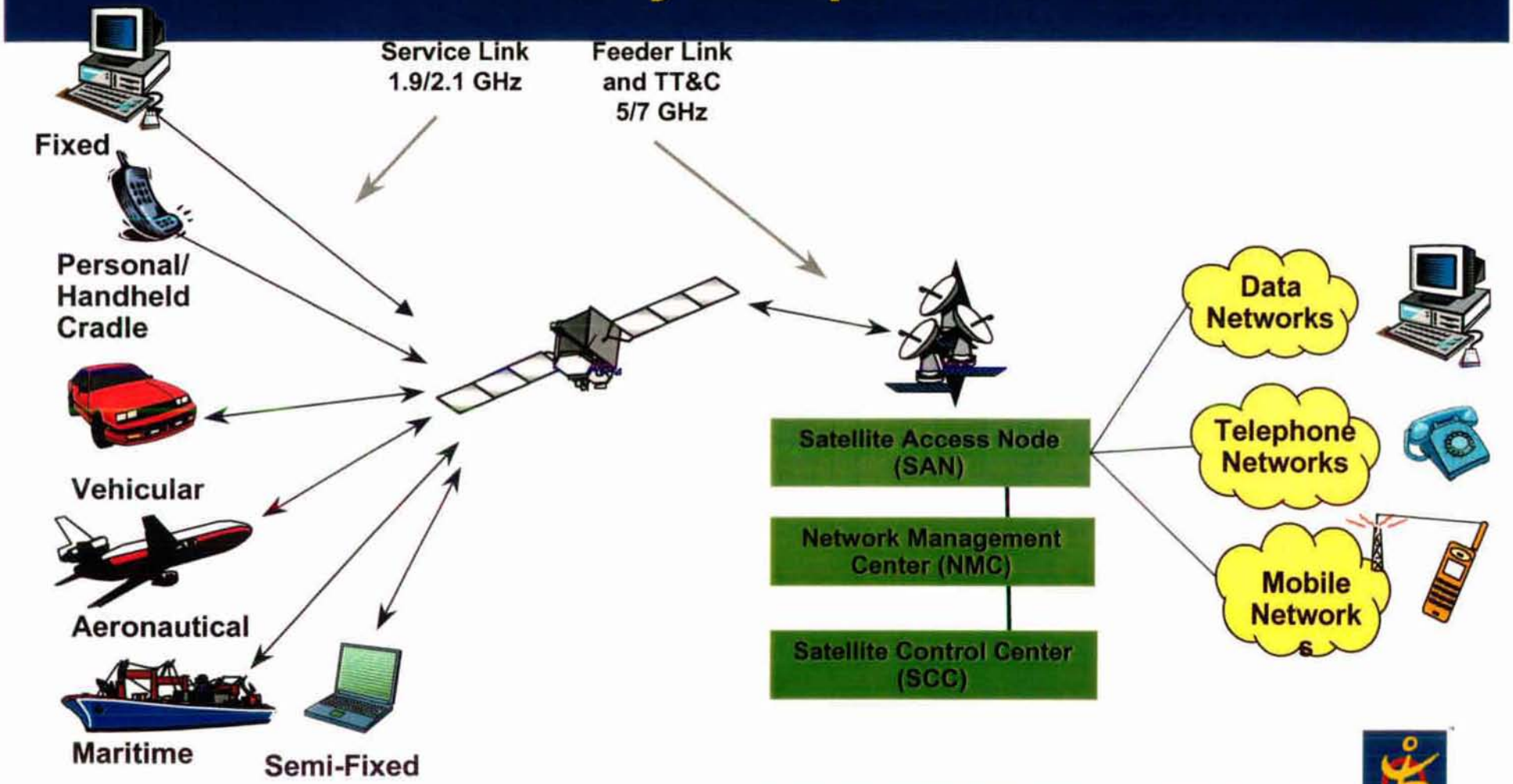
ICO

System Overview
SC Only Components



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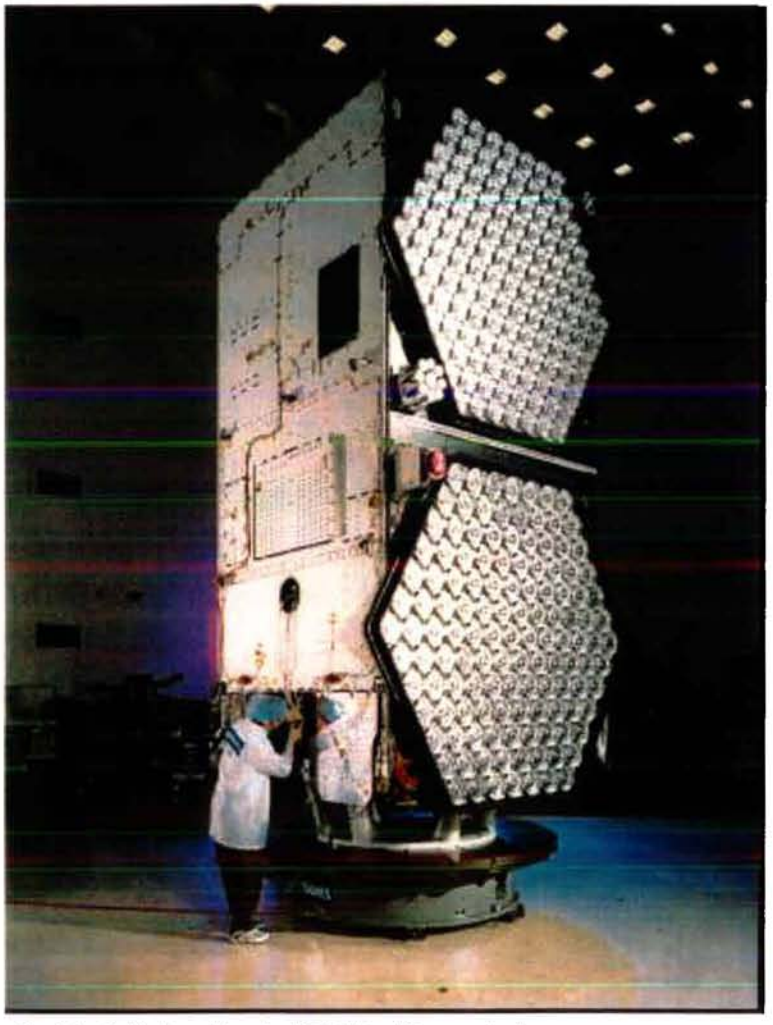
ICO Satellite Status



- 15 satellites on order from Boeing Satellite Systems
- 1 Satellite in orbit and operating successfully
- 6 other satellites essentially complete
- 7 other satellites in various stages of assembly

Completion and launch of full satellite constellation awaits further funding, which depends on timely approval of ICO's ATC petition with the FCC.

