ATX TECHNOLOGIES

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APR - 3 2002

Federal Communication Commission
Bureau / Office

April 3, 2002

The Honorable Michael Powell
Chairman of the
Federal Communications Commission
Washington, D.C. 20554

Re: National Wireless Digital Network
Ex Parte Submission
WT Docket 01-108

Dear Chairman Powell:

On behalf of ATX Technologies, Inc., and as part of the Commission's continuing effort to ensure a ubiquitous wireless network that serves the needs of the American people, enclosed is a white paper describing the challenges encompassed in replicating in the digital environment the present public safety benefits delivered to millions of motorists by the current analog network.

ATX provides telematics technology and services to automobile manufacturers. ATX integrates wireless communications, location technology, in vehicle and off-board wireless computer technology and the availability of live operators to provide enhanced emergency response and other needs to individuals with telematics equipped vehicles. The cornerstone of ATX's telematics services is the automatic crash notification ("ACN") and in-vehicle Mayday button, which rely upon analog cellular networks to transmit critical data and open a voice channel between the vehicle and an ATX call center. Similar to the safety benefits provided by standard factory installation of seat belts and air bags, telematics-based ACN/Mayday systems represent the latest generation of in-vehicle safety technology. To be as robust of a public safety service as technically possible, these telematics-based public safety systems are dependent on a nationwide, wireless infrastructure that in its most essential form today – based on the analog standard -- delivers almost ubiquitous nationwide wireless coverage and simultaneous voice and data capabilities. Telematics will survive, and likely prosper, under a forthcoming digital infrastructure --- but the public benefits of location-based public safety technology will be greatly reduced from what the American public enjoys today if a reasoned transition from analog to digital is not established and pursued.

The Commission is currently examining whether to eliminate the standard upon which the analog network has been constructed and from which a range of

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technologies and services emerged. The evolution to a digital environment presents substantial challenge:

- The current analog network provides ubiquitous wireless communication capability for both voice and data throughout the United States. It is the "glue" holding wireless communications together. Replicating these qualities in the digital environment, particularly in an era of heightened national security and law enforcement needs, is critical.
- Large areas of the country will remain serviced by analog networks. The challenge is not simply moving to a digital environment but recognizing that the Nation's wireless network will comprise both digital and analog networks.
- The present digital network is overwhelmingly voice oriented. There remain substantial challenges in responding to the demand for data technologies and services, such as telematics, that are routine in the analog environment.
- Without a reasoned transition to the digital/analog environment what will evolve are not enhanced wireless technologies and services, but a weakening of the Nation's wireless networks and the competitive environment that has emerged in telematics.

As detailed in the white paper, the challenges presented by the transition to digital are complex and difficult and go beyond the stranded costs associated with the present infrastructure. The Commission's leadership in bringing the interests together to begin the transition is critical.

ATX urges the Commission to begin this process by holding a public forum, in concert with the federal Department of Transportation, that will examine the challenges of how to commence this transition in much the same fashion that the Commission sponsors forums envisioning the potential of 3G Wireless technologies. There is one key difference – the transition to digital presents substantial risks to public safety. The potential loss of life and increased risk of permanent injuries resulting from automobile

accidents, particularly those in rural areas, if the Nation's wireless infrastructure proves less reliable, less robust, and less oriented to delivering public benefits and more focused on providing more spectrum to wireless carriers motivated to provide services to heavy wireless users, is tangible.

Respectfully submitted,

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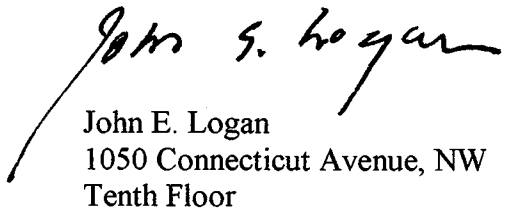

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Attachment
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The Honorable Kathleen Q. Abernathy
The Honorable Michael J. Copps
The Honorable Kevin J. Martin
Mr. Peter Tenhula, Senior Legal Advisor to Chairman Powell
Mr. Bryan Tramont, Senior Legal Advisor to Commissioner Abernathy
Mr. Paul Margie, Legal Advisor to Commissioner Copps
Mr. Sam Fedder, Legal Advisor to Commissioner Martin
Mr. Thomas Sugrue, Chief, Wireless Telecommunications Bureau
Mr. David Furth, Senior Legal Advisor Wireless Telecommunications Bureau
Ms. Maureen McLaughlin, Office of the General Counsel
Mr. Jeffrey Steinberg, Deputy Chief, Commercial Wireless Division, Wireless Telecommunications Bureau
Mr. Jay Jackson, Senior Engineer, Commercial Wireless Division, Wireless Telecommunications Bureau

