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FEDERAL COMMUNICATIONS COMMISSION
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LAW OFFICES
GINSBURG, FELDMAN AND BRESS
CHARTERED
1250 CONNECTICUT AVENUE, N.W.
WASHINGTON, D.C. 20036
TELEPHONE (202) 637-9000

CORRESPONDENT OFFICE
9, RUE BOISSY D'ANGLAS
75008 PARIS, FRANCE

HENRY M. RIVERA
(202) 637-9012

TELECOPIER (202) 637-9195
TELEX 4938614

August 12, 1994

EX PARTE

William F. Caton
Acting Secretary
Federal Communications Commission
1919 M Street, N.W.
Washington, D.C. 20554

Re: PR Docket No. 93-61
Automatic Vehicle Monitoring Systems

Dear Mr. Caton:

On Friday, August 12, 1994, a copy of the attached letter was delivered to the Chairman and all of the Commissioners, as well as to the Commission's Staff listed at the end of the letter.

Two copies of this letter are being submitted to the Secretary of the Commission pursuant to § 1.1206(a)(1) of the Commission's Rules.

Please contact the undersigned if you have any questions or require additional information concerning this matter.

Sincerely yours,

Henry M. Rivera /LSS

Henry M. Rivera

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AUG 12 1994

FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

August 12, 1994

The Honorable Reed Hundt, Chairman
The Honorable James H. Quello, Commissioner
The Honorable Andrew C. Barrett, Commissioner
The Honorable Susan Ness, Commissioner
The Honorable Rachelle Chong, Commissioner
Federal Communications Commission
1919 M Street, N.W.
Washington, D.C. 20554

Re: PR Docket No. 93-61
Automatic Vehicle Monitoring Systems

Dear Mr. Chairman and Commissioners:

The undersigned manufacturers, users, and associations of manufacturers and users of sophisticated, low power Part 15 equipment, operating on an unlicensed basis in the 902-928 MHz frequency band, submit this letter in response to the interference analyses and alleged "compromise" proposal advanced by the Wideband LMS Proponents.[1/] This letter and its attachments do not respond to the August 3, 1994, informal, verbal proposal by the Commission's Staff concerning operations in the band. Separate individual responses to that particular proposal are being filed.

[1/] Specifically, this letter responds to: (1) the letter dated June 21, 1994, to Ralph Haller, from AirTouch Teletrac concerning its alleged actual experience with interference from Part 15 equipment; (2) the June 23, 1994 letter to Ralph Haller, from AirTouch Teletrac, Pinpoint Communications, Inc., MobileVision, L.P. and Uniplex (the "Wideband LMS Proponents") which forwarded a "Consensus Paper on Part 15 Interference," and offered what was referred to as a "Compromise" proposal "in an effort to alleviate Part 15 concerns about the potential for interference from Part 15 devices to receivers used by wideband LMS systems in the 902-928 MHz frequency band." The letter also had associated with it an analysis entitled: "Further Analysis of Interference of Part 15 Devices and LMS Wideband Systems, Probability of Interference," by G.K. Smith, dated June 22th [sic] 1994, Issue 1.4 (the "Smith Report"); and, (3) a letter dated June 27, 1994 to Ralph Haller from Pinpoint, seeking to somehow distinguish its position from that of the other proposed wideband Location and Monitoring Service ("LMS") providers.

The premise of this response is that neither the Location and Monitoring Service ("LMS"), as designated, nor Part 15 devices will be able to operate without significant adverse consequences if they are forced to co-exist in the 902-928 MHz frequency band. The Wideband LMS Proponents' proposal suggests that interference from Part 15 devices to LMS has not been a problem in the past, and will not be a problem in the future. The undersigned have examined the evidence provided by the Wideband LMS Proponents in support of these claims, and have found that evidence to be flawed. The undersigned, therefore, disagree with the Wideband LMS Proponents' claim that Part 15 interference is not, and will not be, a problem.

In addition to disputing the Wideband LMS Proponents' claims regarding interference from Part 15 devices to LMS, this response also discusses interference from LMS to Part 15 equipment, which the LMS proposal did not discuss. This letter also explains why the LMS Wideband Proponents' alleged compromise is really not a compromise at all.

If the Commission makes a determination that it is in the public interest for LMS and Part 15 operations to co-exist in the 902-928 MHz band, despite record evidence regarding the potential for interference, a proposal, requiring additional industry input, is set forth herein which could alleviate many of the interference problems and allow both Part 15 and LMS to co-exist in the 902-928 MHz band. This proposal is based on two principles: (1) the hierarchy rules of Section 15.5 must not be applicable in certain specified circumstances; <u>and</u>, (2) certain minimal technical standards must be adopted so that the high power LMS operations and Part 15 operations can reasonably co-exist.

<u>BACKGROUND</u>

This is an extremely important proceeding because the Commission must determine whether a newly proposed service, LMS, can co-exist with numerous widely deployed existing Part 15 low-power, unlicensed operations in the 902-928 MHz frequency band. This debate over co-existence, amply discussed in the Comments in this proceeding, has aggravated the disagreements among the involved parties and raised numerous questions at the Commission, all of which has frustrated the progress toward a final resolution of this Rule Making.

The fact that the Wideband LMS Proponents merely restate their position in their June letters does nothing to assist in the resolution of the difficult issues presented in this proceeding. If the Commission adopts the rules for LMS as proposed, it could mean the demise of Part 15 services, services which the Commission has

strongly encouraged.[2] Accordingly, the question facing the Commission is straightforward: Should the Commission create LMS at the expense of Part 15? If some compromise is developed, the Commission must address the question of whether either service will develop to its fullest given the likelihood of interference.

