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March 8, 2001

01-185

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Via Hand Delivery

Commissioner Susan Ness
Federal Communications Commission
445 Twelfth Street, S.W.
Washington, D.C. 20554

Re: *IB Docket No. 99-81 (2 GHz MSS Service Rules)*

Dear Commissioner Ness:

The Commission has long championed the mobile-satellite service (MSS) industry as virtually the only way to provide ubiquitous, low-cost, high-quality voice and data telecommunications services on a truly global basis. The successful operation of an MSS system will give people in rural and underserved areas access to the same advanced communications capabilities that urban users take for granted. *Unfortunately, due to the failures of early MSS projects and the instability of the telecom and satellite financial markets, the ability of the MSS industry to deliver these important public interest benefits is in dire jeopardy.* There is available to the Commission however, a solution that will preserve the promise of MSS – and in fact, extend its benefits to more users worldwide.

New ICO Global Communications (Holdings) Ltd. ("New ICO")[1] requests that the Commission, contemporaneously with its pending reconsideration of the *2 GHz Service Rules Order*,[2] amend those rules to enable 2 GHz MSS licensees to take advantage of recent technological advances in order to use MSS spectrum much more efficiently than has been possible in the past. These amendments would allow licensees to incorporate an "ancillary terrestrial component," or "ATC," into their soon-to-be-authorized MSS networks. By using dynamic frequency assignment and other interference mitigation techniques within an integrated MSS network, the ATC concept proposed by New ICO would enable MSS licensees to *re-use their own assigned frequencies* terrestrially on an ancillary basis, in order to extend MSS availability to many indoor and urban areas where it is (for all practical purposes) unavailable

[1] New ICO, a Delaware corporation, is the parent of ICO Services Limited, a UK company that has filed a letter of intent to provide 2 GHz mobile-satellite services in the United States.

[2] *Establishment of Policies and Service Rules for the Mobile Satellite Service in the 2 GHz Band*, 15 F.C.C. Rcd. 16127, 16138 (2000) ("*2 GHz Service Rules Order*") (reconsideration pending). ICO asks that the Commission seek comment and adopt the changes proposed in this letter as soon as possible, but in no event later than the Commission's resolution of the pending reconsideration petitions.

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with first-generation technology. Use of an ATC would involve just what its name implies – the use of ancillary terrestrial base stations to re-use assigned MSS frequencies in indoor and urban areas that would otherwise go unserved by a satellite-only MSS network. To ensure that the use of terrestrial base stations is a truly ancillary component of the satellite network, ICO proposes allowing use of an ATC only *after* commercial operation of the satellite constellation has begun.

Incorporation of ATCs into 2 GHz MSS networks would result in a number of important public interest benefits:

- ATCs will solve the chronic coverage problems that have plagued MSS projects to date, extending MSS service to urban and indoor subscribers.
- ATCs will improve service to *rural and underserved* areas, for commercial, military, and public safety applications, by improving the quality and pricing of the service and expanding the satellite capacity available for rural use.
- ATCs will allow 2 GHz MSS operators to use spectrum more intensively by designing integrated MSS networks that *re-use spectrum that is already assigned to them in places where it otherwise could not be used by anyone.*

But perhaps the most important benefit of the ATC concept is that it will allow the 2 GHz MSS service itself, with all of *its* attendant public interest benefits, to become a viable enterprise. And it will do this without risk of harmful interference to other users of the spectrum.

The pending reconsideration of the 2 GHz MSS Service Rules creates the perfect opportunity for the Commission to act in time to achieve these pubic interest benefits. By placing this letter on public notice and seeking comment on the rule changes proposed by New ICO, the Commission can – as it has repeatedly done before – satisfy its procedural requirements *without* having to draft a further notice of proposed rulemaking. (A proposed public notice is attached as Appendix A.) New ICO urges the Commission to resolve this issue concurrently with any 2 GHz order on reconsideration, which New ICO understands to be targeted for mid-2001. The Commission should adhere to that schedule and conclude all of the 2 GHz MSS rulemaking and licensing proceedings within that time frame.

I. THE IMPORTANCE OF MSS

Huge portions of the United States will never be covered by terrestrial digital wireless networks. Low population densities simply make many areas of the country economically unattractive to terrestrial wireless providers. The same is true for sparsely populated areas in the rest of the world, especially where economic development is lagging.

This structural obstacle to terrestrial wireless deployment deprives citizens in rural and undeveloped areas of the wireless voice and data services that have come to be taken for granted elsewhere. It also prevents the deployment of digital wireless infrastructure for public safety applications in substantial portions of the United States and the world. Moreover, the development of advanced wireline infrastructure (cable modem and DSL equipment) in rural areas is even more limited than the development of digital wireless infrastructure. In fact 88% of the United States has no terrestrial broadband (>200 kbps) service of any kind, wireless or wireline.

MSS networks remedy this chronic bandwidth drought in rural areas, providing the wireless digital infrastructure that no terrestrial wireless provider would build. And with data rates ranging from up to 384 kbps possible via the ICO system, many Americans may find an MSS network to be their best, if not their only, choice for fast data communications. MSS will be even more critical in those parts of the world where the wireline infrastructure is more limited. Likewise, military, maritime, recreational, and public safety users can benefit from MSS coverage of rural areas, even if they do not live in rural areas. A flourishing MSS industry is therefore important, particularly to those who live or work in the vast areas not covered by terrestrial digital wireless networks.