ATX TECHNOLOGIES

In the Matter of Year 2000 Biennial Review of Part 22,
WT Docket No. 01-108

THE ROAD TO DIGITAL: "UNDER CONSTRUCTION–USE ALTERNATE ROUTE"

Executive Summary

Responding to a carrier-driven initiative to replace analog formats with digital in the cellular spectrum bands, the Federal Communications Commission (FCC) is considering a proposal to eliminate the requirement that all systems operating within those bands be compatible with the Advanced Mobile Phone Service ("AMPS") Analog Cellular Standard (the "Standard").

The current rule requires cellular carriers to provide analog cellular services in compliance with the Standard's specifications, so long as there are customers who subscribe to those analog services. If the requirement is eliminated, a range of non-carrier services that are dependent on AMPS compatibility also will be eliminated, including those services provided by public safety oriented telematics service providers to a current – and rapidly growing – embedded base of 2.5 million users.

While carriers and others tout their ability to replicate certain aspects of telematics using digital standards, the simple fact is that no currently-operating digital system can replicate the nationwide geographic coverage – especially in rural areas where a higher percentage of fatal highway accidents occur – that the AMPS compatibility requirement has brought about.

This is a critical consideration that involves more than telematics. During this period of unprecedented threats to our national security, the analog network remains the only nationwide wireless framework that links the country together in a common communications platform and provides a PROVEN location-based safety and security infrastructure.

To avoid undermining the Nation's only robust coast-to-coast and border-to-border wireless network, a reasoned transition from the AMPS compatibility requirement to a better infrastructure model must be established and implemented. A reasoned transition must include:

- Public outreach beyond "carrier interests" to the "user interests" to ascertain the range of services dependent on the current AMPS-based infrastructure and the minimum requirements for any replacement system. This should take the form of a forum or series of forums in connection with other interested government and private-sector entities such as the Department of Transportation, FEMA, the Intelligent Transportation Society of America, the ComCare Alliance, representatives of rural interests, representatives of individuals with hearing disabilities and representatives of individuals who have received free analog phones from the wireless industry for safety/security reasons.
- Retention of the AMPS compatibility requirement at least until a true replacement is rolled out and operational on the same geographic scale as is the present

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AMPS-based network – not merely "laboratory proven" or operational in the top ten (or twenty, or fifty) metropolitan markets.

- How market forces will provide a clear migration path to the new digital standard for users of the current system.

1. The Public Interest and Telematics

Retention of the AMPS standard until a suitable replacement is in place and operational is clearly in the public interest: the automobile and telematics industry, without government mandate, developed in 1996 the first emergency response service capable of utilizing location data using the AMPS-based wireless telecommunications network. Early telematics services rapidly expanded to provide these primary benefits to public safety:

Automatic Collision Notification (ACN): Anytime vehicle airbags or emergency tensioning restraints are activated by a collision, a wireless signal with location/vehicle data is sent to a telematics response center and a voice channel is opened between the vehicle and response center. This voice/data communications link permits emergency personnel to respond to a specific location even if the driver is unable to respond and no third-party observer is present to report the collision. In addition to providing emergency responders with an instant location and information about the vehicle and its owner, the telematics response center is able to identify the correct responder for the emergency (i.e. police, fire, ambulance, tow truck), contact the correct responder with jurisdiction in the vehicle's location (based on a proprietary database), and immediately notify the driver's emergency contacts (helping emergency officials to link with next of kin).

Soon, second-generation ACN will be able to transmit and extrapolate data from in-vehicle sensors indicating where the vehicle was impacted, the presence and location within the vehicle of any passengers, the presence or absence of child safety seats, and whether the vehicle rolled over, so that the type and degree of injury or injuries can be determined and evaluated by medical personnel prior to dispatching emergency equipment to the accident scene. This capability has evolved from extensive studies of collisions and resulting injuries, and there is a uniform view among medical professionals that such capability will provide tangible improvement, particularly in rural areas, to emergency medical response teams' ability to provide life-saving assistance within the "golden hour" when that assistance is most valuable in preventing death or permanent injury to crash victims.

Emergency MayDay Response: Wireless location and vehicle data are sent, and a voice channel is simultaneously opened, anytime a motorist activates a designated "SOS" button in the vehicle, enabling emergency personnel to respond to any kind of in-vehicle medical emergency (e.g. heart attack, seizure) or police emergency (i.e. carjacking, suspicious activity sighted, roadside emergency encountered or crime witnessed) and to find the exact location of the vehicle in trouble.