One of ICO's Satellites in the factory

ICO

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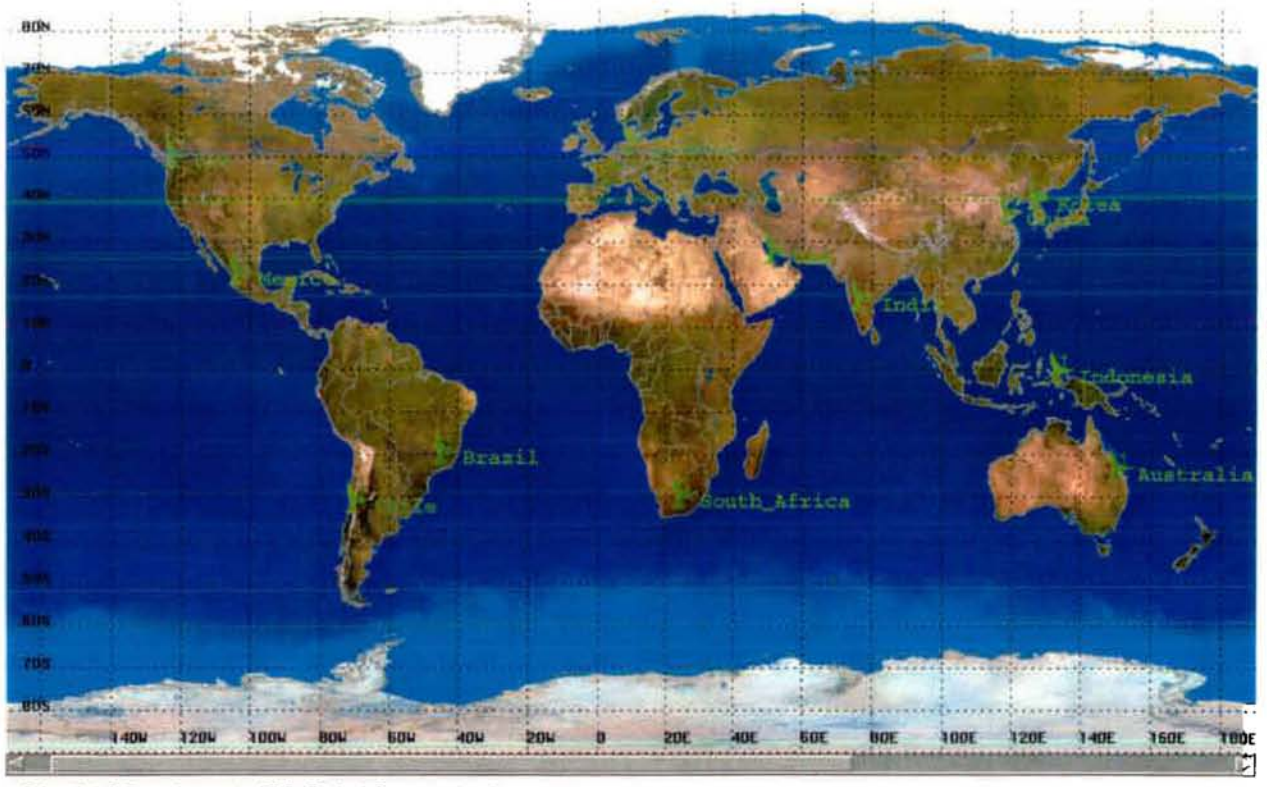
ICO Satellite Access Nodes (SANs)

- ICO has constructed 11 interconnected SANs to nearly complete basic status (circuit switched telephony, circuit data, fax).
- Contract to upgrade SANs and System for advanced IP packet services and higher data rates can be ready for start mid 2002



System completion requires further funding, which is dependent on FCC approval of ICO's ATC petition.

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ICO SAN - Site View

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ICO New Products and Services
Services Elements & UE description

SERVICE ELEMENTS

- Voice
- Fax
- Access to web based ISP e-mail
- Cache updates
- VPN access
- Web access
- Messaging
- Location determination & reporting
- Voice group call
- PTT
- Large file transfer
- Dial up networking

TRANSPORT LAYER

- Interconnect Voice
- Push to Talk Voice (PTT)
- IP Packet Data (up to 144 kbps Protected – 384 Unprotected)

USER TERMINALS

- Personal accessory concept
- Vertical UEs Repeater concept
  - Maritime
  - Aeronautical
  - Land portable [ICO Mobile Office]
  - Transportation
- Dual mode handheld

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ICO Satellite Launch

- First Satellite already in orbit
- Launched 19 June 2001
- Tests completed and satellite is operating perfectly

June 2001 Launch of ICO's F2 Satellite

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Conclusion

- The ICO System is in an advanced state of construction.
- Global provision of advanced "3G" wireless services to everyone everywhere, regardless of location, is possible, by completing the system.
- But consumers demand ubiquitous, integrated, feature-rich service.
- Wall Street will not fund a value proposition that does not include access to urban markets.
  - Iridium/Globalstar bankruptcies.
  - The model of 'roaming' onto unaffiliated networks to provide service where satellites cannot reach has not worked.
- The FCC can enable urban and rural consumers alike to have advanced wireless services by approving ICO's ATC application.

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Question from the FCC

- From a purely technical point of view, can the operations of mobile satellite services (MSS) in the 2 GHz band, L-band and Big LEO band be "severed" from terrestrial operations in each band? In other words, is it technically feasible for one operator to provide terrestrial services and another operator to provide satellite services in the same MSS band? If not, why not?