II. OBSTACLES TO SUCCESSFUL MSS DEPLOYMENT

As the Commission is well aware, the MSS sector has been decimated by a string of failures:

- Iridium went through bankruptcy and nearly had to deorbit its satellites.[3] After spending more than $5 billion on its system, Iridium was able to muster only about 55,000 subscribers, and Motorola was forced to write off more than $2.5 billion on the project. Iridium has since been acquired by a private company that plans to scale back its service drastically.[4]

- Globalstar, "suffering from anemic revenue and flip-flops in its marketing strategy," indefinitely halted repayments on $3 billion of debt in January, and hired an

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[3] *See* David Barboza, "Iridium, Bankrupt, is Planning a Fiery Ending for its 88 Satellites," N.Y. Times, Apr. 11, 2000 at C1.

[4] *See* Matthew Fordahl, "Virginia Company Acquires Iridium Assets," AP State & Local Wire, Dec. 13, 2000.

investment bank to pursue "strategic alternatives."[5] The default led analysts to predict that Globalstar "will find it virtually impossible to raise additional financing."[6]

- Citing "hard lessons learned . . . in the Mobile Satellite Service industry," Motient recently filed an application in which it concluded that "a satellite-only system is ideal for rural areas but has insufficient capacity and poor urban coverage, particularly near and inside buildings, to be affordable and competitive."[7] Motient has requested authority for a satellite system "supplemented by terrestrial base stations."[8]

Because of these difficulties, capital markets have simply lost confidence in mobile-satellite service projects. Merrill Lynch, for example, recently described Globalstar's equity value as "worth zero under its current capital structure."[9] Outside investors, cognizant of the problems the satellite industry has been facing, have been unwilling to fund new MSS projects.[10]

New ICO has been no stranger to these struggles. In 1999, despite having raised over $3 billion, ICO was forced to file for voluntary bankruptcy protection.[11] With significant investments from, among others, Craig McCaw, ICO emerged from bankruptcy protection in May 2000,[12] with McCaw assuming control.[13]

The failure of so many recent MSS projects cannot be ignored as merely a private financial problem. Without a robust MSS sector, millions of Americans will have *no wireless*

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[5] Andy Pasztor, "Globalstar Halts Debt Repayment, Hires Bank to Pursue Alternatives," The Wall Street Journal, Jan. 17, 2001 at A16.

[6] *Id.*

[7] Motient Services Inc., Application for Assignment of Licenses and for Authority to Launch and Operate a Next-Generation Mobile Satellite Service System, File No. _____ (filed Jan. 16, 2001).

[8] *Id.*

[9] Merrill Lynch, "Eye in the Sky: 4Q00 Preview" at 27 (Jan. 9, 2001).

[10] *See* Peter B. de Selding, "SkyBridge Strategy Shifts to Focus on Existing Spacecraft," Space News, Feb. 19, 2000 at 1 (describing new strategy by SkyBridge to start business by leasing capacity on existing satellites as being "forced on SkyBridge by the plummeting financial conditions surrounding . . . low-orbiting satellite constellations in particular").

[11] *See* Letter from Cheryl A. Tritt to Magalie Roman Salas, File Nos. 188-SAT-LOI-97; SAT-LOI-19970926-00163 (Sept. 27, 1999).

[12] *See* Letter from Cheryl A. Tritt to Magalie Roman Salas, File Nos. 188-SAT-LOI-97; SAT-LOI-19970926-00163 (May 17, 2000).

[13] *See* Request for Declaratory Ruling of ICO Services Limited, File No. SAT-LOI-19970926-00163 (filed June 12, 2000); *ICO-Teledesic Global Limited*, DA 01-6 (Int'l Bur., rel. Jan. 9, 2001).

voice or data service whatsoever. Billions of people around the globe will have no terrestrial wireless option and no foreseeable prospect for adequate wireline infrastructure either. These uncounted billions will simply not be connected to what all had hoped would be a "global" information infrastructure, and that will make the network less useful for all of us.[14] Without MSS, our available infrastructure for disaster relief, search and rescue missions, maritime safety, military operations, and other public safety applications will be seriously diminished. In short, fixing the structural problems that now threaten the existence of this sector must be a national priority.

The woes of the MSS industry can largely be traced to problems with signal coverage. First and foremost, MSS handsets generally do not work indoors, and generally are unable to receive signals in urban "canyons."[15] This severely limits the potential market for existing MSS networks. Second, the same large-beam, global-coverage architecture that makes MSS systems so valuable also makes them subject to severe localized capacity limitations. These limitations have, so far, been a crippling impediment for the industry and a terrible waste of available spectrum.

The follow-on effects of the signal coverage problem are more subtle, but equally serious. Satellite-only MSS service requires a different power budget, and in the past this has made the phones both large and expensive. The unavailability of the MSS signal in urban and indoor settings makes demand for the phones so low that it is impossible to achieve scale economies anything like those achieved for terrestrial wireless networks. And the long product development cycles typical of satellite projects leads to rapid obsolescence of the high-priced handsets. Small wonder, then, that there has been such faint demand.