PART 15 DEVICES AND LMS CANNOT CO-EXIST IN THE SAME BAND

The undersigned are convinced that there are no long-term prospects for successful co-existence of wide-area AVM/LMS systems and Part 15 devices in the 902-928 MHz frequency band. Despite the allegations of minimal interference from Part 15 devices made by the Wideband LMS Proponents (allegations which are incomplete and erroneous, see, e.g., Attachment No. 1 hereto), Part 15 operations will cause harmful interference to LMS facilities when operating in relatively close proximity to each other -- which will be a common occurrence in populated areas, attractive to both types of service.

Although the number of interference incidents and/or complaints about Part 15 have been few to date, the degree to which future interference will occur will depend on the extent to which both AVM/LMS systems and Part 15 devices proliferate. A historical study, like that presented by the Wideband LMS Proponents is, therefore, not very instructive.[3]

Exhibit 2 of the Wide Band LMS Proponents' filing, the Smith Report, purports to show that mutual interference will limit Part 15 proliferation before the density of Part 15 devices is sufficiently high to cause substantial interference to AVM/LMS. As discussed in detail at Attachment Nos. 2 and 3 hereto, the Smith paper suffers not only from fundamental mathematical flaws, but also from faulty assumptions that have been proven incorrect by actual operations. The LMS Proponents' conclusion that interference from Part 15 devices can be dismissed as a non-problem is simply wrong. Interference-free operation of wide-area AVM/LMS

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[2] In its August 9, 1994 Report to Ronald H. Brown, Secretary, U.S. Department of Commerce Regarding Preliminary Spectrum Reallocation Report, the Commission noted the millions of Part 15 devices operating in the 902-928 MHz band as well as the 2400-2483.5 MHz band, and indicated that "[i]t is unlikely that a licensed service would be able to share this [2400-2483.5 MHz] band ...." and cautioned against any reallocation that would "jeopardize the significant private sector investment already made in developing new technologies under Part 15." ¶ 39.

[3] See,e.g., Comments of Ad Hoc Gas Distribution Utilities Coalition on Wideband LMS Proponents So-Called Compromise Proposal, dated July 18, 1994.

systems cannot be ensured in the 902-928 MHz band in the presence of Part 15 devices.

The LMS Wideband Proponents also completely ignore issues of interference from LMS to Part 15 devices which is likely to occur,[4] especially based upon Pinpoint's proposals for a wideband, high-power forward link.[5] Accordingly, the best long term solution is for wideband LMS systems to operate in dedicated spectrum outside of the 902-928 MHz band.

INTERFERENCE ISSUES

Two documents discuss the Wideband LMS Proponents' consensus position: the "LMS Consensus Position on Part 15 Interference," which followed on the heels of the June 21, 1994 filing by AirTouch, relating to the scarcity of harmful interference from Part 15 devices to LMS operations; and the Smith Report alleging that Part 15 devices will interfere more severely with each other than with LMS. Both of these documents are seriously flawed.

The AirTouch report and the Consensus Position on Part 15 interference *fail to acknowledge significant cases of harmful interference*. As the materials at Attachment No. 1 unequivocally demonstrate, there have been allegations of harmful interference from Part 15 devices to LMS which have not been previously reported to the Commission, and there is unequivocal evidence that Part 15 devices have, in fact, caused harmful interference to LMS operations.

In addition, there are two papers attached (Attachment Nos. 2 and 3) which take issue with the methods used and conclusions reached in the Smith Report. These papers illustrate that the methods used and conclusions reached are erroneous and are, therefore, not reliable in predicting potential future interference from Part 15 devices to LMS operations.

THE SO-CALLED COMPROMISE

In the June 23 letter, the Wideband LMS Proponents proffer what they refer to as a "compromise." This so-called compromise was proposed because of "the perceived potential that LMS providers could force Part 15 equipment owners ... to cease operation in the LMS band." This letter goes on to state that the compromise proposal "responds to this concern by overlaying interference

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[4] Id.

[5] This wideband high-power forward link is likely to cause interference not only to Part 15 devices, but to other operations in the band as well, including LMS.

negotiation obligations on the band hierarchy" (emphasis added). This proposal offers nothing to the Part 15 Community because the band hierarchy rules continue to be applicable under the proposal. Therefore, instead of immediately calling for the termination of Part 15 operations which interfere with LMS operations, the LMS operators would be required to negotiate with the Part 15 operators before they could demand the termination of Part 15 operations. So long as the LMS operator has the ability to force Part 15 devices off the air, no real compromise has been offered the Part 15 community.

The LMS operators' offer to negotiate in good faith, and turn to the Commission if negotiations are not successful, does not, as a technical matter, resolve any interference problem, nor does it change the fact that the end result of this process will be that Part 15 users which can be identified will be forced to resolve the interference problem by shutting down.[6/] The cost and time involved in such interference-resolving proceedings along with its chilling effect on the Part 15 marketplace will result in the eventual de facto elimination of a significant portion of Part 15 equipment from this band.

Moreover, the proposed compromise deals only with one-half of the problem when LMS and Part 15 operate in the same band. The compromise only concerns instances where there is interference from Part 15 to LMS, and completely ignores the possibility that LMS may cause interference to Part 15 operations. Interference to Part 15 from the new LMS providers could force the termination of Part 15 operations. Such a result would be detrimental to the public interest because it, too, would deny the public the benefit of Part 15 operations which have successfully developed with the encouragement of the Commission, for the sake of newly proposed, and unproven LMS systems.

PROPOSAL FOR ATTEMPTED CO-EXISTENCE

If, notwithstanding the concerns expressed herein, the Commission determines that it is in the public interest for LMS and Part 15 to operate in the 902-928 MHz band, some extremely important issues must be addressed in order to attempt to ensure that both services can operate in a reasonably effective manner. The undersigned have used their best efforts to develop a true compromise position in this proceeding, one in which both Part 15

[6/] It is anticipated that many Part 15 devices capable of significantly interfering with LMS systems will be extremely difficult to identify due to their dispersion and high mobility. Moreover, identification of interfering devices will be extremely difficult because it may be impossible to separate the cumulative effect of Part 15 devices from the transmissions from one particular device.

interests and AVM/LMS interests, if they can agree, could maximize the potential for both types of services to successfully co-exist in the band.[7] The compromise proposed by the undersigned is based on two principles: exemption from the hierarchy rules for LMS in certain circumstances and technical specifications relating to LMS operations that will permit Part 15 to survive in the band.