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Answer overview

- If the spectrum is split into separate frequency bands (segmented), severing will technically work, quite easily.
  - This is what is done today. However, this is not economically viable, cannot be funded, and therefor will not be built.
- If the spectrum is not segmented, but is to be shared, then from a purely theoretical technical view, it would appear that yes, having the spectrum and associated services operated by separate companies may be possible.
- However, from a practical technical view, ICO believes that no, having the spectrum and associated services operated by separate companies is not possible.
- Why?
  1) The radio interference from a terrestrial system into the satellite system is extreme and severe. An independent ("severed") ATC system would have to be extremely limited.
  2) Real spectrum sharing and management requires technical innovation and development, and common real time business decision making and planning. Separate economic entities have opposing business goals, and hence could not engage in the type of joint business planning and development required, and would not engage in the spectrum sharing required.
  3) A rich suite of services (telephony and data), available and working seamlessly across both platforms, **is required. It is not optional.** It has been repeatedly demonstrated that separate entities do not co-operate in ensuring seamless operations without common economic interest - which would not exist here.

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MSS with Integrated ATC

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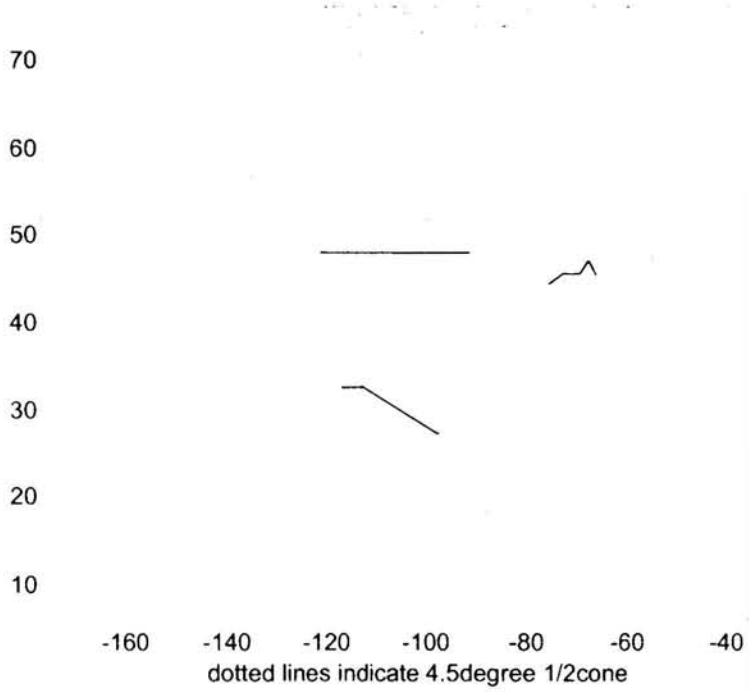
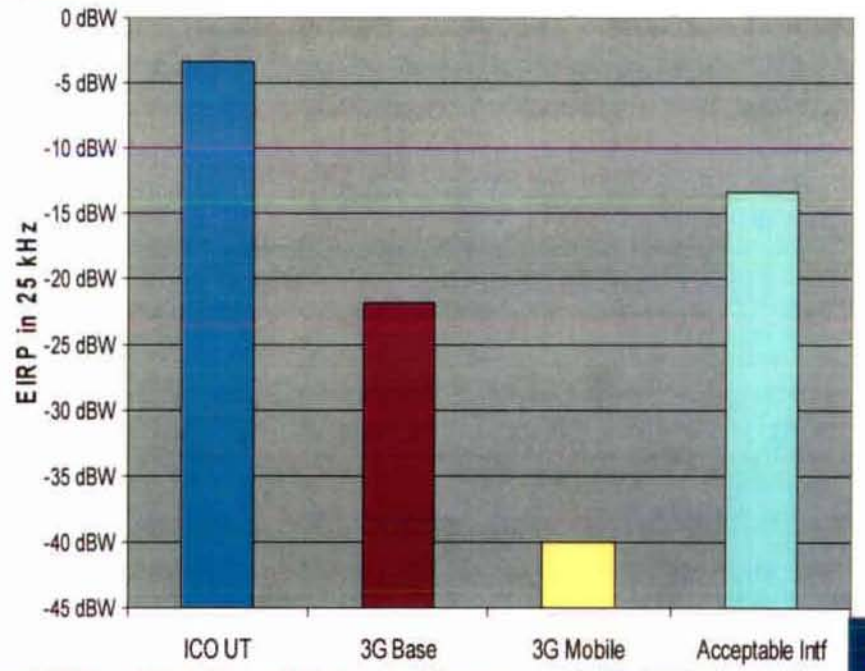
Uplink Sharing (applies to forward band, reverse band, and uplink duplex sharing modes)