New ICO, for its part, has been exploring a range of potential solutions to the problems associated with handsets. For example, the use of already-permitted wireless technology such as Bluetooth or IEEE 802.11 could allow a whole range of consumer devices – standard terrestrial phones, PDAs, or laptop computers – to communicate with a satellite transceiver that houses the antennas, amplifiers, and other electronics unique and specific to the satellite link. Such a solution might, in some cases, make MSS handsets more consumer-friendly and affordable. But Bluetooth represents at best a partial remedy: it cannot, for example, account for coverage problems due to urban canyons and other obstacles. Rather, a more complete remedy is necessary.

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[14] This phenomenon is known as "Metcalfe's Law," which states that the value of any network increases exponentially with each additional connected user, since each person on the network can reach a greater number of persons.

[15] *See, e.g.*, Barboza, *supra* ("[Iridium] was a technology that didn't live up to its hype or its billing," said James Grant, editor of Grant's Interest Rate Observer, who has chronicled Iridium's problems, *noting that the telephones could not even be used indoors.*") (emphasis added).

The solution is not to abandon those in rural and unserved areas which MSS networks are uniquely able to serve. The solution, instead, is to find a way to provide service to both rural *and* urban customers – a truly ubiquitous service that is attractive to a sufficiently large cross-section of people to pay for itself. Without this, MSS service will disappear, not just for those who have other options, but also for those who do not. *In short, MSS service must be extended to all, or it will be available to none.*

Some have attempted to address the chronic problems facing the MSS industry with a dual-band roaming arrangement, under which urban terrestrial mobile subscribers roaming into rural environments could access an MSS network and rural MSS subscribers roaming into cities could access terrestrial mobile services. There are a number of flaws in this approach, however. Conspicuously, the dual-band roaming approach results in two bands being used to provide what is essentially one service. In urban areas, only the terrestrial frequencies are used; the MSS spectrum is wasted. Conversely, in rural areas, only the MSS frequencies are used, and the terrestrial mobile spectrum is wasted. Moreover, aside from the spectrum-inefficiencies entailed by this approach, it implicitly cuts holes in the *MSS operator's* authorized service area, depriving the operator of any realistic possibility of providing service to the most densely populated areas. The economics of such a model simply do not support continued investment and technological advances in the MSS sector. Moreover, dual-band roaming necessarily results in an MSS operator's inability to ensure service quality with respect to urban operations.

New ICO has a better solution – a way to take advantage of newer technology in order to create an integrated, next-generation MSS network that will use the spectrum more efficiently. The ATC approach described below will make digital mobile service widely available in indoor and urban environments, and it will do so without occupying a single kilohertz of spectrum that the Commission has not already allocated for MSS. Integration of ATCs will allow 2 GHz MSS licensees to fix what ails the entire industry by simply re-using frequencies that would otherwise lie fallow. New ICO is prepared to move forward with an integrated, next-generation MSS network that will deliver the promised public interest benefits globally and restore confidence in the MSS sector. But billions of dollars of additional investment are required, and that investment simply cannot be justified unless the Commission provides 2 GHz MSS licensees the flexibility they need in order to solve the persistent problems noted above.

III. THE ATC CONCEPT

The Commission can and should make it possible for 2 GHz MSS operators to address the coverage concerns described above. ICO therefore proposes that the Commission allow 2 GHz operators to integrate ancillary terrestrial components into their MSS systems.

ATC is meant to be, as the name implies, *ancillary*. It is meant not as a stand-alone terrestrial service, but as a means for the 2 GHz MSS satellite service to realize its original promise of offering a single telecom system for everyone, regardless of location. To this end,

New ICO proposes that ATC only be operated in conjunction with a launched *and commercially operating* satellite system. Without this limitation, a terrestrial mobile operator might attempt to buy up MSS licenses and construct terrestrial facilities in urban areas without providing any satellite service at all. That would provide more service to urban areas, but would leave rural and remote areas even worse off than they are today. At all costs, the Commission must prevent such a "spectrum grab," and New ICO's proposal achieves this. Under the New ICO proposal, ATCs could only be used by a *bona fide* MSS licensee that is in compliance with its system milestones and has placed an MSS system into commercial service.

Any 2 GHz MSS operator, or all of them, can implement the ATC concept, and it would work with any of the possible "selected assignment" bandwidths that might result from the Commission's 2 GHz MSS licensing plan.[16] Furthermore, ATC can be implemented without harmful interference to other users of the MSS band, or to users of adjacent bands. Further information on how the network would protect adjacent operators is included in the technical annex attached as Appendix B.

At the most generic level, the ATC concept is simply that each MSS provider should have the ability to supplement satellite-only MSS coverage with a network of ancillary terrestrial base stations in areas where satellite-only coverage is inadequate. These base stations might be located on towers or rooftops as with traditional mobile services, or on High Altitude Long Endurance (HALE) platforms. Just as the Commission has left each of the 2 GHz MSS system proponents with substantial flexibility to design its space segment, New ICO believes that MSS operators should have substantial flexibility in determining how any ATC should be implemented.