Stolen Vehicle Recovery: Telematics-equipped vehicles can be quickly located after being reported stolen to police by using wireless location and GPS satellite technology to

locate the vehicle and guide police to where it can be recovered. Recovery of telematics-equipped vehicles reported stolen exceeds 80 percent.

Remote Diagnostics: Remote diagnostics assists the automotive manufacturers and vehicle owners in more accurately diagnosing and addressing in real-time vehicle performance problems. Remote diagnostics includes warning drivers of low tire pressure, monitoring the engine management system for emissions-related failures, explaining the sudden activation of a "check engine" warning light and scrutinizing other vehicle operations, all resulting in more accurate and timely information about the vehicle's operation.

Other Safety Applications

A host of other safety-related services are available today or in the very near future with telematics-equipped vehicles, including:

- Hands-free calling, which dramatically reduces driver distraction related incidents;
- Real-time traffic alerts and dynamic route guidance, which enable motorists, based on their moving location, to avoid congested areas or re-route around a traffic accident, road construction, or adverse weather-related driving conditions;
- Remote door unlock (for those who lock their keys in the vehicle);
- Emergency detection of the presence of a child or pet in an overheated car;
- Immediate download of medical profiles of the driver, particularly critical when providing emergency care to motorists who are taking blood-thinners or who have severe allergies; and
- Sending emergency messages into a vehicle.

The above examples demonstrate the primary enhancements to public safety that location-based telematics provides on our Nation's highways. For motorists, those benefits are enhanced vehicle safety in specific emergency situations, continuous monitoring of vehicle performance and hands free access to enhanced driving conveniences – e.g., directions or information about the proximity of traffic congestion, traffic incidents or adverse road conditions – based on the vehicle's actual location. For vehicle manufacturers, telematics provides precise and current information regarding their vehicles' operating performance. And for transportation officials, telematics provides a platform for better managing the Nation's highway infrastructure through collection of real time information regarding traffic incidents, adverse road conditions and congestion.

Clearly, preserving or enhancing the wireless infrastructure upon which telematics depends is in the public interest. Conversely, disrupting that infrastructure before a suitable replacement is in place is not in the public interest.

2. Why Telematics Is Based on the AMPS Standard

There are a number of wireless networks operating in the United States today, but only one of those networks permits full interoperability between different brands of equipment and kinds of service providers. That network is the nation's AMPS-based analog cellular network.

The ability of one user of this network to communicate with other users, coast-to-coast and border-to-border, is the result of an FCC decision to foster the development of a single, nationwide, open standard – the AMPS standard – in the bands of radio spectrum allocated to this network, and to impose an AMPS compatibility requirement on any user of those bands.

The reality is that digital, as currently deployed by wireless carriers, is not as robust in coverage area or in reliably transmitting data as the analog infrastructure. The basic reason stems from how the spectrum was licensed and the purposes for which it is dedicated evolved. The digital networks, especially the Personal Communications Services (PSC) bands, were auctioned by the government to the highest bidder. With carriers expending substantial investment simply to acquire the right to use the spectrum, the FCC imposed minimal obligations on how the spectrum was to be used, including what technical standards the networks would be built upon.

What has resulted is less nationwide coverage by particular digital networks and less availability of a range of applications, particularly in data transmission, than what the analog network provides. As each carrier can determine its own technology and does not build according to one standard, interoperability between the digital networks is virtually non-existent. Additionally, because of the costs necessary to acquire the spectrum, investment in the digital environment has been overwhelmingly committed to the voice mode, with the critical telematics requirement of simultaneous transmission of voice and data lagging considerably. Because carriers hold varying portions of analog and digital networks, the commitment to maintain the analog network varies. The result is that in the context of the FCC's consideration whether to eliminate the AMPs standard, carriers justifiably pursue and advocate positions that promote their individual competitive advantage.

But competitive advantages or disadvantages for particular carriers are not the preeminent concerns when choosing a wireless infrastructure on which to build safety-related devices for automobiles and highways. The core concerns of safety-driven telematics providers are: 1) ubiquitous geographic coverage and 2) proven network reliability for simultaneous voice and data operations. The new networks that utilize digital technologies are primarily voice-based and have not yet achieved satisfactory levels of utility and reliability for simultaneous voice and data transmissions, and cannot provide ubiquitous geographic coverage because they are based on communications

standards that are fundamentally incompatible with each other and are fundamentally incompatible with the AMPS standard.

