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WILKINSON) BARKER) KNAUER) LLP

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2300 N STREET, NW
SUITE 700
WASHINGTON, DC 20037-1128
TEL 202.783.4141
FAX 202.783.5851
www.wbklaw.com

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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

January 10, 2001

Magalie Roman Salas, Esq.
Office of the Secretary
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

Re: *CC Docket No. 94-102*
December 27, 2000 Letter Regarding ACC Tennessee License LLC's E-911 Implementation Report, Call Sign KNKN526
Amendment to American Cellular Corporation's Report of November 9, 2000

Dear Ms. Salas:

American Cellular Corporation ("ACC") on behalf of its affiliate, ACC Tennessee License LLC, by counsel, hereby responds to the Commission's letter dated December 27, 2000. In the letter, the Commission stated that ACC Tennessee License LLC had failed to file the required report detailing its plan to implement an enhanced 911 Phase II automatic location information system. ACC hereby amends the above-referenced report (to the extent necessary) to clarify that the E-911 Phase II Implementation Report described therein applies to ACC Tennessee License LLC.

On November 9, 2000, ACC, on behalf of itself and its affiliates, submitted to the FCC the "Report of American Cellular Corporation on Enhanced 911 Phase II Implementation" ("Report" — copy attached). The Report listed all of the market service areas covered by ACC and its affiliates, and a description of ACC's E-911 implementation plan. ACC Tennesee License LLC is the licensee for Call Sign KNKN526, which encompasses the A Block of the Tennessee 4 - Hamblen RSA. Tennessee 4 is one of the markets listed on the Report. The attached Report encompasses ACC Tennessee License LLC and the areas it serves.

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If you have any further questions, please contact the undersigned.

Sincerely,

WILKINSON BARKER KNAUER LLP

Robert G. Morse
Timothy A. Kruyer[1]

cc: Wendy Austrie

Enclosure

[1]Practice limited to matters and proceedings before federal courts and agencies.

Federal Communications Commission
Washington, D.C. 20554

December 27, 2000

KNKN526
Wilkinson Barker Knauer LLP
2300 N Street NW Suite 700
Washington, DC 20037

Re: November 9, 2000 E911 Phase II Carrier Implementation Report

By the Wireless Telecommunications Bureau:

1. Pursuant to section 20.3(h) of the Federal Communications Commission's (Commission) rules, wireless carriers were required to submit reports on or before November 9, 2000 to the Commission on their plans for implementation of wireless Enhanced 911 (E911) Phase II automatic location identification (ALI) systems.[1] As of the date of this notice, ACC Tennessee License LLC has failed to submit the required report.

2. In accordance with Section 308(b) of the Communications Act of 1934 as amended, 47 U.S.C. § 308(b), ACC Tennessee License LLC. shall within fifteen (15) days of the date of this letter submit a report on its wireless E911 Phase II ALI implementation.

3. The report shall contain information on ACC Tennessee License LLC's implementation plans, as outlined in the *Public Notice*, released September 14, 2000, Wireless Telecommunications Bureau Provides Guidance on Carrier Reports on Implementation of Wireless E911 Phase II Automatic Location Identification.[2] A copy of the *Public Notice* is attached hereto.

4. Failure to file a report concerning ACC Tennessee License LLC's implementation plan for wireless E911 Phase II ALI systems constitutes a violation of the Commission's Rules. Failure to comply with this notice constitutes a continuing violation of the Commission's Rules and will be referred to the Commission's Enforcement Bureau and could result in administrative penalties, including monetary forfeiture. *See Forfeiture Policy Statement*, 12 FCC Rcd 17087 (1997).

5. Your report can be filed either electronically or as a paper filing. Electronic filings should be made using the Electronic Comment Filing System (ECFS). Reports filed through the ECFS can be sent as an electronic file via the Internet to http://www.fcc.gov/e-file/ecfs.html. In completing the transmittal screen, parties should include their full name, Postal Service mailing address, and the docket number of this proceeding. Parties filing electronically should also e-mail a copy of their report to

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[1] Revision of the Commission's Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems, CC Docket No. 94-102, *Third Report and Order*, 14 FCC Rcd 17388 (1999)(*E911 Third Report and Order*).

