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EX PARTE OR LATE FILED

December 7, 1994

EX PARTE

Mr. William F. Caton
Acting Secretary
Federal Communications Commission
1919 M Street, NW, Room 222
Washington, DC 20554

RECEIVED

DEC - 7 1994

FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF SECRETARY

RE: PR Docket 93-61, Automatic Vehicle Monitoring Systems

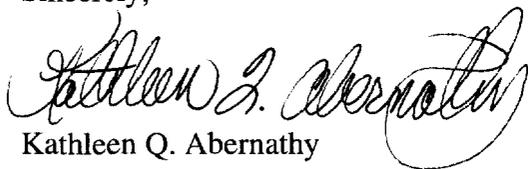
Dear Mr. Caton:

On Wednesday, December 7, 1994, I, on behalf of AirTouch Teletrac, met with James Coltharp, Advisor to Commissioner Barrett. We discussed the information in the attached material. Please associate this material with the above-referenced proceeding.

Two copies of this notice were submitted to the Secretary of the FCC in accordance with Section 1.1206(a)(1) of the Commission's Rules.

Please stamp and return the provided copy to confirm your receipt. Please contact me at 202-293-4960 should you have any questions or require additional information concerning this matter.

Sincerely,


Kathleen Q. Abernathy

Attachment

cc: James Coltharp

No. of Copies rec'd 0+1
List A B C D E

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

PR Docket No. 93-61

In the Matter of

Amendment of Part 90 of the
Commission's Rules to Adopt
Regulations for Automatic 16
Vehicle Monitoring Systems

RM-8013

NOTICE OF PROPOSED RULE MAKING

Adopted: March 11, 1993;

Released: April 9, 1993

Comment Date: June 29, 1993

Reply Comment Date: July 14, 1993

By the Commission: Commissioner Marshall not participating.

I. INTRODUCTION

1. By this Notice, we propose rules that will promote the efficient operation and continuing growth of Automatic Vehicle Monitoring (AVM) systems. These systems, which are now operating under interim rule provisions adopted in 1974,¹ will likely constitute important components of the future Intelligent Vehicle Highway System and tracking of cargo in the trucking, railroad, and maritime industry.² AVM systems are used to locate and track vehicles using non-voice methods and to relay information to and from vehicles. This proceeding is responsive to a petition for rule making filed by North American Teletrac and Location Technologies, Inc.,³ which, through their joint venture with Pactel Teletrac (Teletrac), operates several AVM systems. Based on the record before us,⁴ we are persuaded that AVM technology and experience have developed to a point where permanent provisions will further the public interest.

II. BACKGROUND

2. We first visited AVM policies in a *Notice of Inquiry* of August 21, 1968,⁵ seeking information on the state of development of such systems and the operational requirements they presented. Acknowledging the existence of several system designs, we decided that systems then under study would require a period of actual operation in a land mobile environment so that we could determine what designs would perform most effectively, what type of demand would exist for such services, and how we could license such systems to best serve the public interest.⁶ Hence we instituted an inquiry into AVM technology, providing as well for the authorization of AVM operations on a temporary experimental basis.

3. While our *Notice of Inquiry* elicited a "significant body of data,"⁷ these data did not permit conclusive findings and recommendations. Rather, the data indicated on the one hand that AVM technology had not developed sufficiently to justify permanent policies, but on the other that these systems had the potential to accommodate several radio communication requirements, such as tracking fleets of vehicles, monitoring the status of vehicles, and providing service to individuals in emergency situations, that could not be met easily within existing land mobile operations.⁸ Hence, four years after our original Notice, we re-instituted our inquiry, seeking information that would aid us in determining whether AVM systems should be authorized on a regular basis.

4. In the summer of 1974, we terminated our inquiry with a *Report and Order* adopting the interim rule now in effect.⁹ From the information before us, we concluded that AVM techniques had progressed to a point where systems could be authorized on a routine basis. The *Report and Order* recognized, however, that there are a variety of different methods of locating vehicles including proximity sensing, multilateration and dead reckoning, to serve the differing needs of users.¹⁰ We recognized that all these different methods and uses would need to be accommodated. Accordingly, we chose to adopt interim provisions, envisioning continuous study and development of AVM techniques to define spectrum requirements and operational standards for future action on our part.¹¹

5. Development of AVM systems has recently progressed to the point that a number of systems have become viable and are now providing AVM service. Demand has been demonstrated for the wide variety of services that different types of AVM systems are capable of providing,¹² and we anticipate that the demand for AVM services will continue to grow. In 1992, the Private Radio Bureau granted Teletrac a waiver to allow it to provide service on a private carrier basis, to serve individuals, and to locate objects

¹ Report and Order, Docket No. 18302, 30 RR 2d 1665 (1974) (Report and Order).