1. Exemption From The Hierarchy Rules For Certain Operations

As has been stated many times by Part 15 interests in this proceeding, if the Wideband LMS Proponents really believe that Part 15 will not cause any significant interference to LMS operations, LMS proponents should not be adverse to abandoning a senior status in the band, and have the Commission rule that Part 15 operations will not be considered to cause harmful interference to LMS operations. On the other hand, LMS operators should be concerned about retaining senior status only if: (1) LMS proponents are, in fact, fearful of interference from Part 15; or, (2) LMS proponents do not wish to be held accountable for the harmful interference caused to Part 15 operations.

The undersigned propose a type of hierarchical parity for Part 15 and LMS but only for certain aspects of LMS operations. Essentially, LMS operations are composed of two basic elements: (1) the forward link, a paging signal to alert a vehicle; and, (2) the reverse link, a wideband pulsed signal from the mobile unit back to the fixed receivers. So long as no wideband forward links are authorized and the narrowband forward links are operated at the upper edge of the band as described in Section 2 below, the forward link should be allowed to operate like any authorized service in the band and, as such, be entitled to the full protection of Section 15.5 of the rules.

The reverse link, however, presents significant problems because the wideband signal has the potential to substantially interfere with Part 15 operations depending upon, for example, power levels, duty cycles and density of mobile units. In addition, Part 15 operations are likely to cause interference to the reception of the mobile signal. Accordingly, if Section 15.5 were not applicable to the reverse link, Part 15 operations would not be forced to discontinue operations in the event they were causing interference to this aspect of the LMS operations. In addition, such a requirement would force both systems to use the

---

7/ The undersigned wish to reiterate that both Part 15 and LMS cannot co-exist in the band if both develop as the proponents of each have predicted. Although the compromise suggested herein would allow the maximum utilization of the frequency band by each type of service, if both services expand as envisioned, the band will become saturated and interference will be a chronic problem.

best technology possible in order to co-exist in the band and attempt to operate effectively.

2. Minimum Technical Standards

Even if LMS licenses contained a condition that Part 15 devices are not deemed to cause harmful interference to LMS operations, because of the great disparity in operating characteristics between Part 15 devices and the high power, wide band operations of some LMS systems, minimal technical parameters must be placed on LMS operations to ensure compatible operations in the 902-928 MHz band. These minimal technical parameters would allow the shared use of the band among the disparate users, and would not allow an LMS operator to force a Part 15 device off the air because of incompatible technical operations. Moreover, the framework should minimize the potential for interference between LMS systems and other users of the band, while allowing LMS system designers a relatively high degree of design freedom.

Initially, the undersigned propose technical standards for LMS operations which are described in Attachment No. 4, a paper by Jay E. Padgett, Ph.D. The paper recommends that : (1) wideband forward links not be authorized; and (2) multiple narrowband (e.g., 25 kHz) channels be authorized at the upper band edge (e.g., between 927.500 and 928.000 MHz), with each wide-area AVM/LMS provider authorized for exclusive use of one or several of such forward links in a given territory. It is also proposed that some reasonable limits be placed on reverse link (mobile) transmit power and duty cycles. These latter details have not yet been worked out, and the Part 15 Community would welcome the participation of the Commission and the Wideband LMS Proponents in developing these standards.

CONCLUSION

As the foregoing discussion and the attached materials should make clear, there are some very serious technical issues which remain outstanding in this proceeding. Although the Wideband LMS Proponents should be credited with attempting to develop a compromise, their proposal is, unfortunately, meaningless so long as the hierarchy rules are applicable to Part 15 devices and there are no technical standards to promote the efficient sharing of the band. If the Commission insists on requiring LMS to share the band with Part 15 devices, despite evidence of incompatibility, then the undersigned would welcome the opportunity to work with LMS industry representatives to develop some technical standards for operations

in the band, so long as Section 15.5 is not applicable to certain aspects of LMS operations. The proposals set forth above are a good beginning to a solid compromise proposal that would allow Part 15 devices and LMS to co-exist in the 902-928 MHz band.

Respectfully submitted,

Henry M. Rivera

Henry M. Rivera
Counsel for
METRICOM, INC.

/s/ John A. Prendergast
John A. Prendergast
Counsel For
ALARM INDUSTRY COMMUNICATIONS COMMITTEE

/s/ Barbara N. McLennan
Barbara N. McLennan
Staff Vice President, Government and Legal Affairs
Consumer Electronics Group
ELECTRONIC INDUSTRIES ASSOCIATION

/s/ Richard G. Geiger
Richard G. Geiger
Vice President
ITRON, INC.

/s/ Steve Schear
Steve Schear, Chairman
PART 15 COALITION[8/]

/s/ Walter A. Engdahl
Walter A. Engdahl, Esquire
SENSORMATIC ELECTRONICS CORPORATION

/s/ Henry M. Rivera
Henry M. Rivera
Counsel for
SOUTHERN CALIFORNIA EDISON CO.

/s/ Jay E. Padgett
Jay E. Padgett
Chairman, Consumer Radio Section, MPC
TELECOMMUNICATIONS INDUSTRY ASSOCIATION

8/ A plurality of the members of the Part 15 Coalition endorse this letter.

/s/ Wray C. Hiser
Wray C. Hiser
Associate General Counsel
THOMPSON CONSUMER ELECTRONICS, INC.