The general way in which ATCs might be integrated into an MSS network is depicted in Figure 1. Figure 1 shows the MSS space segment of satellites with a Satellite Control facility on the ground. The ground segment consists of interconnected ground stations (Satellite Access Nodes or "SANs"), which interconnect to public fixed or mobile terrestrial networks. The ancillary terrestrial component would be built upon standard CDMA infrastructure. The integrated network management center would dynamically configure the satellite part (frequency plans and satellite payload configuration) and the ATC cell plan to allow for efficient and coordinated frequency re-use. Subscribers would choose from a wide range of transceiver options, capable of operating in either ATC or satellite-only mode, depending on coverage, in order to provide a consistent set of services and applications to various communities of users in fixed or mobile environments.

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[16] Obviously, just as with satellite-only MSS coverage, the infrastructure investment for ATC is progressively more difficult to justify as the assigned bandwidth narrows.

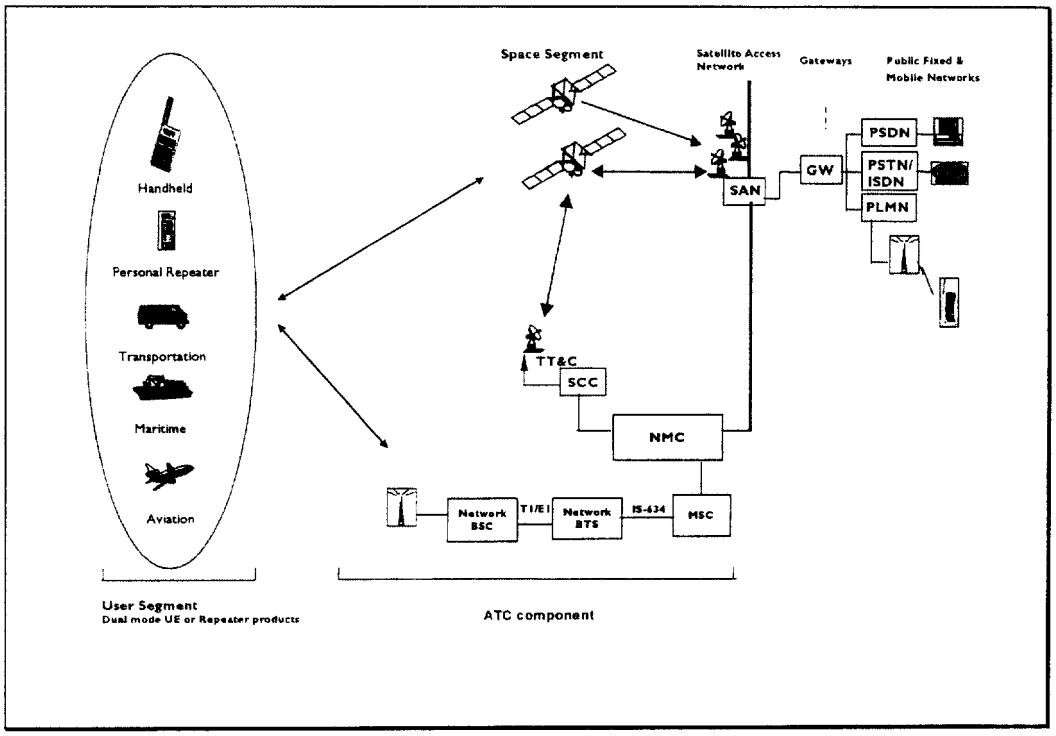

Figure 1: General Architecture of Integrated MSS Network with ATC

Different frequency plans are possible within this general framework. In fact, New ICO has developed at least four basic architectures that 2 GHz MSS operators could use in order to integrate ATCs into their networks without interfering with themselves or adjacent users. In this letter, ICO will describe the "Forward Band" model, which is perhaps the most straightforward. In the technical annex attached as Appendix B, New ICO lays out three other possible architectures.

The "Forward Band" version of ATC is illustrated in Figure 2. In this architecture, user-to-base-station transmissions will occur in the MSS uplink spectrum (co-frequency with user-to-satellite transmissions), and base-station-to-user transmissions will occur in the downlink spectrum (co-frequency with satellite-to-user transmissions.) When an MSS subscriber uses his or her handset[17] in a skyscraper in Manhattan, the handset will find the satellite signal unavailable and will transmit instead in ATC mode, communicating with the nearest ATC base station. However, if the same user with the same handset were later driving out of town on the interstate highway, the handset would communicate directly with the satellite.

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[17] For the sake of simplicity, the word "handset" is here used generically for whatever type of equipment the subscriber is carrying. The description in the text is intended to be generic for any MSS provider, and different types of user devices may be marketed. In any event, it is the network architecture and the frequency plan that is being illustrated here, not the user equipment.