² In the Intermodal Surface Transportation Efficiency Act of 1991, Congress emphasized the importance of Intelligent Vehicle Highway Systems and provided substantial funding to plan, develop, and deploy concepts and technologies for communications, controls, navigation, and information systems to reduce highway congestion, improve highway safety, and render highway traffic more compatible with the environment. See generally reply comments of the Intelligent Vehicle Society of America (IVHS America).

³ The petition for rule making was filed on May 28, 1992, and designated RM-8013.

⁴ In response to our Public Notice, Report No. 1897, released

June 23, 1992, 19 comments and 35 reply comments were filed. These parties are listed in Appendix A to this Notice.

⁵ See Further Notice of Inquiry and Notice of Proposed Rule Making, Docket No. 18302, 35 FCC 2d 692 (1972) (Further Notice).

⁶ *Id.* at 692.

⁷ *Id.* at 693.

⁸ *Id.* at 693-4.

⁹ Report and Order, 30 RR 2d 1665 (1974).

¹⁰ *Id.*

¹¹ *Id.* at 1667, 1672.

¹² See generally comments and reply comments filed by AVM users in response to Teletrac's petition offering testimonial of the value of services being rendered by existing AVM systems.

ceived from Federal Government operations and from Industrial, Scientific, and Medical devices using this spectrum, including interference that may cause undesired operation."

Commenters should address whether they believe it possible to establish reliable LMS systems considering the number and diversity of other users of this band. If not, commenters should offer potential solutions, such as removing Part 15 users and amateur operations from the band, restricting where such users could operate in the band, or placing stricter limitations on the operation of such users in this band.

4. Narrow-Band Licensing

25. We propose that narrow-band LMS systems (any system licensed in the 902-904, 912-918, 926-928 MHz bands) also be licensed on a nonexclusive basis with coordination performed by the licensees to avoid interference. Some commenters operating and developing narrow-band systems claim that their systems are more robust than are wide-band systems and are therefore not as susceptible to interference.⁵² We thus propose that no restrictions be placed on the type or number of systems operating in these bands. We request comments on this proposal and whether, in the alternative, some form of restriction is appropriate. Because these systems are also subject to the interference concerns discussed above, we request comment on whether some form of warning to consumers should be required for narrow-band LMS systems.

5. Construction Period

26. Currently, LMS licensees must construct and place their systems in operation within eight months from the date the license is granted.⁵³ The petitioner and some commenters support extended implementation schedules for LMS systems that employ numerous base stations and receive sites.⁵⁴ Except for local government entities,⁵⁵ we currently have no provision for extended implementation of radio systems that operate on shared channels, and we are not inclined to introduce such a concept in this service.⁵⁶ We do not believe that systems operating on shared spectrum require an extended period to construct their facilities. Because the channels are shared, a licensee need not apply at the outset for all the facilities it intends to construct. Rather, it can apply when it is ready to begin construction on an individual facility. Further, we do not want frequencies to appear more congested than they really are because of licensees that do not construct. If we grant extended implementation, unconstructed licenses could remain active for up to five years rather than being cleared

from the database after eight months. Accordingly, we propose to retain the eight month construction and placed in operation requirement.

LMS Below 512 MHz

27. Section 90.239, 47 C.F.R. 90.239, provides for LMS systems on frequencies below 512 MHz. We have not received any comments regarding such systems. We propose that no changes be made to the rules regarding LMS systems below 512 except that our proposed definition for LMS would apply there as well. Such licensees would not, however, be permitted to provide service to individuals or to provide service on a private carrier basis. We believe such a restriction is appropriate in bands below 512 MHz given their primary use as private land mobile communication channels, not for radiolocation purposes. We request comment on this proposal and on any changes that might be appropriate for LMS systems operating in these lower bands.