/s/ Jeffrey L. Sheldon
Jeffrey L. Sheldon
General Counsel
UTILITIES TELECOMMUNICATIONS COUNCIL

cc: Ralph Haller
Rosalind K. Allen
Thomas P. Stanley
Bruce A. Franca
Richard B. Engelman
Richard M. Smith
Michael J. Marcus

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ATTACHMENT No. 1

On page one of its June 21, 1994 letter to Ralph Haller, AirTouch states: "as described more fully in the attached report, Teletrac has not experienced a single case of harmful interference from ... metropolitan area network devices ...." (emphasis added). AirTouch goes on to state: "only two types of Part 15 equipment cause any real problems. They are field disturbance sensors ... and long range video links ...." (id.) The series of attached PacTel Teletrac letters that follow, dating from August of 1992 through March of 1993, clearly illustrate that Teletrac was, in fact, complaining of receiving harmful interference from Metricom's metropolitan area network devices at numerous locations in Southern California and Florida. These letters, therefore, cast serious doubt on the credibility of AirTouch.

It is interesting to note that these allegations of harmful interference stopped at about the time the Commission was working on the Notice of Proposed Rule Making in this proceeding.

Following the series of Teletrac letters alleging harmful interference, there is a Statement from Michael G. Pettus, Director of Engineering at Metricom, Inc., discussing a series of photographs taken from a video tape, made in the presence of Teletrac personnel, when the allegations of interference were being investigated. (Metricom would be pleased to make a copy of this tape available to the Commission.)

As explained in Mr. Pettus' Statement, the photographs clearly demonstrate that Part 15 device operations in the 902-928 MHz band have a significant degrading impact on Teletrac's operations.

9800 La Cienega Blvd., Suite 800
Inglewood, California 90301-4420
(310) 338-7100
FAX (310) 338-7199

PACTEL
TELETRAC

A Pacific Telesis Company

August 17, 1992

Mike Pettus
Metricom Inc.
980 University Avenue
Los Gatos, California 95030

Dear Mike:

Thank you for talking with me today regarding radio frequency coordination in the 902-928 MHZ band. As I mentioned Pactel Teletrac is licensed under Part 90 of the Federal Communication Commission's Rules in Radiolocation Service with a power limitation of 158 watts ERP at 904-912 MHZ and 1000 watts ERP at 924.95 to 925.065 MHZ. Currently, transmission systems are operating in Los Angeles, Chicago, Detroit, Dallas, Miami, Houston, and additional systems are planned for more than 100 metropolitan areas. As we discussed, the RF equipment that you provide Electric Companies falls under Part 15, as it's broadcast power is under 1 watt, and therefore does not require prior licensing with the FCC.

So that we can minimize interference between our systems, Pactel Teletrac will use you as the main contact should we encounter any interference between 904-912 and 924.890-925.140 MHZ that can be traced back to your equipment. Also, I look forward to any technical information that you can provide on your equipment.

If I can be of any assistance in the future, please don't hesitate to call me at (310) 338-6784. Again Mike, thank you for your courtesy, cooperation, and personal attention to this matter.

Sincerely yours,

John L. Piechota

9800 La Cienega Blvd. Suite 800
Inglewood, California 90301-4420
(310) 338-7100
FAX (310) 338-7199

PACTEL TELETRAC

A Pacific Telesis Company

September 24, 1992

Mike Pettus
Metricom Inc.
980 University Avenue
Los Gatos, California 95030

Dear Mike:

On August 17, 1992, we talked regarding radio frequency coordination in the 902-928 MHZ band. As I mentioned, Pactel Teletrac is licensed under Part 90 of the Federal Communication Commission's Rules in Radiolocation Service with a power limitation of 158 watts ERP at 904-912 MHZ and 1000 watts at 924.95 to 925.065 MHZ. These life/safety services are provided to various State and Federal agencies, including law enforcement/surveillance vehicles, fire trucks, paramedic vehicles, ambulances, and transit vehicles so that their location can be tracked on a computerized map. Currently, transmission systems are operating in Los Angeles, Chicago, Detroit, Dallas, Miami, Houston, and additional systems are planned for more than 100 metropolitan areas. As we discussed, your equipment is covered by Part 15 of the FCC's rules and must not interfere with Part 90 users.

Currently, Pactel Teletrac is experiencing 4-8 db of degradation at sites in Los Angeles and Miami at 904-912 Mhz. The source of this interference has been traced back to the Metricom equipment being used by the local electric utilities, and has degraded the ability of our system to track vehicles. In order to minimize future interference between our systems, we need to know if you can avoid 904-912 MHz and 924.95-925.065 MHz.

Please call me at (310) 338-6784 at your earliest convenience so that we can discuss this problem further. Again Mike, thank you for your courtesy, cooperation, and personal attention to this matter.

Sincerely yours,

John L. Piechota
Manager of Engineering Support

cc: Bill Cody - Los Angeles
Bob Long - Miami

9800 La Cienega Blvd., Suite 800
Inglewood, California 90301-4420
(310) 338-7100
FAX (310) 338-7199

PACTEL
TELETRAC

A Pacific Telesis Company

October 15, 1992

Mike Pettus
Metricom Inc.
980 University Avenue
Los Gatos, California 95030

Dear Mike:

On September 24, 1992, I sent you a follow up letter, and have also called you today regarding radio frequency coordination in the 902-928 MHZ band. As I previously mentioned, Pactel Teletrac is licensed under Part 90 of the Federal Communication Commission's Rules in Radiolocation Service with a power limitation of 158 watts ERP at 904-912 MHZ and 1000 watts at 924.95 to 925.065 MHZ. These life/safety services are provided to various State and Federal agencies, including law enforcement/surveillance vehicles, fire trucks, paramedic vehicles, ambulances, and transit vehicles so that their location can be tracked on a computerized map. Currently, transmission systems are operating in Los Angeles, Chicago, Detroit, Dallas, Miami, Houston, and additional systems are planned for more than 100 metropolitan areas. As we discussed, your equipment is covered by Part 15 of the FCC's rules and must not interfere with Part 90 users.