[2] *See Public Notice* Wireless Telecommunications Bureau Provides Guidance on Carrier Reports on Implementation of Wireless E911 Phase II Automatic Location Identification, DA 00-2099, CC Docket No. 94-102.

WAustrie@fcc.gov. Parties who choose to file by paper must file an original and four copies of each filing with the Commission's Secretary, Magalie Roman Salas, Office of the Secretary, Federal Communications Commission, 445 12th Street, SW, Washington, D.C. 20554 and a diskette copy to the Commission's copy contractor, International Transcription Service, Inc. (ITS), CY-B400, (202) 857-3800. In addition, parties must submit one copy to Wendy Austrie, Policy Division, Wireless Telecommunications Bureau, Federal Communications Commission, 445 12th Street, S.W., Washington, D.C. 20554. Reports will be available for public inspection during regular business hours in the FCC Public Reference Room, Room CY-A257, 445 12th Street, S.W., Washington, D.C. 20554.

6. Should you have any questions regarding this matter, please contact Ms. Wendy Austrie at 202-418-1310.

Federal Communications Commission

for Thomas J. Sugrue, Chief
Wireless Telecommunications Bureau

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

In the Matter of	)	
	)	
Revision of the Commission's Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems	)	CC Docket No. 94-102
	)	
Phase II Implementation Report	)	TRS No: 804286

To: The Commission

I. REPORT OF AMERICAN CELLULAR CORPORATION ON ENHANCED 911 PHASE II IMPLEMENTATION

Pursuant to Section 20.18(i) of the Federal Communications Commission's (FCC) rules, 47 C.F.R. § 20.18(i), American Cellular Corporation, on its own behalf and that of its subsidiary licensees, (hereinafter referred to as "ACC"), hereby reports on its plans for implementing Phase II Enhanced 911 ("E911") service. This report is responsive to the requirements set forth in the FCC rules and is organized in accordance with the Wireless Telecommunications Bureau's guidance.[1]

It should be noted that a portion of the information provided herein was gathered from third party vendors and from publicly available information, including but not limited to, filings made at the FCC by participants in this docket. To the best of its knowledge and in good faith, ACC believes the information submitted herein this filing is true and accurate; however, ACC cannot be held responsible for the ultimate veracity of any information received from third party

[1]Public Notice, *Wireless Telecommunications Bureau Provides Guidance on Carrier Reports on Implementation of Wireless E911 Phase II Automatic Location Identification*, CC Docket No. 94-102, DA 00-2099 (rel. Sept. 14, 2000).

vendors or other publicly available information. As permitted under Section 20.18 of the rules, ACC reserves the right to amend its filing.

BACKGROUND/CONTACT INFORMATION

(1) Carrier Identifying Information

Company	TRS#
American Cellular Corporation	804286

(2) Contact Information

Correspondence or other inquiries regarding this report should be addressed to:

Sean O'Hara
E911 Development Manager
3910 South Avenue
Youngstown, OH 44512
Phone: 330-509-6510
Fax: 330-509-3620
Email: *sean.o'hara@dobson.net*

With a copy to:

Ronald L. Ripley
Corporate Counsel
AMERICAN CELLULAR CORPORATION
13439 North Broadway Extension
Oklahoma City, Oklahoma 73114
(405) 529-8500 *voice*
(405) 529-8765 *fax*
E-mail: *rripley@dobson.net*

II. E911 PHASE II LOCATION TECHNOLOGY INFORMATION

(1) Type of Technology

ACC has determined at this time, based on the unique nature of its service areas and the challenges such service areas present, and the requirements imposed by the FCC, to pursue a network-based solution to meet the requirement of Phase II E911 deployment. ACC has approximately 482 cell sites and 9 Mobile Switching Centers (MSCs) operating predominantly in the rural areas of Kansas, Kentucky, Michigan, Minnesota, New York, Oklahoma, Ohio, Pennsylvania, Tennessee, West Virginia and Wisconsin. (See Attachment for specific markets) Most of the licenses held by ACC are 800 MHz cellular band TDMA (IS-136), with a small mix of 1.9 GHz TDMA (IS-136). ACC's infrastructure is provided by Nortel.