Technical Requirements

28. Currently, transmitters used in LMS systems above 512 MHz do not have to be type accepted, provided that they meet the technical requirements of Section 90.239(e)(2).⁵⁷ Several commenters support requiring that equipment used for LMS systems be type accepted.⁵⁸ LS states, however, that such a requirement would be prohibitive for licensees in the early stages of equipment development and requests that licensees be permitted to operate new systems for 18 months before they are required to get their equipment type accepted.⁵⁹

29. In that we are proposing permanent rules for LMS systems, we believe that equipment should receive type acceptance prior to use. As LMS systems become more wide spread, and because such systems will be licensed on a nonexclusive basis, it will be increasingly important to LMS licensees and users that new equipment comply with required technical standards. Accordingly, we propose to require that LMS equipment be type accepted prior to marketing and use.⁶⁰

30. We propose a number of technical requirements for LMS systems to minimize the possibility of both co-channel and adjacent-channel interference. We propose that no restriction be placed on the type of emission that can be authorized for LMS operation in the 902-928 MHz band.⁶¹ We propose bandwidth limits as follows:

for 904-912 and 918-926 MHz – maximum 8 MHz
for 902-904 and 926-928 MHz – maximum 2 MHz
for 912-918 MHz – maximum 6 MHz.

⁵² Amtech comments at 10 and 36.

⁵³ See Section 90.155, 47 C.F.R. § 90.155.

⁵⁴ Teletrac petition at 33. MobileVision comments at 16.

⁵⁵ See Section 90.155(b), 47 C.F.R. § 90.155(b).

⁵⁶ Any waivers granted by the Licensing Division to permit extended implementation will, however, remain in effect. Pending a Report and Order in this proceeding, we do not anticipate granting any new waivers of the eight-month construction requirement absent extraordinary circumstances. Additionally, because of the scope of this proceeding all AVM licensees should be aware that final rules adopted may require any licensee,

regardless of the type of system of frequencies that the system operates on, to modify its operations.

⁵⁷ See 47 C.F.R. § 90.239(e)(2).

⁵⁸ Teletrac petition at 17. MobileVision comments at 14.

⁵⁹ LS comments at 2.

⁶⁰ Licensees still in the developmental stages that do not wish to seek type acceptance may be licensed on a developmental basis in accordance with subpart O of Part 90 of our Rules, 47 C.F.R. Part 90 Subpart O.

⁶¹ See Section 2.201 of the Rules, 47 C.F.R. § 2.201, for a description of emission designators.



TADIRAN

COMMUNICATION SYSTEMS DIV.

Dec. 4, 1994

Mr. William Goshay
V.P. Engineering
AirTouch Teletrac

Dear Bill:

In response to your request to shift the operating frequency of the Teletrac basestations and VLU's from 925.015 to some frequency between 927 and 928 Mhz, we looked into the existing design and estimated the implications of the required modifications.

The modification requires circuit modifications and redesign of special purpose RF components. After modification we will conduct integration and testing of the modified receivers. It must also be verified that the modifications did not affect the performance of other functions within the two units. We intend to update the production line test fixtures, software and documentation at the same time as the design of the modifications in order to speed up the transition from development to production and allow us to deliver modified units at the earliest possible date. This process will require us to place risk orders with our suppliers before units have been fully tested and approved. We will provide you with estimates of the costs involved in the modifications and the risk orders as soon as they are processed.

In terms of time, if you approve the risk path, we will be able to provide you with first units within six months ARO and deliver production units a few weeks afterwards.

Please take into account that although Tadiran works throughout the months of December and January, some of our suppliers are closed for 1-2 weeks during this period. An early decision will help us in meeting the critical timeline.

Sincerely yours,

Meir Bittan,
Director, Digital Communication System
Communication Systems Division



26. HASHOFTIM ST. P.O.B. 267. HOLON 58102 ISRAEL TEL: (972-3) 5574460 FAX: (972-3) 5574239

A Review of LMS and Part 15 in the 902 - 928 MHz ISM Band



A I R T O U C H

Teletrac

November 18, 1994

Teletrac operates in Six Major Metropolitan Areas

Teletrac provides important services at affordable prices to individuals, businesses, and government agencies in each of its operational cities.

- . Los Angeles December 1990***
- . Chicago May 1991***
- . Detroit July 1991***
- . Dallas October 1991***
- . Miami October 1991***
- . Houston May 1992***

Services offered by Teletrac

The variety of services possible with Teletrac technology is diverse.

Consumer

Stolen Vehicle Recovery

Roadside Assistance

Mobile Yellow Pages

Peace of Mind Location

Remote Door Lock/Unlock

Commercial

Fleet Management

Panic Button Alert

Tractor/Trailer Security

Status/Messaging

Stolen Vehicle Recovery

Law Enforcement Applications

Teletrac Helps Public Safety and Law Enforcement:

- **Ambulance response times are faster with the aid of Teletrac devices.**
- **Panic buttons installed in taxis and buses provide protection for drivers and passengers in emergencies.**
- **Parolees and/or probationers are tracked to monitor movement and potential repeat offenses.**
- **Breaking up organized auto-theft rings and "chop-shops". Over a third of all recoveries lead to an arrest.**
- **Suspected narcotics smugglers are monitored with Teletrac.**
- **Truck mounted devices have aided in the recovery of millions of dollars of stolen cargo.**
- **Kidnapping payoff scenarios can be conducted in safer surroundings using Teletrac device co-located with ransom.**

Teletrac Customers

Teletrac has over 900 commercial & government customers:

Cook/DuPage County Transp.

