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December 9, 1994

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DEC 9, 1994

FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF SECRETARY

Mr. William F. Caton
Acting Secretary
Federal Communications Commission
1919 M Street, N.W., Room 222
Washington, D.C. 20006
STOP CODE: 1170

Re: Ex Parte Communication in PR Docket No. 93-61
on behalf of Pinpoint Communications, Inc.

Dear Mr. Caton:

Pursuant to Section 1.1206(a)(2) of the Commission's Rules, notice is hereby given of an *ex parte* communication regarding the above-referenced proceeding. An original and one copy of this letter are being filed with the Secretary's Office.

Today, Mimi W. Dawson, Policy Advisor for Wiley, Rein & Fielding and I met with Ms. Rosalind K. Allen, Chief of the Commercial Mobile Radio Division of the Wireless Bureau, and Mr. Martin D. Liebman of the Wireless Bureau to discuss Pinpoint's views in this proceeding. A copy of the materials supplied during the meeting is enclosed.

Should any question arise concerning this matter, please contact me.

Respectfully submitted,

David E. Hilliard
Attorney for Pinpoint Communications, Inc.

cc: Rosalind K. Allen, Esq. (w/o encl.)
Mr. Martin D. Liebman

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Pinpoint Communications, Inc.

- **Founded in 1990**
 - **Based in Dallas, Texas**
 - **50 employees (31 engineers and programmers)**
- **Developers of high capacity wide-area AVM system, ARRAY™**
 - **Developed in Texas and Maryland**
 - **Designed to operate on a shared basis**
 - **Tolerant of most Part 15 operations**
 - **Designed to operate in the noisy environment of the 902-928 MHz band**
 - **Emphasis on capacity, cost, and functionality**
 - **1,500 to 3,000 vehicle locations per second -- can locate in one second more vehicles than Teletrac, MobileVision, and Southwestern Bell combined times seven**
 - **Integral short messaging using same signal that provides the vehicle location**

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- **Holds licenses in 20 large markets**
 - **Commercial operations to begin in Dallas in 1995**
 - **Dallas site surveys and site procurement negotiations virtually completed**
 - **Ready to build out**
 - **Users waiting for service**
 - **Can operate in 8 MHz sub-band as licensed under current rules**
 - **Can share on a time division basis with other wide-area AVM (*e.g.* Uniplex and others desiring entry on shared basis)**
 - **Can share on a co-primary basis with local-area AVM (*e.g.* tag systems)**
 - **Is compatible with most Part 15 operations**
 - **Does not require separate spectrum for forward link outside wide-area AVM spectrum allocated in 1974**

Wideband Forward Link

- Unlike narrowband forward link in separate dedicated spectrum, wideband forward link design is fully consistent with existing rules and does not require separate dedicated spectrum for forward links.
- Use of narrowband forward link by others has been implemented in a spectrally inefficient way by occupying spectrum in opposite sub-band, thereby constraining competitive users.
- Pinpoint can share with Uniplex, which also uses a wideband forward link.
- Use of the wideband forward link places less energy over a given geographic area for a smaller fraction of the time than do certain Part 15 devices.
 - In an ARRAY™ system with 30 base stations, only one base station transmits a wideband signal at a time; average on-the-air time for a given base station *in a fully loaded system operating at peak capacity is less than one percent* of the time the system has access to the spectrum;
 - Wideband forward link uses spread spectrum ("direct sequence") techniques to disperse energy of a 364 kbps signal over a much wider bandwidth so as to place a small amount of power in the amount of spectrum occupied by a "narrowband" device such as Part 15 frequency hopping systems.
- Wideband forward link supports the data needs associated with the large position locating capacity (1,500-3,000 per second in 8 MHz) required for IVHS applications and to sustain time sharing among multiple service providers.

Both AVM and Part 15 have been encouraged by the FCC.