Networks based on digital technologies that utilize these incompatible standards, including TDMA, CDMA and GSM, hold out the promise of many exciting new communications possibilities and enhanced capabilities for both voice and data operations, but these networks are still under construction, are undergoing major upgrades and have yet to implement a range of applications beyond voice. Some of the networks are very large, and link major metropolitan areas, but not rural areas. While proponents of the competing standards are taking steps to resolve the lack of interoperability, this large gap will remain the norm for users of the non-AMPS networks.

Despite the progress of the "Digital Age" in wireless technologies, the analog cellular network based on the AMPS standard remains the only network that permits its users to gain access through any service provider and to operate any vendor's network equipment from any location in the nation. This difference has critical implications for our national communications infrastructure, and for those government and private entities that must rely on that infrastructure to carry out their public safety and security mandates. In the Wireless Communications and Public Safety Act of 1999, Pub. L. 106-81, 113 Stat 1286 (the "911 Act"), Congress made clear that a seamless, ubiquitous, and reliable end-to-end infrastructure for communications, including wireless communications, to meet the Nation's public safety and other communications needs, is a national priority. The Commission has pursued this goal in several proceedings, including its implementation of the 911 Act and in reviewing the obligations of carriers to provide roaming capability. Indeed, because of the necessity to base emergency response services on the most reliable and ubiquitous wireless network, telematics was built upon the Nation's AMPS foundation.

Moreover, the range of diverse technologies that comprise intelligent transportation systems (ITS) have also been centered on the analog network and its ubiquitous coverage. The safety of passengers and vehicles, as well as obtaining the most effective use of the Nation's highway infrastructure, is intricately tied to the analog network and the ability of the future digital environment to replicate it.

The Challenge in Implementing Digital Technology

Several, but not all, carriers currently operating in spectrum allocated to cellular service seek to remove the AMPS compatibility requirement in order to roll out all-digital services in those bands. The FCC must examine whether and/or how carriers can transition the unique features of the analog cellular network --ubiquitous coverage and simultaneous voice and data transmission-- that enables telematics to provide innovative, location-based emergency response services to nearly 2.5 million motorists nationwide today and the 4-5 million motorists projected to be driving telematics-equipped vehicles by the end of 2002.

3. The Need for a Reasoned Transition

The goal of moving wireless communications to a digital network offers many advantages, but also entails hurdles. Chief among these is the difficulty of replicating today's enhanced public safety capabilities in the digital environment. In this regard, several carriers noted in their filings to the Commission on the AMPS compatibility issue that a "reasoned transition" is needed. ATX agrees, and simply asks the Commission to ensure that all concerned parties – not just carriers -- are involved in the process of determining what constitutes a reasoned transition, for such a transition is much more than the identification of a particular time period for completion of the transition: it is the identification of the nature of the wireless infrastructure the Nation will need to support adequately safety-related technologies, and the steps that will need to be taken to create that necessary infrastructure.

Failing to maintain the capabilities afforded by the current analog environment raises serious public safety concerns. Therefore, any reasoned transition must assure that the analog fabric remains intact until a satisfactory digital replacement, that the market will actually provide nationwide ubiquitous coverage, is in place and operational.

The Public Harm in Not Replicating the AMPs Standard

Eliminating the AMPS compatibility requirement and the capacity that supports it without ensuring that the location-based public safety benefits now available in our cars and on our roads and highways are replicated in a digital wireless network will have the following negative consequences:

- less robust emergency response capabilities that have already been purchased by millions of motorists with telematics-equipped vehicles;
- limited geographic availability for these same capabilities – primarily in metropolitan areas – putting drivers at greater risk when they drive between metro areas or in rural areas (where the need for location-based emergency response is most critical);
- reduced availability of critical data about the condition of a vehicle and its occupants in those emergencies when simultaneous voice and data communications are essential to the rendering of proper assistance;
- increased impediments to the widespread deployment of location-based emergency services (beyond luxury vehicle lines) that the Commission has in the past encouraged;
- unnecessary delay in the deployment of more advanced emergency response services that are being designed into future vehicles;
- disruption of the widespread deployment of an integrated hands-free communications platform into the vehicle at a time when state governments, through driver distraction legislation, are encouraging such deployment;
- increased impediments to the development of a tool for more integrated traffic management nationwide; and

- discouragement of the use of a location-based technology that could provide significant public benefits in a national crisis.

With so much at stake, it is critical that the Commission solicit and carefully consider the views of the *users* of the analog network – especially those users involved in matters of public safety on a nationwide scale – in developing the particulars of a reasoned transition from analog to digital in the cellular bands.