Currently, Pactel Teletrac is experiencing 4-8 db of degradation at a lot of sites in Los Angeles and some sites in Miami at 904-912 Mhz. The source of this interference has been traced back to the Metricom equipment being used by the local electric utilities, and has degraded the ability of our system to track vehicles. In order to minimize future interference between our systems, we need to know if you can avoid 904-912 MHz and 924.95-925.065 MHz.

Please call me at (310) 338-6784 at your earliest convenience so that we can discuss this problem further. Again Mike, thank you for your courtesy, cooperation, and personal attention to this matter.

Sincerely yours,

John L. Piechota
Manager of Engineering Support

cc: Bill Cody - Los Angeles
Maury Abrams - Los Angeles
Bob Long - Miami

9800 La Cienega Blvd., Suite 800
Inglewood, California 90301-4420
(310) 338-7100
FAX (310) 338-7199

PACTEL
TELETRAC

A Pacific Telesis Company

November 18, 1992

Mike Pettus
Metricom Inc.
980 University Avenue
Los Gatos, California 95030

Dear Mike:

As I have mentioned in previous letters and telephone conversations, Pactel Teletrac is still experiencing 4-8 db of degradation at a lot of sites in Los Angeles and at sites in Miami at 904-912 Mhz, and the interference continues to get worse. The source of this interference has been traced back to the Metricom equipment being used by the local electric utilities, and has degraded the ability of our system to track vehicles. In order to eliminate this harmful interference between our systems, please contact the following RF Field Engineers:

Los Angeles

Bill Cody - Network Area Supervisor - (714) 890-7636
Pager (213) 969-1467
Maury Abrams - Field Engineer - (714) 890-7634
Pager (310) 313-9436
Bob Moreno - Field Engineer - (714) 890-7638
Pager (213) 739-3712

Miami

Bob Long - Area Network Supervisor - (305) 484-1300 ext. 615
Pager (305) 659-4942
Rick Nelson - Field Engineer - (305) 484-1300 ext. 616
Pager (305) 659-6008
Mike Duckett - Field Technician - (305) 484-1300 ext. 614
Pager (305) 659-7104

As I previously mentioned, Pactel Teletrac is licensed under Part 90 of the Federal Communication Commission's Rules in Radiolocation Service with a power limitation of 158 watts ERP at 904-912 MHZ and 1000 watts at 924.890 to 925.140 MHZ. These life/safety services are provided to various State and Federal agencies, including law enforcement/surveillance vehicles, fire trucks, paramedic vehicles, ambulances, and transit vehicles so that their location can be tracked on a computerized map. Currently, transmission systems are operating in Los Angeles,

Chicago, Detroit, Dallas, Miami, Houston, and additional systems are planned for more than 100 metropolitan areas. As we previously discussed, your equipment is covered by Part 15 of the FCC's rules and must not interfere with Part 90 users. The harmful interference that we have encountered over the last several months is degrading our service and is delaying the testing and implementation of new services.

If you have questions, please call me at (310) 338-6784 so that we can discuss this problem further. Again Mike, thank you for your courtesy, cooperation, and personal attention to this matter.

Sincerely yours,

John L. Piechota
Manager of Engineering Support

cc: Bill Cody - Los Angeles
Maury Abrams - Los Angeles
Bob Moreno - Los Angeles
Bob Long - Miami
Rick Nelson - Miami
Mike Duckett - Miami
Steve Henderson - Technical Assistance Center
Rex Frye - Technical Assistance Center
Paul Gussow - Technical Assistance Center

9800 La Cienega Blvd., Suite 800
Inglewood, CA 90301-4420
(310) 338-7100
FAX (310) 338-7199

PACTEL
TELETRAC℠
A Pacific Telesis Company

January 11, 1993

Mike Pettus
Metricom Inc.
980 University Avenue
Los Gatos, California 95030

Dear Mike:

I called Jock Kaiser today at Southern California Edison at (818) 812-7346 about setting up a meeting with him and yourself in Irwindale to discuss the interference Pactel Teletrac is experiencing at 904-912 Mhz.

We would like to set up the meeting next week or the following week based upon your availability. If this is convenient for you, I would like to make this a luncheon meeting. Please let Jock and myself know what day is convenient for us to meet.

If you have questions, please call me at (310) 338-6784 so that we can confirm the meeting. Again Mike, thank you for your courtesy, cooperation, and personal attention to this matter.

Sincerely yours,

John L. Piechota
Manager of Engineering Support

cc: Bill Cody - Los Angeles
Maury Abrams - Los Angeles

9800 La Cienega Blvd., Suite 300
Inglewood, CA 90301-4420
(310) 338-7100
FAX (310) 338-7199

PAC TEL
TELETRAC℠
A Pacific Telesis Company

January 25, 1993

Mike Pettus
Metricom Inc.
9800 University Avenue
Los Gatos, California 95030

Dear Mike:

I just wanted to drop you this short note to thank you for meeting with us to discuss the radio frequency interference problems we have been encountering from Southern California Edison's NetComm Network. I look forward to working with you in the future to resolve these interference issues, and the interference problems we are encountering in Miami from Florida Power & Light. Please let me know when it will be convenient with you to meet with FP&L.

As I didn't have any business cards with me at the meeting, I have enclosed one for your records.

Please call me at (310) 338-6784, so that we can set a tentative date to meet with FP&L. Thanks again Mike, for your assistance.

Sincerely yours,

John L. Piechota
Manager of Engineering Support

cc: Bill Goshay - Vice President of Engineering
Matt Porterfield - Vice President & General Manager - Los Angeles Metro
Bill Cody
Maury Abrams
Bob Moreno
Gary Heston

9800 La Cienega Blvd., Suite 800
Inglewood, CA 90301-4420
(310) 338-7100
FAX (310) 338-7199

PAC TEL
TELETRAC℠
A Pacific Telesis Company

January 25, 1993

Jock Kiser
Engineer - Network Services Research Center
Southern California Edison
6090 North Irwindale Avenue
Irwindale, California 91702

Dear Jock:

I just wanted to drop you this short note to thank you for meeting with us to discuss the radio frequency interference problems we have been encountering from the NetComm Network. I look forward to working with you in the future to resolve these interference issues.