To graphically present how ACC proposes to meet the FCC's mandate, a block diagram of a Wireless E911 Phase II system is shown in Figure 1. The existing nodes in the current system are the Mobile Switching Center (MSC), Selective Router, Automatic Location Identification (ALI) database, and Public Safety Answering Point (PSAP). To provide Phase II compliance, the Position Determination Equipment (PDE), (location processor and communications equipment), Mobile Positioning Center (MPC), and information in compliance with the rules, possibly Wireless Automatic Location Identification (WALI) are required. The following paragraphs describe each node of the network and what changes, if any, are required.

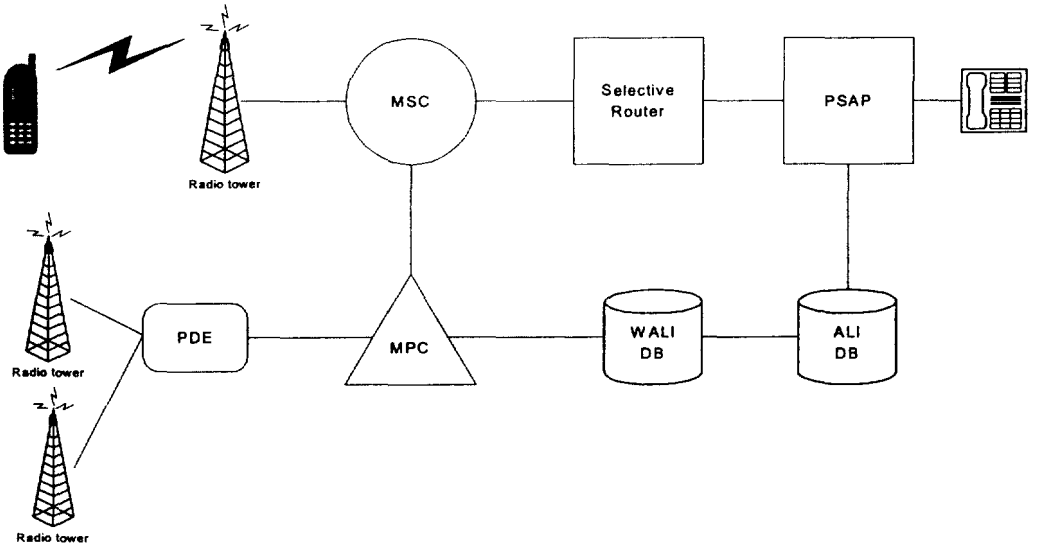

Figure 1. Network Diagram

Mobile Switching Center

The Mobile Switching Center (MSC) requires new capabilities for routing emergency 911 calls. The MSC will interface to the MPC to determine PSAP routing. ACC understands that its current vendor, Nortel, will release new software upgrades in the third quarter of 2001 to provide Phase II functionality.

Mobile Positioning Center

The Mobile Positioning Center (MPC) is a new network node needed to provide Phase II capabilities. The MPC, which provides the primary interface to the PDE, is responsible for gathering location information and determining the correct routing for the MSC for an emergency 911 call. The MPC presents E911 location information to the WALI/ALI database and provides updates upon requests from the WALI/ALI, which are in turn provided to the PSAP. The functionality of the MPC can be provided by purchasing an MPC or using a service bureau that provides the MPC and WALI/ALI database functionality. Two ALI vendors under consideration for the service bureau approach are SCC and Xypoint. Both vendors are being used during Phase I testing.