LA County Dept. of Education

Dallas School Transp.

Chicago Yellow Cab

Budget Rent-a Car

US Postal Service

Southern California Edison

TCI Cable

Pacific Bell

Federal Bureau of Investigation

Drug Enforcement Agency

Consolidated Freight

J.B. Hunt Trucking

Dept. of Customs

Alcohol, Tobacco & Firearms

Avis Rent-a-Car

ParaTrans Ambulance

US Secret Service

Internal Revenue Service

Houston Gas Utility (ENTEX)

Michigan Consolidated Gas

Chicago Police Department

Why Customers Need Teletrac

“Since 1990, Cargo C.A.T.S. has recovered more than \$85 million in stolen equipment and freight. A great deal of this success can be directly attributed to the Teletrac system”

LA County Sheriff; Cargo Criminal Apprehension Team

“On two separate occasions [our] drivers were attacked. Both times they pushed the Teletrac button which sent an emergency message to a security company. Because the company was able to give the police the exact location of the vehicle, police responded in minutes.”

PepsiCo Food Services

“Without making public the specific ways in which the FBI is utilizing these services, our surveillance capabilities have been significantly enhanced by the use of these commercial [radio-location] services.”

Federal Bureau of Investigation

“The Teletrac system proved extremely useful, during the recent civil unrest in Los Angeles, by allowing us to locate and direct all affected buses to safety, when the unrest entered our service area.”

Santa Monica Municipal Bus Lines

Teletrac Is A Spread Spectrum Innovator

- **First company to take advantage of 1974 FCC rulemaking encouraging innovation in vehicle location.**
- **First company to apply spread spectrum technology to achieve low-cost vehicle location.**
- **Teletrac is the only company in the world that has commercialized a spread spectrum vehicle location system for the mass market.**
- **Teletrac offers multiple service offerings to serve many needs:**

Stolen Vehicle Location

Electronic Roadside Assistance

Mobile Information Service

Fleet Vehicle Location

Personal Panic/Hijack Emergency alert

Teletrac's Spread Spectrum Technology Helps:

CONSUMERS

- **Millions of dollars have been saved by recovering stolen vehicles in less than 1-2 hours before vehicle damage occurs**
- **Teletrac roadside assistance subscribers receive towing assistance in 45 minutes without ever leaving their vehicle.**
- **Panic buttons installed in Avis Rent-a-Car helps Miami visitors in the event of emergencies.**

COMMERCE

- **Improved driver productivity lowers operating costs and improves customer response times.**
- **Truck and cab drivers use Teletrac to summon help in emergencies for immediate response.**

History of LMS - FCC Part 90.239

- **The FCC adopted Interim Rules for Automatic Vehicle Monitoring (AVM) in 1974 to promote the development of this new spread spectrum technology for vehicle location and monitoring.**
 - Pulse-ranging AVM systems were authorized in two 8 MHz sub-bands: 904 - 912 MHz and 918 - 926 MHz.
 - Secondary to ISM and Government Users.
 - Primary to Part 15 and Amateurs.
- **Teletrac was granted first multilateration AVM license in 1985 and introduced the first commercial US AVM service in 1990.**
- **Teletrac filed a Petition for Rulemaking in May 1992 for final AVM rules after having proven the commercial viability of AVM technology.**
- **The FCC Issued Notice of Proposed Rulemaking in April 1993 (PR 93-61):**
 - Continue wideband multilateration licensing in two 8 MHz AVM sub-bands.
 - Non-vehicle applications allowed: Location and Monitoring Services (LMS).
 - Continued sharing of sub-bands with primary and secondary users.

History of Part 15.

- **FCC Rules for non-licensed use of low power RF devices established in 1938.**
- **In 1985, Part 15 Rules were adopted for limited range direct sequence spread spectrum systems operating at 1 Watt peak output power.**
- **In 1989, Part 15 Rules for the 902 -928 MHz band were restructured:**
 - 15.245 for field disturbance sensors (less than 100 mWatts)
 - 15.247 for spread spectrum devices (less than 1 Watt)
 - 15.249 for other low power communications transmitters (less than 1 mWatt)
- **234.5 MHz of spectrum available for spread spectrum Part 15 systems:**

- 902 -928 MHz	26.0 MHz
- 2.400 - 2.4835 GHz	83.5 MHz
- 5.725 - 5.850 GHz	125.0 MHz
- **The spread spectrum Rules were modified in 1990 to reduce power when using high antenna gains and to allow frequency hopping systems.**
- **Part 15 may not cause harmful interference to, and must accept interference from, licensed systems, ISM equipment and other Part 15 devices.**
- **Part 15 devices must cease operating if harmful interference occurs.**

Part 15 and LMS Coexistence.