As I didn't have any business cards with me at the meeting, I have enclosed one for your records. Also, if you need to reach the field engineers, they can be reached at:

Name	Title	Phone	Pager
Bill Cody	Network Supervisor	(714) 890-7636	(213) 969-1467
Maury Abrams	Field Engineer	(714) 890-7634	(310) 313-9436
Bob Moreno	Field Engineer	(714) 890-7638	(213) 739-3712
Gary Heston	Field Engineer	(714) 890-7633	(213) 739-3714

If you need to reach me, I can be reached at (310) 338-6784. Thanks again Jock, for your assistance.

Sincerely yours,

John L. Piechota
Manager of Engineering Support

cc: Bill Goshay - Vice President of Engineering
Matt Porterfield - Vice President & General Manager - Los Angeles Metro
Bill Cody
Maury Abrams
Bob Moreno
Gary Heston

9800 La Cienega Blvd., Suite 300
Inglewood, CA 90301-4420
(310) 338-7100
FAX (310) 338-7199

PACTEL
TELETRAC℠
A Pacific Telesis Company

February 17, 1993

Mike Pettus
Metricom Inc.
9800 University Avenue
Los Gatos, California 95030

Dear Mike:

Attached, please find documentation showing the harmful interference that Pactel Teletrac is getting from Florida Power & Light's Metricom Network. Please contact me at your earliest convenience to let me know when it will be convenient with you to meet with FP&L to discuss eliminating this interference problem.

Please call me at (310) 338-6784, so that we can set a tentative date to meet with FP&L. Thanks again Mike, for your assistance.