- 1974 Rules allocated 16 MHz for AVM (plus 2 MHz developmental).
- Tens of millions of dollars have been invested by wide-area multilateration systems to address IVHS (now ITS) and public safety applications.
- Competing AVM technologies offer a choice of market driven solutions.
- Opportunities for open entry under a shared allocation will bring about innovations and improvements.
- Part 15 community emphasizes 1985 and 1990 rule changes to allow high-powered operation, but:
 - Operation permitted only on condition of no harmful interference to licensed services;
 - Part 15 must accept interference from both other Part 15 devices and licensed stations.
- Every Part 15 device must be labeled to make conditions of operation clear:

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

A Hierarchy or Spectrum Etiquette Will Serve the Needs of AVM and Part 15.

- **Current rules provide for**
 - **26 MHz of spectrum for Part 15 commercial and consumer devices;**
 - **Under Modified NPRM Band Plan supported by Pinpoint, 10 MHz of this spectrum can be used for high-powered Part 15 commercial ubiquitous data and voice networks free from wide-area radiolocation networks.**
- **Significant questions exist as to whether high-powered wide-area Part 15 data and video networks are compatible with AVM use and with other lower powered Part 15 use.**
- **Because of the potential for interference from such high-powered systems to other Part 15 use, the maintenance of the hierarchy or the use of some form of spectrum etiquette will also serve the needs of most Part 15 users as it will create sub-bands in which these high-powered systems cannot operate without causing interference to wide-area licensed systems.**
- **If wide-area AVM operating in shared spectrum and high-powered outdoor wide-area Part 15 data systems could agree upon the use of a "busy-idle" indicator by which the AVM system would signal to the Part 15 system when it is prepared to transmit, both types of systems could share the same spectrum efficiently without interference under an agreed upon etiquette.**
- **If high-powered Part 15 networks create interference to low-powered Part 15 devices, the low-powered systems can seek safe haven inside the 16 MHz of AVM spectrum.**
- **Current and revised regulations should provide protection from debilitating interference to AVM, but AVM providers should have an obligation to implement systems that exhibit significant robustness to tolerate most Part 15 emissions.**
- **There should also be a requirement for private dispute resolutions efforts before involving the Commission.**

TESTING

Testing will help to build a better record by providing the FCC with the field data that could resolve the difficult compatibility issues in this proceeding:

- Gain insight as to AVM to Part 15 interactions and the potential for interference to system and device operations;
- May reveal techniques for interference mitigation.

With encouragement from the Commission staff and reasonable assurance that results will be considered, Pinpoint and certain Part 15 interests were prepared to conduct tests first weekend in December. (Part 15 unilaterally canceled tests on November 29th.)

Pinpoint has long expressed its willingness to test with others:

- Experimental system began operating in Washington in August 1993;
- Two series of tests with Amtech have proved compatibility with largest base of tag technologies, including Caltrans-type (6 MHz) tags;
- Pinpoint has long been willing to test with Part 15 systems; promising talks have broken down repeatedly:
 - Was prepared to meet with Part 15 and AVM interests in October of 1993 at a conference called by Part 15 interests in California, which was canceled by others;
 - Offered in May 1994 to test with the Part 15 Coalition;

- **In June 1994 was within 30 minutes of beginning tests with Washington Gas of the compatibility with Itron automatic meter readers when the tests were canceled because Pinpoint refused to enter into a nondisclosure agreement that would have prohibited Pinpoint from even telling the FCC that the tests occurred.**
- **Pinpoint and Itron discussed conducting tests on November 14 and 15 in Washington, D.C., to examine the effect of the Pinpoint wideband forward link on the Itron automatic meter reading system, but Itron declined to go forward with the tests.**
- **Was ready and willing to test on December 3 and 4 after weeks of cooperative preparation, when notified by Part 15 interests on November 29th that they would not engage in testing.**
- **Remains willing to test and submit to reasonable conditions on use of the test data.**

902 - 928 MHz is Not Suitable for Auctions.