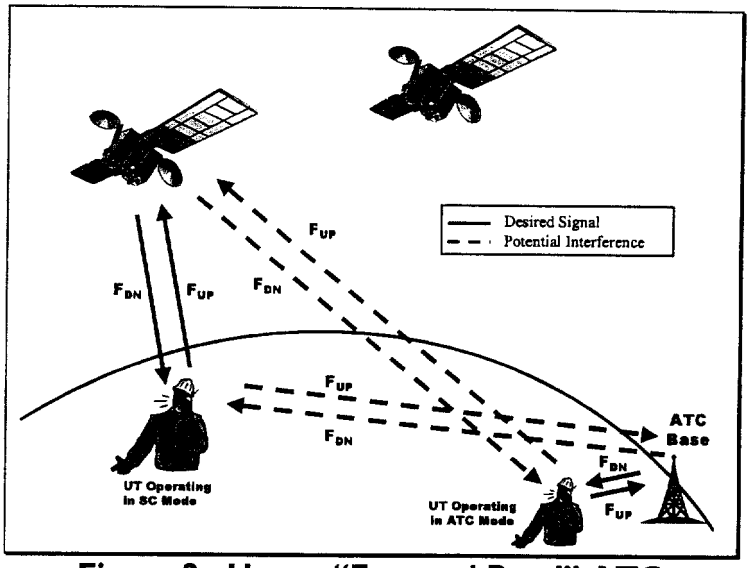

Figure 2: How a "Forward Band" ATC Can Be Integrated with the MSS Network

Importantly, however, the ATC concept only works if it is fully integrated with the MSS network and under the constant control of a single MSS operator. For example, the MSS operator must be able to carefully coordinate demands of the ATC base station and the satellite for the same frequencies at the same time in the same coverage area. For this coordination to occur, the MSS operator will have to take into account traffic loading information and dynamically manage channel assignments to the ATC and satellite-only segments of the network, as explained in Appendix B. The number of simultaneous active users in ATC and satellite mode must be actively managed on a real-time or semi-real-time basis to ensure sufficient link margins and cell sizes are maintained according to design. Both uplink and downlink channels of the satellite-only portion, and both forward and return channels of all ATCs nationwide, must be dynamically managed in this way. For this delicate coordination process to be successful, the MSS operator must utilize a sophisticated network control system that can only function if the ATC and satellite modes operate as a single, inseparable, dynamic unit.

In addition to the challenge of achieving dynamic channel assignment between the ATC and satellite modes, implementation of the ATC concept will present other significant network integration challenges. In some cases, mitigation of interference between the ATC and satellite-only segments will require adjustments in ATC cell sizes. And, since the network will provide ubiquitous global coverage, all approved user transceivers will need to use a common set of protocols in order to facilitate the dynamic channel assignments described above. Even the gain of the ATC base station antennas, as well as the angles at which they are pointed, will need to be determined with reference to the MSS network of which the ATC will be a part. With each MSS network using different power levels, satellite constellations, user transceivers, data rates,

etc., complete integration of the ATC into the overall MSS network is an absolute prerequisite to successful network operation.

IV. PROPOSED RULE CHANGES

The Commission can authorize ATC operations with only three minor changes to its rules. The necessary modifications are collected and attached in Appendix C, but they can be summarized easily here:

1. Expand the definition of "2 GHz Mobile-Satellite Service" in section 25.201, to specifically include the use of an ancillary terrestrial component of the MSS network;
2. Amend section 25.114 to require applicants for 2 GHz Mobile-Satellite Service authorizations to describe any ATC operations they wish to incorporate into their network designs, and demonstrate that other authorized users are protected from interference; and
3. Amend section 25.143 to make clear that the 2 GHz Mobile-Satellite Service blanket license also covers the use of ATCs and that licensees may use ATCs to re-use terrestrially whatever frequencies have been assigned to them for space-to-Earth and Earth-to-space communications.

These three relatively minor changes, codified in Appendix C, would enable *all* 2 GHz MSS operators to incorporate ancillary terrestrial components into their systems after commencing commercial service from their satellite constellations, provided the necessary interference showing had been made.

As Appendix B illustrates, ATC operations can be engineered to conform to the Commission's existing interference rules and not cause harmful interference to the operations of adjacent-channel licensees providing MSS or other authorized services. Accordingly, no change in the existing technical rules is necessary to implement ATC.

V. PUBLIC INTEREST BENEFITS OF ATCs

Commission action to authorize use of ATCs in integrated MSS networks will have major public interest benefits:

- Permitting ATCs will enable the MSS industry to achieve its vital mission of providing ubiquitous global connectivity;

- Permitting ATCs will make integrated MSS services available in urban and indoor settings, solving the chronic coverage problems that have plagued previous MSS projects;

- Permitting ATCs will improve service to rural areas, for commercial, military, public safety, and recreational uses;

- Permitting ATCs will allow more intensive use of spectrum that would otherwise lie fallow; and

- Permitting ATCs will not result in harmful interference to other users of the spectrum.

These public interest benefits are addressed in turn below.

Permitting ATCs will enable the MSS industry to achieve its vital mission of providing ubiquitous global connectivity. MSS systems have the unique ability to help accomplish a host of public policy goals. Millions of Americans who live in rural areas currently have no mobile voice or data service at all. Millions more have only an analog voice service. While the introduction of new competition in urban markets has lowered prices dramatically, rural users all too often are faced with the high prices and poor service that normally result when there is little or no competition. New ICO's ATC proposal would give these rural markets not just one new competitor, but potentially a whole new sector full of viable, attractive service options.

Moreover, the MSS industry is not just about voice service. While it is natural to focus on mobile voice services, services such as ICO's will offer millions of average Americans in rural areas a faster data line than anything they can obtain from their wireline phone company. The development of advanced wireline infrastructure (cable modem and DSL equipment) in rural areas is even more limited than the development of digital wireless infrastructure. With data rates ranging from up to 384 kbps possible via the ICO system, many Americans may find an MSS network to be their best, if not their only, choice for fast data communications. The same is even more true in those parts of the world where the wireline infrastructure is in worse shape, or non-existent.