Sincerely yours,

John L. Piechota
Manager of Engineering Support

cc: Rick Nelson - Field Engineer, Miami

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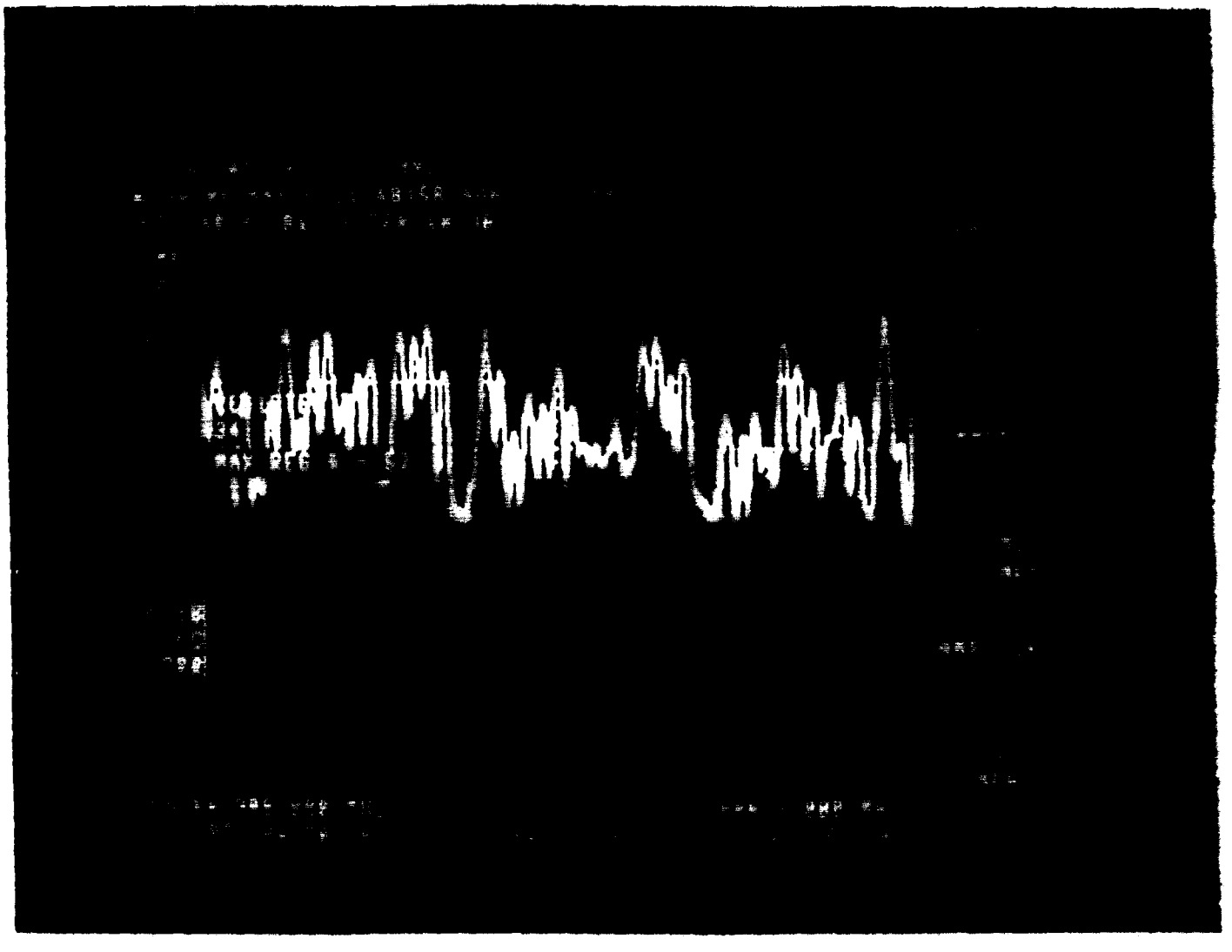
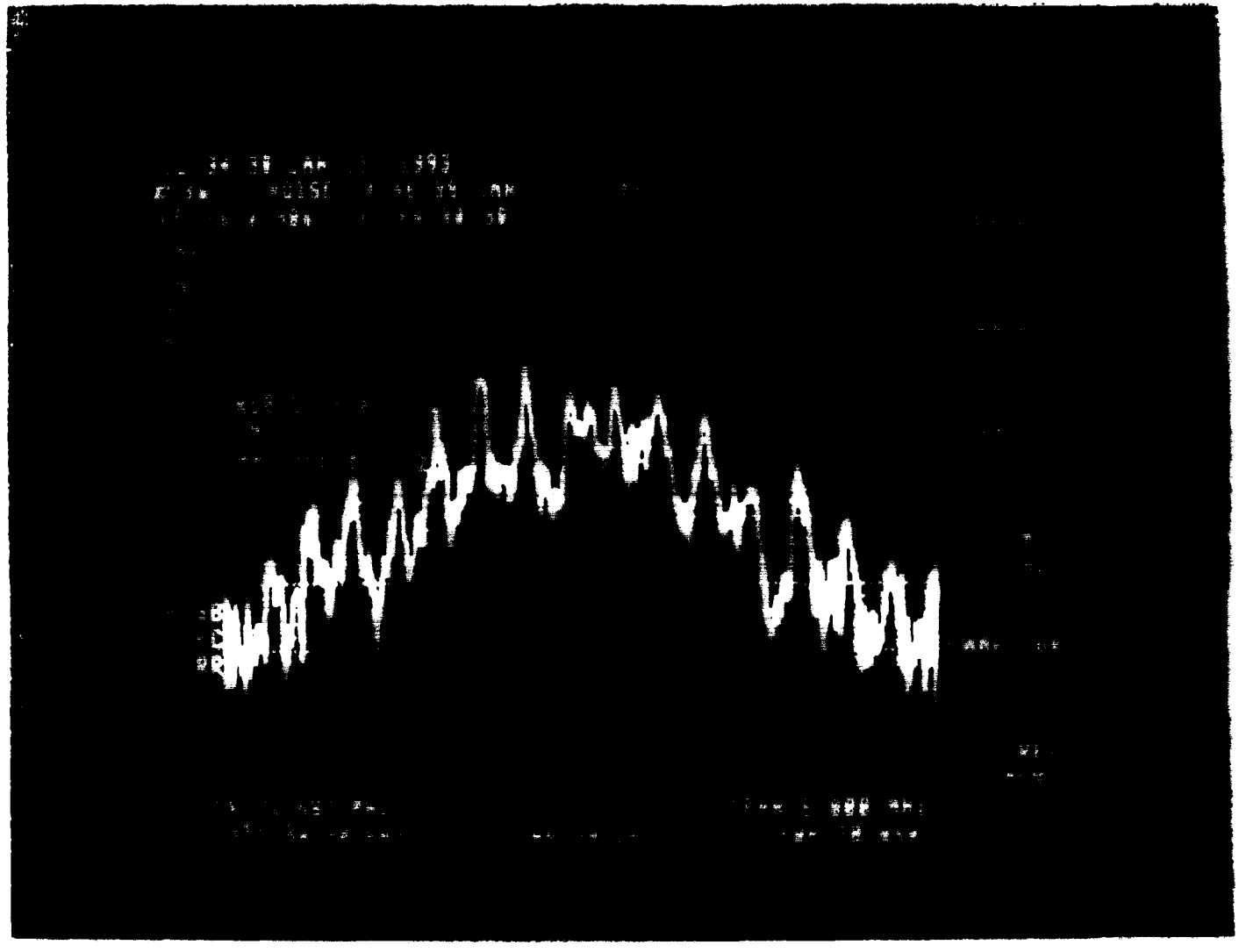
FEB 1[illegible]



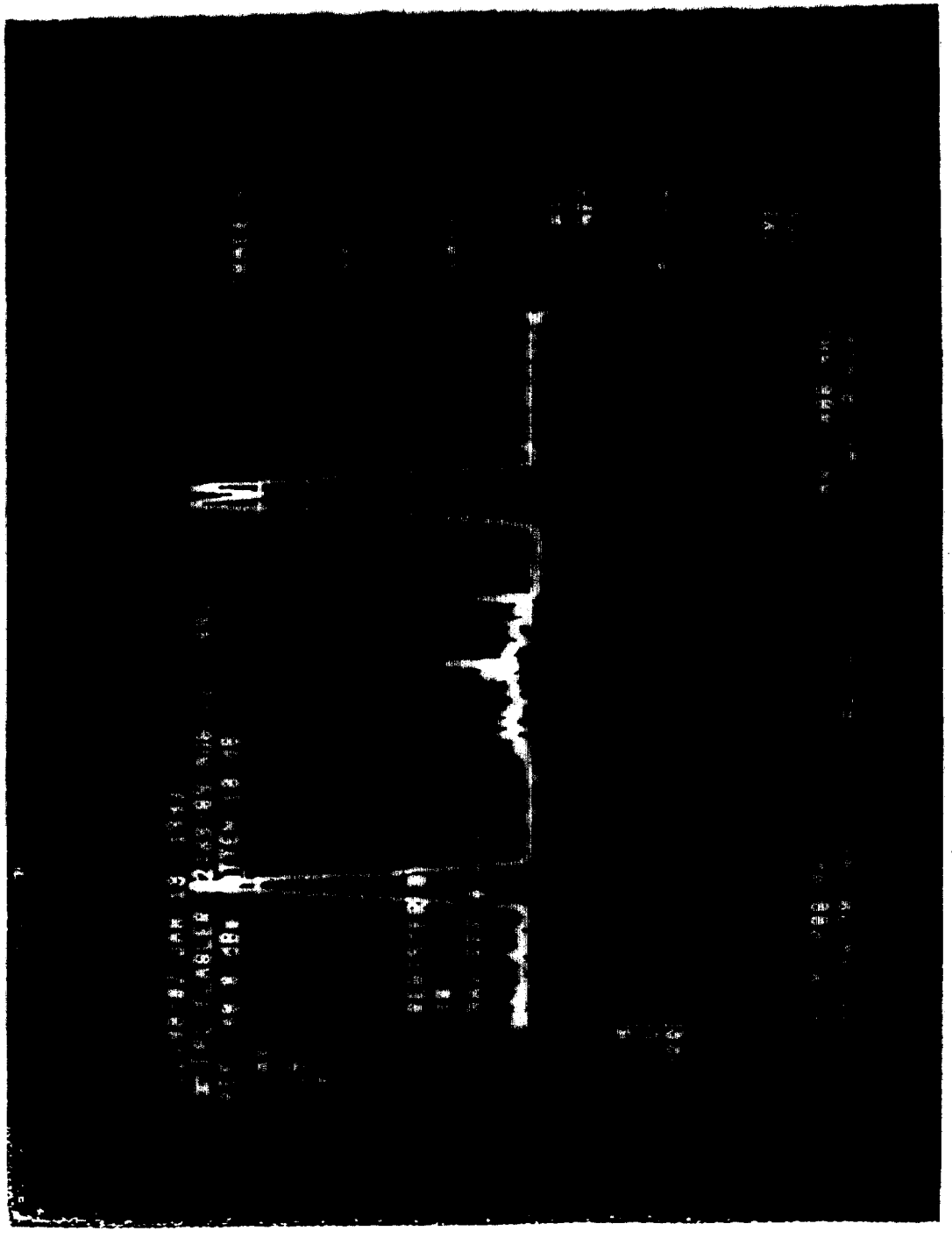
Showing multiple notes.... RF AP..Tel Dv c.l.