- The band has served as a technological incubator fostering the development of a wide variety of technologies, often produced by small entrepreneurial companies. Several small companies ready to deploy their systems on a shared basis. Auctions would price these companies out of the market. The competitive bidding amendments require the FCC to such ways to avoid auctions and to ensure such companies have a meaningful opportunity to provide service.
- NTIA declined to make this band available for reallocation because of significant federal presence (nearly a billion dollars in technology used by 18 federal agencies) and pointed to the history of shared operation in the band as demonstrating how it has been used to develop technology.
- Auctions of even a part of this band would displace existing users and crowd the remainder into less spectrum. Local-area and Part 15 users would be forced into any remaining spectrum. Wide-area AVM auction buyers can be expected to push for "clear" spectrum if they have bought spectrum at auction -- witness their behavior in this proceeding.
- Auctions would set back the development of IVHS services, several of which now operate in this band and many more of which are likely to do so in the future.
- Unlike the FCC plan for personal communications services (PCS), there is so little spectrum available for auction in this band that auctions will stifle rather than lead to increased competition, particularly in the provision of wide-area AVM. Continuing the policy of sharing would lead to more than the two service providers the FCC contemplates and would leave the door open for innovators to enter the market.
- There are serious litigation issues as to whether the band qualifies for auctions under the Communications Act.

- **Under Section 309(j) of the Act, auctions require a determination that the "principal use of such spectrum will involve . . . the licensee receiving compensation in return for" communications service.**

A decision to auction would effectively foreclose state and local governments that may want to be wide-area licensees in order to retain control over their vehicle location services supporting public safety operations.

These entities will not offer subscriber services.

FCC has a statutory obligation under Section 309(j)(6)(E) to try to avoid mutual exclusivity.

- **Of the five system proponents for wide-area AVM, two -- Pinpoint and Uniplex -- have said that they can share spectrum.**
- **A shared spectrum allocation also leaves open opportunities for additional technological development and entrepreneurial entry.**
- **Pinpoint has in good faith reliance on the Commission's rules developed technology that can share spectrum with others, provide for open entry, and make efficient use of the spectrum.**

Much Remains to be Done Before the Commission Can Use Auctions.

- Before reaching a decision to hold auctions, the Commission must determine whether auctions for AVM or some other licensing scheme would meet the statutory requirements in Section 309(j)(3) to
 - Promote the development and rapid deployment of new technologies, products, and services for the benefit of the public while avoiding excessive concentration of licenses.
 - Promote economic opportunity and competition and ensure that new and innovative technologies are readily accessible to the American public by avoiding excessive concentration of licenses and by disseminating licenses among a wide variety of applicants including small businesses, rural telephone companies, and businesses owned by members of minority groups and women;
 - A decision to auction spectrum now would thwart the very sort of entrepreneurial companies that have developed technology. Southwestern Bell, for example, has bought its basic technologies from overseas.
 - Recover for the public a portion of the value of the spectrum and avoid unjust enrichment; and
 - Provide for efficient and intensive use of the spectrum
 - Pinpoint can perform 1,500-3,000 vehicle locations per second in 8 MHz of spectrum and is willing and able to share access to the spectrum with wide-area AVM systems;
 - Southwestern Bell wants 2.25 MHz on an exclusive basis and claims to be able to do approximately 16-33 locations per second;
 - Accordingly, Pinpoint can locate more than 26 times as many vehicles per second in a comparable amount of spectrum.

If the Commission determines that auction of some or all of the wide-area AVM spectrum is the best way to meet Section 309(j)(3) objectives, the FCC must hold a separate rulemaking to implement those auctions.

High capacity AVM is a prerequisite for efficient intelligent transportation systems.

- For example, a police department in a medium-to-large metropolitan area may want to monitor its 600-car fleet.
- Pinpoint, through group addressing, could locate all vehicles in the fleet in 1/5 of a second, giving the department a virtually instantaneous location update.
- Pinpoint's high capacity can accommodate many other large fleet users and consumers in addition to the department.
- The lower capacity Southwestern Bell system would take 18-36 seconds to provide the same update.
- By the time the entire fleet is "located," many vehicles may have moved 500 to 2000 feet, seriously undermining the simultaneity and accuracy of the position fixes.