ALI Database

The ALI database maintains current location information for emergency 911 callers. With the requirements of Phase II, this functionality needs to be upgraded to include dynamic updates for mobile 911 calls and a provision for communicating to a new network node – the MPC. Some ALI providers use a WALI to maintain the dynamic updates and other providers use the same database for dynamic and static data items. In either case, upgrades to the ALI database are required.

WALI Database

The WALI database is an optional node in the network based on how the ALI provider implements the dynamic capabilities of the database. The approach used will be dependent on the ALI/MPC service bureau provider.

Position Determination Equipment (PDE)

Because ACC primarily provides service to rural areas, it faces particular challenges in identifying a location system that meets the FCC mandate. To date, ACC has conducted surveys of available technologies for the determination of the location of its IS-136 and IS-95 handset. ACC has held discussions with vendors proposing various technologies and with other carriers to determine the suitability of the proposed technologies.

Several competing technologies are under investigation and consideration by ACC, including systems proposed by TruePosition, Grayson, SigmaOne, and U.S. Wireless. Handset-based technologies for compliance purposes have been ruled out at present due to the lack of availability, changeover costs, and issues related to incompatible roamers visiting the ACC systems. Again, due to a high percentage of rural areas, ACC's systems host a vast number of roamers. Compatible technologies with those selected by neighboring carriers are therefore of great importance. It appears that a handset-based solution, based on current technologies, would pose major issues in providing Phase II E-911 coverage to these roamers.

In general, it appears that all PDE vendors are in the initial development phase of their respective solutions and that at least one major design and development iteration is necessary before such solution is commercially marketable or usable in an operational system. Factors supporting this determination include the lack of commercially available equipment, lack of operation and maintenance systems, and operating systems that are incompatible with the existing cellular infrastructure and the limited testing conducted to date. In addition, there is a need for an

enormous deployment that no vendor seems to be ready to undertake. ACC is committed to meeting the FCC mandate and work with vendors to plan and implement a satisfactory deployment.

Based on publicly available trial results published by the PDE vendors, ACC has opted to focus on the merits of a network-based solution. ACC believes that the requirements set by the FCC for Phase II compliance are extremely challenging for rural carriers such as ACC. To be more specific, carriers selecting a network-based solution are required to deploy to 50% of callers within 6 months of PSAP request and to 100% within 18 months. Furthermore, Phase II requires that the wireless carriers provide the longitude and latitude of the mobile unit making the 911 call to the PSAPs, within a radius of no more than 100 meters (328 feet) for 67% of calls, and 300 meters (984 feet) for 95% of calls for network-based solutions. The aggressive deployment timeline and the accuracy requirements seem to be unreachable by the PDE vendors based on current technology and information available from vendors. Additionally, in the rural areas the geometry of the deployed cell sites causes major concerns about the accuracy of the location. On the other hand, areas with higher cell density lend themselves to better cell site geometry, thus leading to higher accuracy and availability of locations for network solution. Note that the distance between ACC cell sites ranges up to 54 miles as shown in Figure 2.