Likewise, military, maritime, recreational, and public safety users will benefit from MSS coverage of rural areas, even if they do not live in rural areas. Military and public safety users often depend on mobile-satellite service during natural disasters and other crises. Recreational users can gain an important additional measure of personal safety by subscribing to a robust MSS service. Maritime users, both commercial and recreational, are also a natural market for MSS. By strengthening the MSS sector's ability to serve these core markets, ATCs will benefit not only rural Americans, but all Americans. And all Americans will also benefit from the strong satellite manufacturing capability that a revitalized MSS industry would help to sustain.

Without the ability to serve indoor and urban subscribers, however, 2 GHz MSS operators will be unable to attract the billions of dollars necessary to build and launch their systems. The primary public interest consideration in favor of ATC is therefore quite simple: ensuring that MSS service, with all its attendant public benefits, survives.

There is strong Commission precedent for this aspect of New ICO's proposal. While this proposal would provide the 2 GHz mobile-satellite service more flexibility than do the current rules,[18] the Commission has allowed such flexibility in the past when necessary to make an underlying service viable. For example, it allowed Instructional Television Fixed Service ("ITFS") licensees to lease spectrum to commercial operators, who can then offer non-ITFS services using ITFS spectrum.[19] The Commission acted specifically so that commercial operators could "provide funding used by ITFS licensees for their educational mission."[20] Indeed, the Commission's rationale for allowing non-ITFS service over ITFS spectrum was as follows:

> [T]he cost of constructing and operating an [ITFS] system represents a significant burden to licensees. In addition, the cost of education is increasing daily. . . . [N]ew revenue sources are necessary in order to give [ITFS] every chance to grow and succeed.[21]

Faced with evidence that the "pure" ITFS was not economically viable, the Commission, rather than abandoning the service entirely, amended its rules to permit lessees to offer non-ITFS service over ITFS spectrum. (Such service might even be thought of as "ancillary" to the ITFS service.)

Even more recently, the Commission took a similar step for similar reasons when it amended the service definitions for MDS and ITFS in order to give those licensees the authority to transmit two-way digital data. Both services had historically been limited to one-way radio transmissions, but when faced with evidence that the traditional service limitations were

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[18] Part 25 of the Commission's Rules currently defines "Mobile-Satellite Service" as "[a] radiocommunication service: (1) Between mobile earth stations and one or more space stations used by this service; or (2) Between mobile earth stations by means of one or more space stations." 47 C.F.R. § 25.201. It further notes that MSS "may include feeder links necessary for its operation. (RR)" *Id.*

[19] *See* 47 C.F.R. § 74.931(a) (providing that ITFS channels "must be used to transmit formal educational programming); 47 C.F.R. §§ 74.931(b)-(d) (listing other permissible forms of ITFS programming); 47 C.F.R. § 74.931(f) (allowing licensees to "use excess capacity on each channel to transmit material *other than ITFS subject matter* . . . subject [to certain conditions]) (emphasis added).

[20] *Amendment of Parts 21 and 74 to Enable Multipoint Distribution Service and Instructional Television Fixed Service Licensees to Engage in Fixed Two-Way Transmissions*, 13 F.C.C. Rcd. 19112, 19114 (1998).

[21] *Amendment of Parts 2, 21, 74 and 94 of the Commission's Rules and Regulations in Regard to Frequency Allocation to the Instructional Television Fixed Service, the Multipoint Distribution Service, and the Private Operational Fixed Microwave Service*, 94 F.C.C.2d 1203, 1250 (1983).

hindering MDS and ITFS licensees from providing competitive service options, the Commission acted decisively to give those licensees the flexibility they needed in order to flourish.[22]

Here, the Commission is faced with a similar situation. MSS systems in the 2 GHz band will be unable to provide "city-like" telecommunications in rural and unserved areas unless the Commission allows them to provide services in the city. Just as with ITFS and MDS licensees, the Commission should give 2 GHz MSS licensees the tools they need to make the promised public interest benefits a reality.

Permitting ATCs will make integrated MSS services available in urban and indoor settings, solving the chronic coverage problems that have plagued previous MSS projects. Implementation of the ATC concept will allow 2 GHz MSS service in indoor and urban areas where it is currently not available with first-generation MSS technology. As described above, 2 GHz MSS satellite signals cannot be received indoors or in urban areas. ATC will make 2 GHz MSS service a realistic option in those areas through better coverage and higher capacity.

Allowing a satellite service to reach urban customers through an ancillary terrestrial medium is by no means a novel idea. At least since 1992, the Commission has contemplated a complementary terrestrial "adjunct" to satellite Digital Audio Radio Services ("DARS").[23] Indeed, several DARS applicants proposed to use terrestrial "gap fillers" that would allow service in "urban canyons and other areas where it may be difficult to receive DARS signals transmitted by satellite."[24]

When these gap fillers were most recently proposed, the Commission wondered "whether, if a large number of gap fillers is required, there comes a point at which the service becomes essentially a terrestrial rather than a satellite service."[25] However, the Commission noted that the DARS terrestrial repeaters would "operate on the same frequency as the satellite transmission" and would be used only "to improve service link margin in difficult

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[22] *Amendment of Parts 21 and 74 to Enable Multipoint Distribution Service and Instructional Television Fixed Service Licensees to Engage in Fixed Two-Way Transmissions*, 13 F.C.C. Rcd. 19112, 19115 (1998) ("[O]ur goals in instituting this proceeding were to facilitate the most efficient use of the affected spectrum, to enhance the competitiveness of the wireless cable industry, and to provide benefits to the educational community through the use of two-way services, such as high-speed Internet service.").