typical in-beam contours for satellite at 75W on Equator



Conclusion: If SC uplink is shared by a terrestrial cellular operator, the number of terrestrial users is very limited and must be actively managed and limited, reinforcing that a single operator must manage both components.

- Forward band and uplink duplex modes: A SC's (specifically such as ICO's) spot beams and link design limit an unrelated 3G operator to a maximum of about 30 simultaneously operating, outdoor, co-frequency mobile terminals per 1.25 Mhz within each SC beam, or about 250 within CONUS.
- A single entity operating both, using proposed mitigation technologies, could increase this number by a factor of about 100, See next slide for further discussion.



Relative EIRPs of ICO UT and 3G transmitters in a 25-kHz ICO channel bandwidth radiated towards the satellite, compared to acceptable interference threshold (shown as C/I = 10 dB, assuming single operator; for an independent operator, at least 22 dB should be used). Data is normalized to account for propagation effects such as multipath, polarization mismatch, etc.

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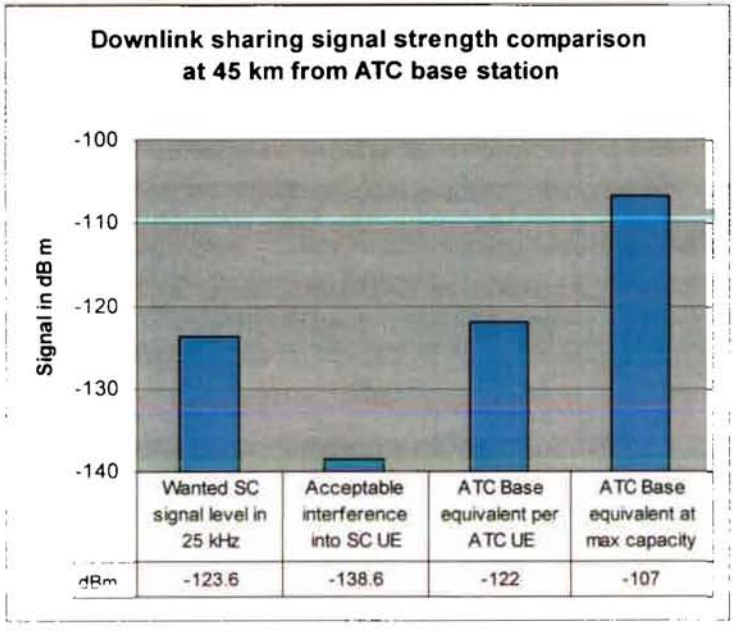
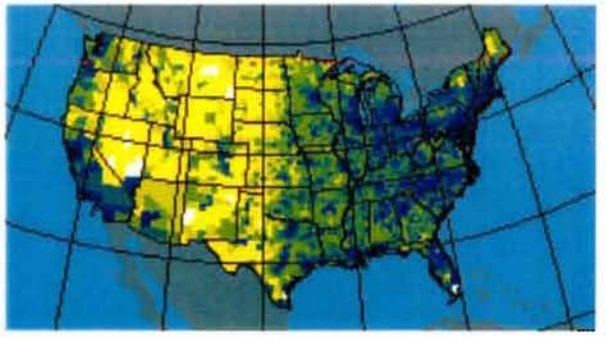
Downlink Sharing (apples to forward band, reverse band, and downlink duplex sharing modes)



•Terrestrial base stations operating in the SC downlink cause an exclusion zone within which SC UTs suffer unacceptable interference. Within the exclusion zone, spectrum must therefor be dynamically managed. Outside the exclusion zone, simultaneously shared spectrum can be used without restriction.