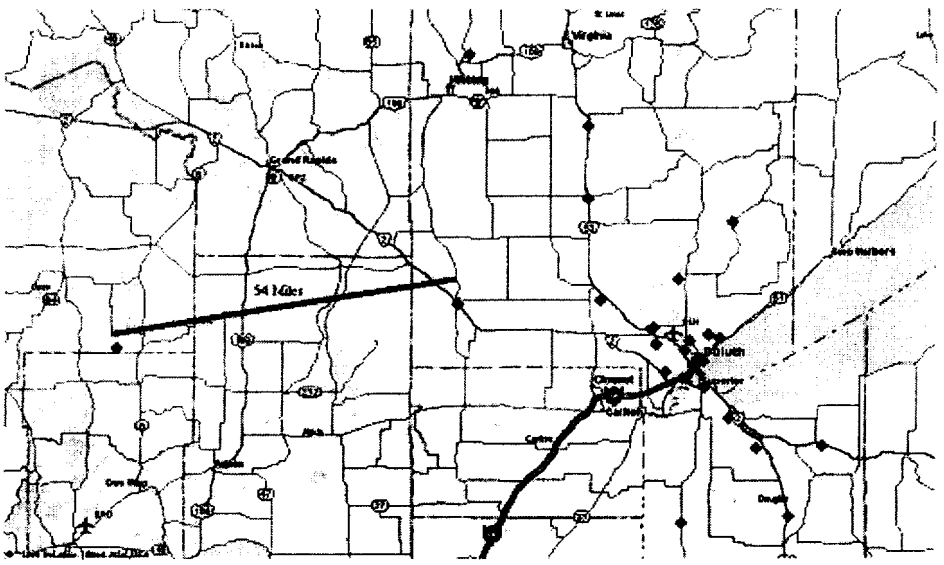

Figure 2. ACC's Network in Minnesota

The network-based solutions available to meet ACC's requirements include a variety of network-based solutions including Angle of Arrival (AOA), Time Difference of Arrival (TDOA), RF signal measurement, and their combinations. These techniques may be used on their own or in a variety of combinations to attack the location determination requirement. For instance, systems performing spatial processing or multipath characterization of signals may employ a combination

of time difference of arrival and relative signal strength measurements of the multipath profile. Table 1 provides the status of the four systems currently being studied by ACC.

Table 1. PDE Vendor Status

Vendor	Service Options	Technology	Air Interface	Status	Rural Coverage
Allen Telecom	Turnkey/ Service Bureau	TDOA AOA	IS-136 IS-95	Demonstrated IS-136 IS-95	Undetermined
TruePosition	Turnkey/ Service Bureau	TDOA	IS-136 IS-95	Demonstrated IS-136	Undetermined
SigmaOne	Turnkey/ Service Bureau	TDOA AOA	IS-136	Demonstrated IS-136	Claims 2 site coverage
USWireless	Service Bureau	RF Finger Printing AOA	IS-136 IS-95	Demonstrated IS-136 IS-95	Claims 1 site coverage

Figure 3 depicts the predicted coverage of the AOA and TDOA technologies for Minnesota (Rural). Based on the plots, it is not clear at this point that any of these systems will meet the FCC-mandated accuracy and availability requirements in the rural areas. ACC is planning to conduct field trials in the coming months and will assess the viability of these solutions. Based on the results of its testing, ACC reserves the right to change its plan and select an alternative ALI technology, as permitted under the FCC's rules.[2]

[2] *See Third Report and Order*, 14 FCC Rcd. 17388, ¶ 89 (1999)