[23] *See Amendment of the Commission's Rules With Regard to the Establishment and Regulation of New Digital Audio Radio Services*, Notice of Proposed Rule Making and Further Notice of Inquiry, 7 F.C.C. Rcd. 7776, 7779 n.9 (1992) ("For the purpose of this proposed allocation, we deem complementary DARS to be an adjunct to a satellite based system, rather than a separate, stand-alone terrestrial system.").

[24] *Establishment of Rules and Policies for the Digital Audio Radio Satellite Service in the 2310-2360 MHz Frequency Band*, 12 F.C.C. Rcd. 5754, 5810 (1997) ("*DARS Order*").

[25] *Establishment of Rules and Policies for the Digital Audio Radio Satellite Service in the 2310-2360 MHz Frequency Band*, Notice of Proposed Rulemaking, 11 F.C.C. Rcd. 1, 18 (1996) ("*DARS Notice*").

propagation environments, especially in urban areas."[26] Based on this understanding, the Commission has proposed "to permit deployment of satellite DARS gap-fillers, on an as-needed basis by satellite DARS licensees to meet their service requirements."[27]

As with DARS terrestrial gap fillers, ATC is designed to extend the reach of a satellite service to authorized areas where technology does not currently allow service. Moreover, it uses no more spectrum than is already assigned to the MSS operator. ATC thus represents an "adjunct" or "complementary" element of the mobile-satellite service rather than a stand-alone terrestrial service.

Permitting ATCs will improve service to rural areas, for commercial, military, public safety, and recreational uses. ATCs will enable better service to rural areas in a number of ways, some obvious and some more subtle. Most obviously, ATCs will improve rural service because, without ATCs, there may be *no 2 GHz service to rural areas at all.*

Moreover, use of an ATC as part of the MSS network will actually ensure that adequate capacity remains available for rural applications despite the increased urban demand that will follow from enhanced urban coverage. The maximum localized capacity of an MSS network is affected by the network's frequency reuse patterns, which (as with any satellite network) are typically large compared to terrestrial frequency re-use patterns. Thus, in a satellite-only network, every transmission from an urban subscriber uses up capacity that would otherwise be available for a rural subscriber, and *vice versa*. Improving the signal coverage in urban areas will, of course, increase the demands that urban users make on the MSS network. However, use of an ATC will at the same time facilitate the routing of most urban traffic in such a way as to minimize the burden on the satellite portion of that network. By keeping portions of the heavy traffic from densely populated areas off of the satellites, the ATC segment will leave more satellite capacity available for rural use.

Rural users will also benefit from the scale economies that implementation of ATCs will create. Handsets will be less complex than under dual-band roaming architectures; handset volumes can be expected to reduce prices. And all of these benefits can be achieved without assigning to MSS operators a single additional kilohertz of spectrum beyond what is already allocated for 2 GHz MSS.

As with the DARS, ITFS, and MDS precedents, the ATC solution proposed by New ICO here is an *industry-wide* solution. ICO's users will benefit from ICO's incorporation of an ATC into the ICO network. But by focusing its proposal on the service rules themselves, New ICO

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[26] *DARS Order*, 12 F.C.C. Rcd. at 5811.

[27] *Id.*, 12 F.C.C. Rcd. at 5812. The Commission has not yet issued technical rules for DARS terrestrial gap fillers.

proposes a means by which any and all 2 GHz MSS operators can take advantage of the same efficiencies to craft a successful venture.

Permitting ATCs will allow more intensive use of spectrum that would otherwise lie fallow. More efficient use of the radio spectrum has long been one of the Commission's primary goals. That has never been more true than today. Indeed, in a world where "[t]echnological advances, consumer demand, and the finite nature of spectrum have made [the Commission's] spectrum management responsibilities increasingly complex" and "[t]here is very little unencumbered spectrum available for new services,"[28] the Commission has characterized "promoting greater efficiency in spectrum markets" as the first and most important of its spectrum policy priorities.[29]

Implementation of ATCs will improve spectrum efficiency not by altering the number of times spectrum is re-used within a particular satellite beam, but rather by enabling the already assigned MSS spectrum to become useful in urban areas. By marshalling both satellite and ATC resources within the same integrated MSS network, the MSS operator will be able to ensure that each element of the network is used in the most appropriate way. It bears repeating that careful integration of the satellite and ancillary terrestrial components of an MSS network is the key to facilitating improved re-use of MSS spectrum. As noted above and explained more fully in Appendix B, satellite and ATC operations will need to be harmonized in countless ways, from network launch, to handset design, to base station cell size and antenna gain.

Permitting ATCs will not result in harmful interference to other users of the spectrum. ATC will, as described above, lead to a number of public interest benefits. At the same time, it will not result in additional harmful interference to other MSS operators or adjacent spectrum users. As described in Appendix B, ICO will be able to implement ATCs without imposing any additional interference burden on adjacent MSS users or other authorized users outside the MSS band. With respect to these other users, Appendix B demonstrates that the potential interference in the MSS uplink band from an integrated MSS network using ATCs is not increased compared to the potential interference from a satellite-only network, and the potential interference in the downlink band from the integrated MSS network is negligible compared to the potential interference from services in adjacent bands.