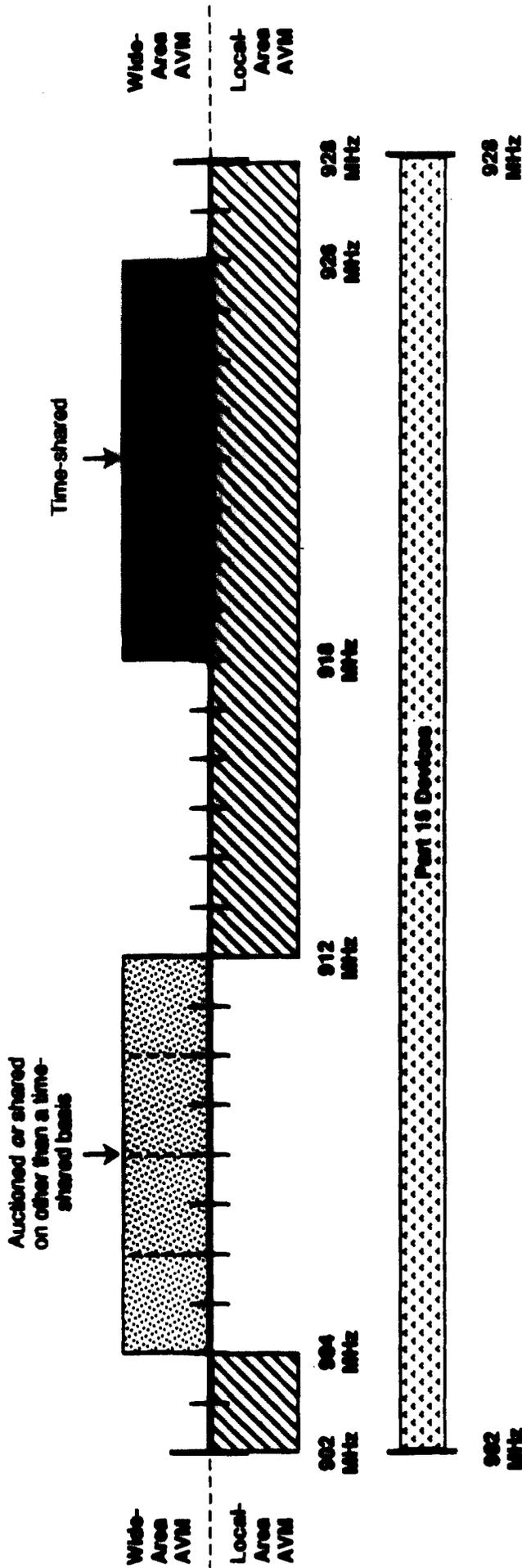
Teletrac and MobileVision systems fare only slightly better than Southwestern Bell.

- To maintain a good understanding of fleet location, the department may want another update cycle to begin almost immediately, effectively precluding the use of the Southwestern Bell system by more than a few other fleet managers.

IF THERE ARE TO BE AUCTIONS, THE COMMISSION SHOULD MAKE AT LEAST 8 MHz OF THE WIDE-AREA AVM SPECTRUM AVAILABLE FOR NON-AUCTIONED TIME-SHARED ACCESS BY WIDE-AREA AVM WHILE PERMITTING LOCAL-AREA AVM ON A CO-PRIMARY BASIS IN THE SAME 8 MHz SUB-BAND.

- Would facilitate entry by entrepreneurial companies and other "designated entities";
 - Would provide spectrum to support AVM systems to be licensed to state and local authorities; and
 - Would provide spectrum to support Enhanced 911 emergency capabilities for urban and suburban mobile services.
-
- Auctions could be part of a solution that embodies the "Modified NPRM Band Plan" suggested by Pinpoint.
 - Maintaining a shared spectrum option would also reduce the license modification problems associated with moving from a totally shared regime to one that includes exclusive spectrum made available by auctions.

Modified NPRM Band Plan with Auction Option



	Auctioned or shared among wide-area AVM systems without the use of time-sharing.
	Shared among wide-area AVM systems on a time-sharing basis.
	Local-area AVM
	Part 15 Devices

Notes:

1. Wide-area forward links are to be located in the sub-band in which a licensee's wideband pulse is generated.
2. Local-area AVM and wide-area AVM would share at 918-926 MHz on a height-power differential basis pursuant to Section 90.173(b) of the Commission's Rules. Thus, the local-area systems would not time-share with wide-area AVM systems.