- **THE REALITY: Part 15 is in the 902 - 928 MHz band to stay.**
- **Teletrac has designed its system to tolerate substantial interference from Part 15 and other users of the band.**
- **The limited instances when interference is harmful require the interference to be resolved as quickly as possible to prevent unacceptable service degradation for customers.**
- **The LMS service provider has few options for dealing with harmful interference when it does occur:**
 - **moving an LMS receive site is very costly and takes time**
 - **an LMS system is licensed for a specific frequency.**
- **Migrating individual Part 15 devices to a new frequency in isolated cases is the easiest, cheapest and least disruptive solution.**
 - **Virtually all Part 15 devices are designed to be frequency agile.**
- **Unlicensed equipment developers have choices for spectrum:**
 - **14 MHz within 902 -928 MHz outside the LMS sub-bands**
 - **208.5 MHz in other ISM bands (2.4 GHz and 5.8 GHz)**
 - **20 MHz in unlicensed PCS band (1.9 GHz)**

Teletrac Coexists well with Part 15.

- **Teletrac has been commercially operating in spectrum shared with Part 15 devices for up to 4 years in its 6 commercially operating cities.**
- **Cases of harmful interference to Teletrac from Part 15 devices have been isolated (about 1 in 15,000). No case has required FCC involvement.**
- **The vast majority of interference has been caused by two types of Part 15 business/industrial devices (long range video links, anti-shoplifting systems). Simple frequency migration has solved each case.**
- **Primary interference from Teletrac to Part 15 is from narrowband forward channels (250 kHz representing less than 1% of the band). There have been no reports of Part 15 operations being degraded by these signals.**
- **3000 Metricom Utilinet units operate in Teletrac's Los Angeles area (some located at Teletrac receiver sites) without degrading either service.**
- **LMS companies jointly proposed a tolerance level to Part 15 interference: 10 to 20 dB above noise floor depending on Part 15 duty cycle.**
- **LMS companies jointly proposed good faith negotiation and arbitration to resolve interference before seeking FCC intervention.**

Incidents of Harmful Part 15 Interference since 1991.

The incidence of interference has been limited to about 1 in 15,000 Part 15 devices operating in the 902 - 928 MHz band. Final LMS rules and on-going technical exchange will give Part 15 developers and LMS providers greater understanding of how to prevent interference in the future.

Equipment Type / Use	Part 15 Units in Teletrac Coverage **	Total Cases of Interference	Active Cases of Interference	Cases of Interference Involving FCC
Spread Spectrum	13,100	1	0	0
Wireless Stereo/Video *	36,900	17	2	0
Cordless Telephones	184,500	1	0	0
Wireless Security Alarms - Residential	17,712	0	0	0
Wireless Security Alarms - Commercial	10,148	0	0	0
Field Disturbance Sensors	3,690	30	0	0
Wireless Bar-code Readers and Portable Computers	123,000	0	0	0
Meter Reading Transponders	369,000	0	0	0
Total	758,050	49	2	0
Percent	100%	0.006%	0.0003%	0.0%

* These cases of interference have been from long range outdoor video links.

** Based on Part 15 manufacturer estimates scaled in proportion to US pops covered by Teletrac systems.

Summary

- **LMS is a vital spread spectrum-based service that uniquely solves problems for consumers, businesses and government. Its continued growth will provide great public benefit.**
- **Part 15 concerns should be taken in context with their allocations outside the 902-928 MHz ISM band as well as their reduced regulatory oversight. These advantages far outweigh any disadvantages resulting from secondary status to AVM in a small portion of the spectrum.**
- **Existing customers should not be disrupted. It is more detrimental to the public to displace an existing service than it is to displace one under development.**
- **The final rules may impact all users of the band, but the end result needs to be a more certain environment in which all products and services can continue to develop.**
- **Real world experience shows Part 15 and LMS do coexist and fears of incompatibility are severely overstated. The LMS community has endeavored to help alleviate these fears.**
- **There is sufficient evidence for an FCC decision to finalize the LMS rules to allow continued growth of this vital industry.**