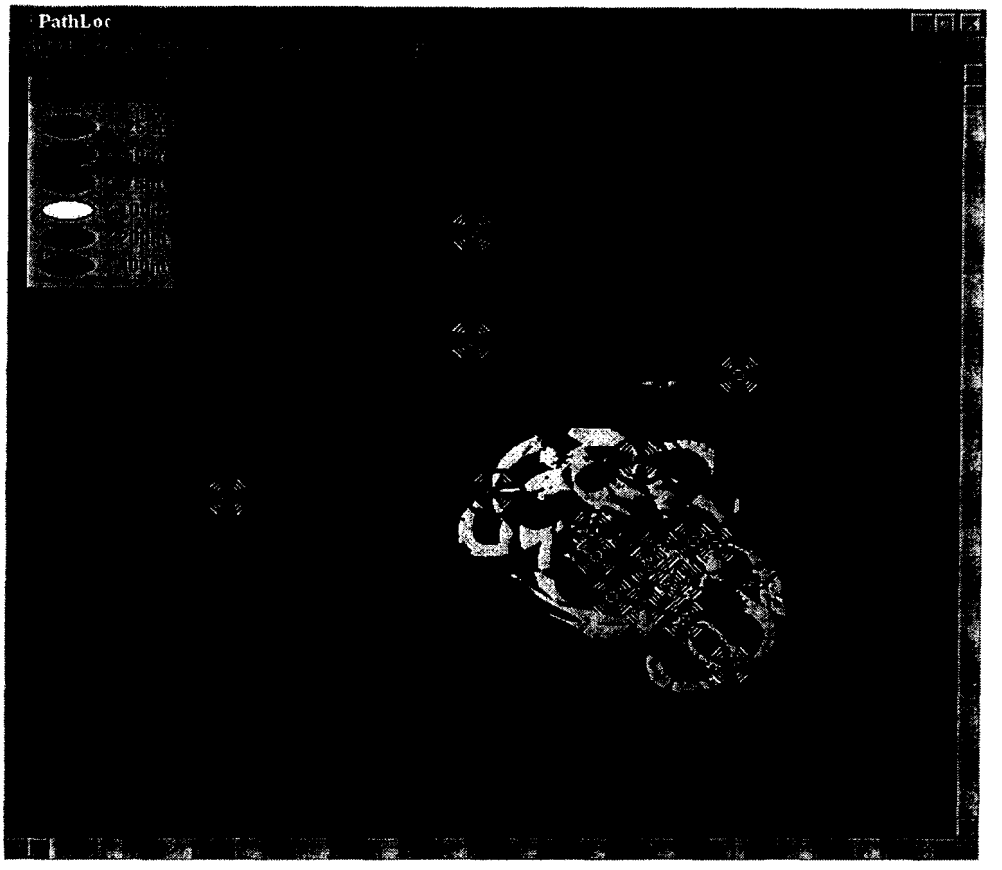

Figure 3. Minnesota- Hybrid AOA/TDOA Coverage

(2) Testing and Verification

Phase I testing and verification has been initiated. This reduces the complexity of the Phase II testing and verification by verifying interim upgrades to many of the network nodes with the exception of the PDE. Phase I requires the addition of the MPC node and communication to both the ALI database and MSC and therefore will test and verify their connectivity and functionality. Because ACC has received Phase I requests, it has allowed ACC to have already established some procedures and entered into agreements with some of the same vendors ACC is considering for Phase II. This should allow for a smoother transition to Phase II upon request. The testing accuracy of Phase II ALI solutions will be in accordance with the guidelines provided in OET Bulletin No. 71, issued April 12, 2000.

(3) Implementation Details and Schedule

The following is a stage-by-stage overview together with the preliminary timetable of ACC's Phase II deployment plans.

- **Stage 1 Location System Implementation Planning**

  Identify potential "good fit" solutions and highlight potential pros and cons of PDE and Mobile Positioning Center (MPC) candidates. Focus will be on determining

the technical and business implications of incorporating solutions from specific companies offering candidate PDE and MPC technologies and establishing a roadmap for selecting from the available alternatives. This task will culminate in the rating of available technologies and definition of next steps for formal evaluation of the most viable alternatives. Possible solutions to be assessed include:

- Network-based AOA/TDOA/Hybrid Solution
- Network-based Location Pattern Matching Solution
- Network-based/Handset-assisted Enhanced Observed Time Difference (E-OTD) Solution

A master plan will be developed to include system integration and testing, location system field trials (or review of previously conducted trials), vendor selection, deployment planning and operational/acceptance testing and certification after deployment.

- **Stage 2: Technology Selection**

A technology evaluation and test plan will be developed to conduct a thorough in-depth evaluation of the commercial readiness, implementation impact and performance of the candidate location technologies. This test plan will include assessment of PDE and MPC technologies identified in Stage 1. The integration and testing activities required to verify operational end-to-end connectivity between the E911 routing equipment, MPC, ACC's upgraded MSC(s) and the selected PDE technology(s) will be included in this plan. This includes verification of MPC, MSC and PDE functionality and interface compatibility per TR45 J-STD-036 and operational verification of Automatic Location Identification (ALI) database connectivity per TR45 J-STD-036.

- **Stage 3: Deployment of Trial Systems, Conduct Field Trials, and Document Results**

ACC will work with the PDE and MPC vendors to deploy selected trial systems as necessary. This effort may include the total deployment responsibility on ACC's part and coordination with vendors deploying their own systems. The effort will be scaled, as appropriate, once particular PDE and MPC vendors are selected and the scope of each trial deployment is known. ACC will evaluate third-party trial results determined to be adequate for ACC's needs.