5



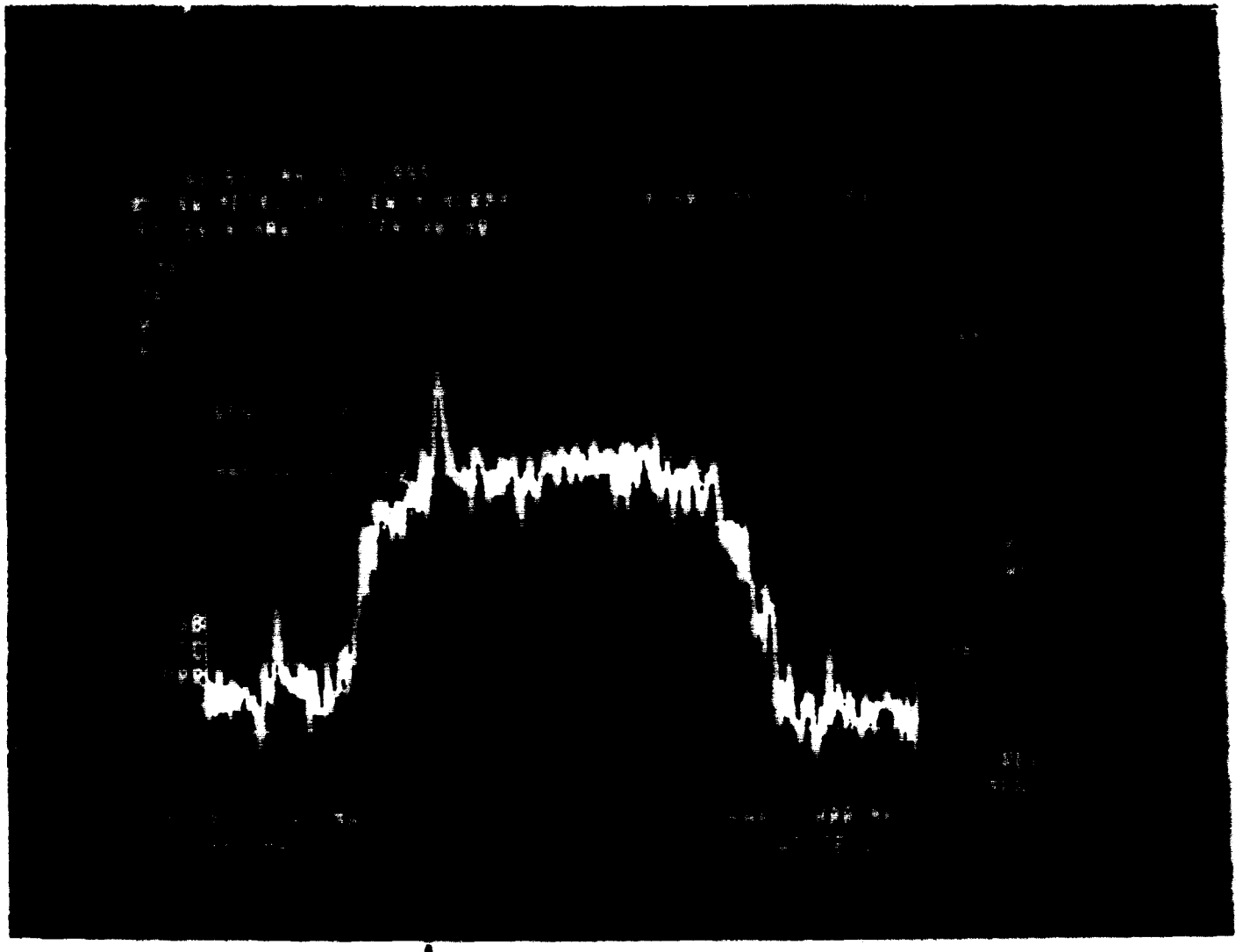
Not metricom interference

Seen at nearly all miami (south) sites, This is not max hold



Taken At FPL Facility

2



small spike

Nearly "Normal" if, Same Site, No metricom