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[28] *Principles for Reallocation of Spectrum to Encourage the Development of Telecommunications Technologies for the New Millennium*, Policy Statement, 14 F.C.C. Rcd. 19868, 19869 (1999) ("*Spectrum Policy Statement*").

[29] *See id.*, 14 F.C.C. Rcd. at 19870.

VI. PROCEDURAL CONSIDERATIONS

Satellite projects have notoriously long lead times. Once they receive their spectrum authorizations from the Commission, each of the 2 GHz MSS operators will need to move aggressively to build satellites, reserve launch vehicles, build out earth stations, negotiate interconnection, relocate incumbents, and obtain manufacturers for user transceivers. All of this work needs to go forward now, yet all of it is currently on hold – even for ICO, which has already built most of its satellites.[30] Analysts and investors are starting to write off the entire sector, and under the Commission's existing rules New ICO cannot disagree: Without ATC, 2 GHz MSS systems are simply not economically viable. With capital markets essentially closed to MSS operators, neither New ICO nor other 2 GHz proponents can afford to wait.

Fortunately, neither a new proceeding nor a traditional further NPRM is required. Instead, the pending reconsideration of the *2 GHz Service Rules Order* creates a small but adequate window of time within which to address this proposal. New ICO urges the Commission to place this letter on public notice and to accept comments and reply comments on the ATC proposal. (A draft version of such a Public Notice is attached as Appendix A to this letter.) The Commission can then consider any comments filed and act on this request at the same time it issues an order on reconsideration in the *2 GHz Service Rules* proceeding.

Placing this letter on public notice (essentially in lieu of a further NPRM) would fully satisfy the Commission's procedural requirements. First, the Administrative Procedure Act does not require any particular form of NPRM in an informal rulemaking such as this. It only requires that the Commission publish a "[g]eneral notice of proposed rule making" in the Federal Register.[31] After notice is given, the Commission must "give interested persons the opportunity to participate in the rule making" in writing.[32] Nowhere does the APA require that *the Commission itself* draft a proposed rule change.[33] Indeed, on several occasions the Commission has placed proposed rule changes submitted by interested parties directly on public notice.[34] There is no reason why the Commission should not do the same here. The

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[30] At this writing, eight of ICO's twelve spacecraft have been substantially completed. ICO's first satellite was destroyed when its Sea Launch rocket malfunctioned during launch.

[31] 5 U.S.C. § 553(b).

[32] 5 U.S.C. § 553(c).

[33] See 5 U.S.C. § 551(5) (defining "rule making" simply as an "agency process for formulating, amending, or repealing a rule").

[34] See Public Notice, Coalition for Affordable Local and Long Distance Services (CALLS) Modified Proposal, Pleading Cycle Established, CC Dkt. Nos. 96-262, 94-1, 99-249, 96-45 , 2000 FCC LEXIS 1197 (rel. Mar. 8, 2000) (inviting comment on modified coalition proposal as part of ongoing rulemaking); *see also Multi-Association Group (MAG) Plan for Regulation of Interstate Services of Non-Price Cap Incumbent Local Exchange Carriers and Interexchange Carriers*, Notice of Proposed Rulemaking, CC Dkt. Nos. 00-256, 96-

Commission should act as soon as procedurally permitted, so that the fate of the 2 GHz MSS sector will be determined by the merits of the service, rather than a languishing, undecided regulatory proceeding.

Furthermore, this procedural treatment is particularly appropriate here, since the issue of whether MSS service can include a terrestrial component has been before the Commission since 1992 when Celsat first proposed a "hybrid" satellite/terrestrial system.[35] The Commission in 1997 deferred consideration of Celsat's hybrid proposal "until after [it had] accepted applications for system licenses in these bands."[36] Although it has accepted applications, the Commission has never resolved Celsat's proposal. The instant request is thus entirely appropriate for disposition contemporaneously with Commission action on reconsideration. The Commission would, in effect, be resolving the issue it earlier deferred.

* * *

With this request, New ICO is giving the Commission the opportunity to help determine whether or not MSS services have a future. But it must act quickly, for, in this case, delay equals denial. Accordingly, New ICO respectfully requests that the Commission place this request on public notice as soon as possible, and adopt the proposed rule modifications contemporaneously with its forthcoming order on reconsideration in the *2 GHz Service Rules* proceeding, which New ICO understands to be targeted for decision by June 2001. The Commission should adhere to that schedule and conclude all of the 2 GHz MSS rulemaking and licensing proceedings within that time frame.

Continued . . .
45, 98-77, 98-166, 2001 FCC LEXIS 73 (rel. Jan. 5, 2001) (issuing NPRM summarizing group proposal, the full text of which was appended).

[35] *See 2 GHz Allocation Order*, 12 F.C.C. Rcd. at 7409 (1997).

[36] *See id.*

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Appendix A: [Proposed] Public Notice based on this *ex parte* presentation

Appendix B: Intra-System and Inter-System Spectrum Sharing of MSS Networks Including an Ancillary Terrestrial Component (ATC)

Appendix C: [Proposed] Amendments to 2 GHz MSS Service Rules

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