After deployment and integration of the PDE, MPC and MSC upgrades, ACC will conduct system trials according to test plans that take into account ACC's unique location-based service requirements.

The collected test data will be processed and analyzed to determine PDE system location coverage, accuracy, reliability and latency as well as MPC and MSC functionality and loading issues. Test results will be documented for different propagation environments (urban, suburban, rural, etc.) and mobile unit operating scenarios (mobile, stationary, indoor, outdoor, etc.).

- **Stage 4: Deploy Selected Location System(s)**

  ACC will work with the selected PDE and MPC vendors and its existing infrastructure vendors to deploy the selected systems for full compliance with Phase II E911 requirements. The deployment process will include review of location system-specific deployment considerations, review of equipment specifications, network deployment analysis and coverage prediction, site selection and visit, site acquisition, site DGPS survey, equipment installation, system integration and site sign-off.

- **Stage 5: Conduct System Acceptance Testing and Certification of Compliance with FCC Rules**

  ACC will perform detailed test data gathering and analysis for the deployed systems and compare the results against FCC requirements and ACC specific requirements. Any discrepancies and/or deviations with respect to test objectives or FCC requirements will be identified. Areas of special consideration such as coverage holes and areas with performance anomalies will be highlighted. The results will be documented in a final report.

Schedule

ACC will interact with requesting PSAPs to undertake a deployment schedule necessary to meet the requirements. Figure 7 depicts a sample schedule covering all the five stages. The timeline is, of course, dependant on the needs of the requesting PSAP, the availability of PDE hardware and software, the availability of interconnect facilities, and the readiness of the PSAP system to interface to the new technology (See 47 C.F.R. 20.18 (j)).

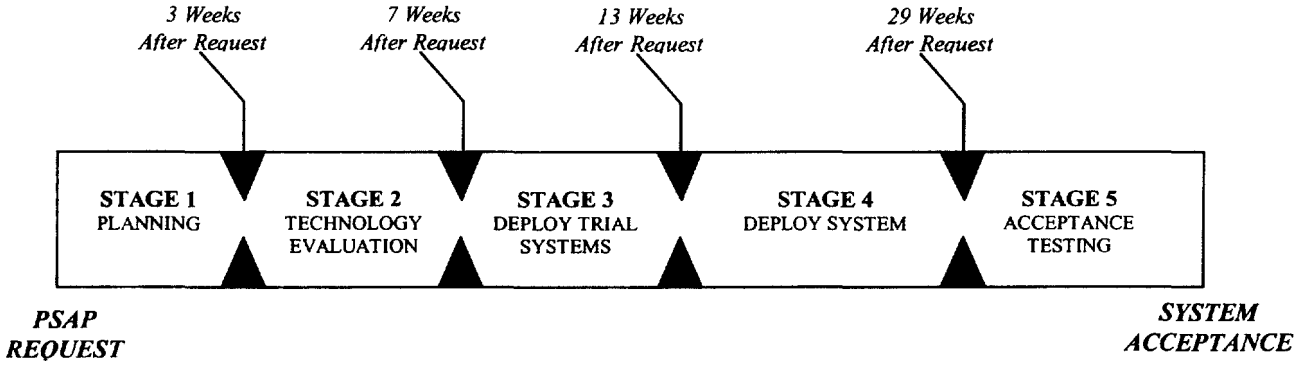

Figure 7. Estimated Timeline for E911 Phase II

(4) PSAP Interface

ACC has met with vendors such as SCC and Xypoint in regards to providing the PSAP interface functions and database management. Each company already has a national presence, is providing similar services to ACC today, and has assured ACC of its ability to meet the FCC's Phase II requirements.