4. Defining the Reasoned Transition: The Need for Public Discussion

ATX encourages the FCC, in partnership with the federal Department of Transportation (DOT), to assume a leadership role toward developing a reasoned transition from analog to digital. Specifically, ATX recommends a public forum or series of forums, the goal of which is to address specifically:

- How the evolving digital, wireless network can duplicate the geographic ubiquity of the current analog network. Today's analog environment covers over 90 percent of the country's geographic area; the digital network covers less than half of that same area. Short of a compatibility requirement for a digital standard, is there any other way to ensure true interoperability on a comparable scale in the digital world? As noted in previous filings with the Commission, the current analog network is the glue that keeps together an otherwise fractured, multi-standard national wireless infrastructure. What happens when that "analog backup" infrastructure is removed?
- How the evolving digital network will ensure the reliability and robustness motorists enjoy today in telematics-based safety as provided by the current analog network. This should include discussion on how the new digital infrastructure can replicate analog's voice and data capabilities as well as ensure cross-system compatibility of a nationwide network that is fractured into TDMA-CDMA-iDEN-GSM standards.
- How the evolving digital wireless utilities will accommodate the next generation of telematics-based public safety applications (including mass deployment of third-generation collision notification systems, real-time traffic management and navigation systems, second-generation remote diagnostics systems and reverse 911, e.g., sending emergency messages to selected vehicles). Mass deployment of telematics-based, real-time traffic services would do much to implement a major priority for federal and state transportation officials – using vehicles as data probes to monitor traffic conditions in real

time and sending traffic alerts to vehicles along segregated routes to better manage traffic.

The issue here is not whether the market will address these issues. Private business has demonstrated the interest and capability in providing location-based services. The issue is whether the public "wireless utility network" is capable of continuing to support these services through the use of the public spectrum in the digital world. The effective use of this spectrum for public safety purposes is a matter of public policy that cannot and should not be left to the vagaries of the marketplace. The issues to be addressed include not only proper administration of the spectrum, but core transportation and vehicle safety policy and funding matters. The goal of an FCC or joint FCC-DOT Forum will be to move toward a solid public plan for highway safety, with the objective of a more integrated nationwide transportation network that uses the future, nationwide wireless communications network.

5. Why the FCC Must Lead on this Issue

- The FCC has long championed location-based emergency response.
The Commission has endorsed and mandated carriers to develop their networks for the provision of location-based emergency response in general, and has embraced automatic collision notification specifically. By not retaining the AMPS compatibility requirement and simultaneously not requiring carriers to replicate the same life-saving capabilities of the AMPS-based network in the digital environment, the Commission is putting at risk those motorists who have already invested in systems they believe will be able to locate them and get them the help they need in an emergency. There were an estimated 2 million such motorists as of year end 2001 – a figure that is expected to grow to 14-25 million by 2005.

- FCC jurisdiction for administering wireless spectrum for public safety.
The digital technology that is being deployed today, while offering many advantages over analog technologies, cannot today replicate the capabilities or scale of the existing analog network. Without a reasoned transition, the result of the deployment of incompatible "advanced" networks will be to degrade the wireless infrastructure that is currently available for telematics-based public safety purposes.

- National Security Concerns. The current AMPS network is the only true coast-to-coast wireless communications network enabling robust simultaneous voice and data. At a time when the national security interests of the United States have a demonstrable need for a robust network that is location-enabled and can provide both voice and data capabilities – apart from the highway safety factors discussed above – , the Commission must ensure that the only network that can meet the need is not dismantled until the next generation network is operational, and that the next generation network, like the present

network, is ubiquitous and integrated, and not a hodgepodge of non-interoperable systems.

- Even carriers are divided on this issue; only three entities propose immediate elimination. There is no market driven path to ensure nationwide ubiquitous coverage.

SUMMARY

Telematics provides core vehicle and public safety services to the American public. It is built on the ubiquitous analog wireless network because that network affords a range of vibrant technologies and services that cannot be provided on today's geographically limited, voice oriented, digital wireless networks. The availability of a countrywide ubiquitous network to promote core public safety functions is a national priority. Telematics-based public safety services must be transitioned to the digital environment, but a reasoned transition – not merely an end date – must be developed. The FCC should solicit and consider the views of transportation officials, automobile manufacturers and telematics service providers as it leads the transition from analog to digital to ensure that the nation's future wireless infrastructure can support and enhance the technologies and services available today.

Respectfully submitted,

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