•Exclusion zone boundary is the limit of terrestrial base station transmission (line of sight), well beyond the range where the signal is usable for communication:

- Direct transmission (around 30 km)
- Tropospheric scatter (variable, up to 50 km)



Blue shows ATC potential candidate locations. Green shows other areas of lower ATC potential. Without active spectrum management, much of remainder can easily become an exclusion zone.

Conclusion: Downlink sharing with unrelated service provider will severely impact Satellite Component service in very large areas or most of CONUS. A single management entity dynamically assigning spectrum to users, and users to the system, based on position location and traffic demand, can maximize re-use and hence spectral efficiency.

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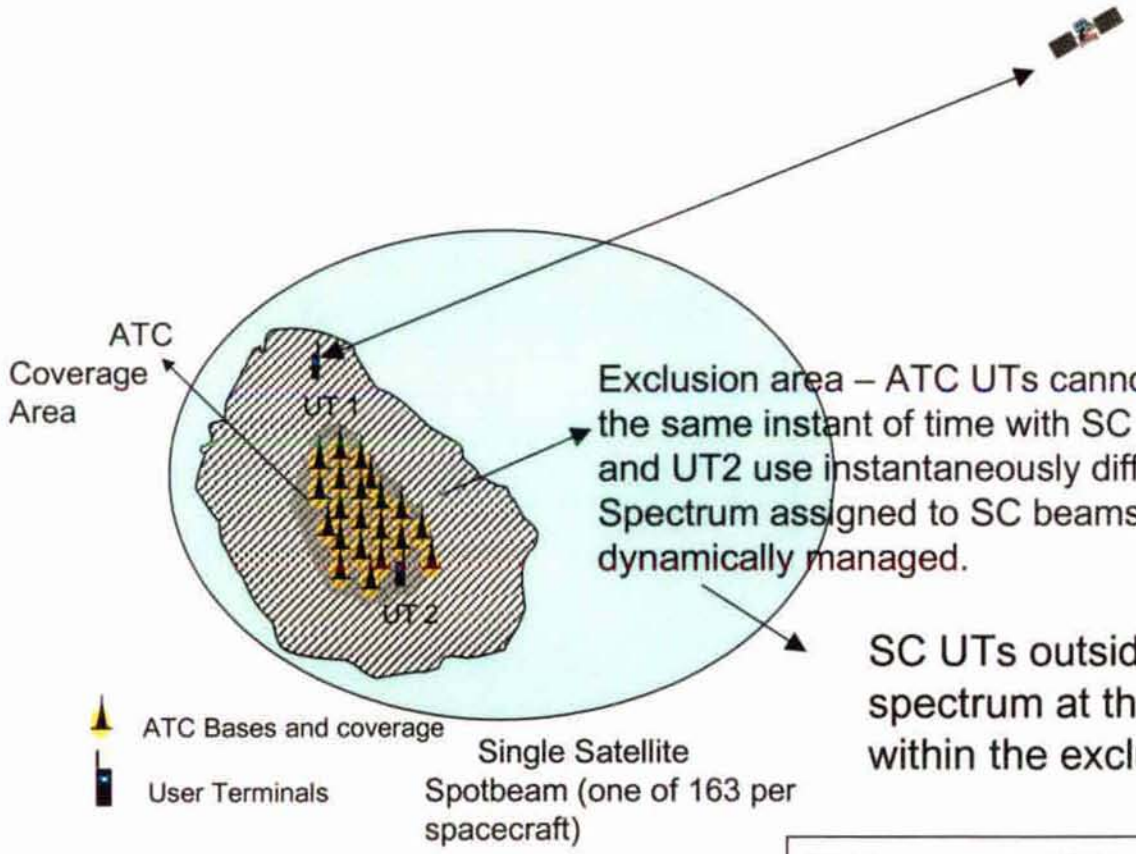
Downlink Sharing - exclusion area

(apples to forward band, reverse band, and downlink duplex sharing modes)



Exclusion area – ATC UTs cannot share spectrum at the same instant of time with SC within this area. UT 1 and UT2 use instantaneously different frequencies. Spectrum assigned to SC beams and to ATC cell is dynamically managed.

SC UTs outside exclusion area can share same spectrum at the exact same time with ATC UTs within the exclusion area.

With separate SC and ATC operators, the exclusion area could be not be served by either entity.

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