(5) Existing Handsets

ACC has tentatively selected a network-based solution for purposes of the instant filing; therefore this issue is not applicable. If after further analysis and discussions it is determined that a handset solution is preferable, ACC will amend its filing with updated information.

(6) Location of Non-Compatible Handsets

ACC has tentatively selected a network-based solution for purposes of the instant filing; therefore this issue is not applicable. If after further analysis and discussions it is determined that a handset solution is preferable, ACC will amend its filing with updated information.

(7) Other Information

ACC has not received any Phase II E911 requests from PSAPs. Once ACC receives a request from a PSAP capable of receiving and utilizing the data elements associated with the service and having a cost recovery mechanism in place, ACC will begin implementation consistent with the timeline described above, subject to the availability of necessary equipment and software from vendors.[3]

[3] 47 C.F.R. § 20.18(j).

CONCLUSION

As discussed herein, the instant report is submitted pursuant to the requirements set forth in Section 20.18(i) of the FCC's rules. In the event that additional information is requested, ACC will consult with the FCC to discuss appropriate means of ensuring that business proprietary information is not publicly disclosed.

Finally, ACC emphasizes that the Phase II deployment challenges are particularly acute for wireless carriers, such as ACC, serving primarily rural areas. Unlike urban areas with high cell density, current location technologies may effectively require a rural carrier to supplement its commercial network with additional sites in order to provide reliable Phase II service in compliance with the rules. Phase II costs may therefore be far more difficult for rural carriers to recover than for carriers in urban markets. ACC remains committed to complying with its Phase II obligations, but again notes that deployment of such capabilities in rural areas will pose unique challenges and require imprudent investment.

Respectfully submitted,

AMERICAN CELLULAR CORPORATION

Ronald L. Ripley
Corporate Counsel
AMERICAN CELLULAR CORPORATION
13439 North Broadway Extension
Oklahoma City, Oklahoma 73114
(405) 529-8500 *voice*
(405) 529-8765 *fax*
E-mail: *rripley@dobson.net*
Its Attorney

E911 PHASE II REPORT

ATTACHMENT

APPLICABLE AMERICAN CELLULAR LICENSEES AND SERVICE AREAS

LICENSEE	MARKET NAME	MARKET NO.
American Cellular Corporation	Alton-Granite City, IL MSA	305A
	Duluth-Superior, MN-WI MSA	141(A1)
	Duluth-Superior, MN-WI MSA	141(A2)
	Eau Claire, WI MSA	232A
	Kentucky 4 - Spencer RSA	446A
	Kentucky 5 - Barren RSA	447A
	Kentucky 6 - Madison RSA	448A
	Kentucky 8 - Mason RSA	450A
	La Cross, WI-Winona, MN BTA	B234E
	Michigan 1 - Gogebic RSA	472A
	Minnesota 2 - Lake of the Woods RSA	483(A2)
	Minnesota 3 - Koochiching RSA	484A
	Minnesota 4 - Lake RSA	485A
	Minnesota 5 - Wilkin RSA	486A
	Minnesota 6 - Hubbard RSA	487A
	Morgantown, WV BTA	B306E
	New York 5 - Otsego RSA	563A
	New York 6 - Columbia RSA	564A
	Ohio 10 - Perry RSA	594(A2)
	Ohio 7 - Tuscarawas RSA	591A
	Orange County, NY MSA	144A
	Pennsylvania 9 - Greene RSA	620A
	Poughkeepsie, NY MSA	151A

	Steubenville, OH-Weirton, WV BTA	B431E
	Tennessee 4 - Hamblen RSA	646A
	Wausau, WI MSA	263A
	West Virginia 2 - Wetzel RSA	702A
	West Virginia 3 - Monongalia RSA	703A
	Wisconsin 1 - Burnett RSA	708A
	Wisconsin 2 - Bayfield RSA	709A
	Wisconsin 3 - Vilas RSA	710A
	Wisconsin 4 - Marinette RSA	711A
	Wisconsin 5 - Pierce RSA	712 (A2)
	Wisconsin 6 - Trempealeau RSA	713(A2)