

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

In the Matter of)	
)	
Revision of the Commission's)	CC Docket No. 94-102
Rules To Ensure Compatibility)	
With Enhanced 911 Emergency)	
Calling Systems)	

**VOICESTREAM WIRELESS CORPORATION
REQUEST FOR LIMITED MODIFICATION OF
E911 PHASE II IMPLEMENTATION PLAN**

Brian T. O'Connor
Robert Calaff
VOICESTREAM WIRELESS CORPORATION
401 9th Street, N.W.
Suite 550
Washington, D.C. 20004
202-654-5900

John T. Nakahata
Karen L. Gulick
HARRIS, WILTSHIRE & GRANNIS, LLP
1200 18th Street, N.W.
Suite 1800
Washington, D.C. 20036
202-730-1300

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I. Introduction and Summary

VoiceStream Wireless Services Corporation (“VoiceStream”) hereby requests that, pursuant to Section 1.41 of the Commission’s rules,¹ the Commission grant it a limited modification of the interim deployment benchmarks set forth in its E911 Phase II waiver.² Both before its waiver and since that time, VoiceStream has been the leading carrier in the development of Phase II location technology for the GSM air interface. VoiceStream continues to be pleased with the results of its development work, particularly with the promising potential for evolutionary improvement in accuracy. The process of developing, specifying, and procuring a Phase II location identification technology – a technology never before deployed – has been technically challenging and has required more extensive testing than previously anticipated. Because many

¹ 47 C.F.R. § 1.41.

² On September 8, 2000, the Commission granted VoiceStream a limited, conditional waiver of Section 20.18 of the Commission’s rules, 47 C.F.R. § 20.18. *See Revision of the Commission’s Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems*, Fourth Memorandum Opinion and Order, 15 FCC Rcd 17442 (Sept. 8, 2000) (“*Waiver Order*” or “*ALI Reconsideration Order*”).

components, both in the network and in handsets, must work together seamlessly, delays in key software or hardware cascade through the entire deployment plan. Significantly, however, VoiceStream remains on its path to full compliance with E911 Phase II requirements.

Although technical difficulties necessitate limited modifications to VoiceStream's benchmarks for the initial deployment of its Network Safety Solution ("NSS") and Enhanced Observed Time Difference ("E-OTD") solution, the modifications that VoiceStream now requests will not affect the Commission's paramount requirement for carriers selecting a handset-based solution -- *95 percent penetration of location-capable handsets among the carrier's subscribers by December 31, 2005*. Rather, the proposed adjustments will ensure the earliest introduction of Phase II services in light of currently anticipated equipment delivery dates and the need to field test E-OTD capable handsets on live network equipment. VoiceStream, while understanding the Commission's sense of urgency, also needs to proceed with a certain level of care to make sure that its initial service rollout is sound so that customers and the network are not put at risk. VoiceStream is not asking for any modification of the Commission's two-stage accuracy requirements.

Because of the additional time VoiceStream and its manufacturers required in the equipment specification development and testing stages, VoiceStream requests that the Commission make the following specific, focused, and limited modifications to its existing deployment benchmarks:

- By June 30, 2002, VoiceStream will deploy its Network Safety Solution ("NSS") throughout its network, without necessity for a Public Safety Answering Point ("PSAP") request;

- By December 31, 2002, VoiceStream will implement E-OTD for all valid PSAP requests pending as of June 30, 2002, and, thereafter, will satisfy any valid PSAP request for Phase II service within six months of its receipt, in full compliance with Commission rules; and
- By September 1, 2002, VoiceStream will make one model of E-OTD handsets available to consumers. VoiceStream will ensure that 50 percent of new handsets activated after February 28, 2003, and 100 percent of new handsets activated after June 30, 2003, will be E-OTD capable.

VoiceStream is *not* requesting any other change in the conditions imposed by the Commission in its September 2001 order. Even with these proposed modifications, VoiceStream will maintain a clear, direct and prompt path to full compliance with the Commission's E911 requirements. Indeed, the NSS will be fully deployed within an additional six months, and VoiceStream will be current on all valid PSAP requests by the end of 2002.

When the Commission granted VoiceStream's waiver last year, it recognized that although GSM "is the standard air interface in most countries worldwide, GSM is used by carriers serving only a small percentage of U.S. wireless subscribers" and "there is evidence to suggest that the development of ALI [Automatic Location Information] capabilities for use by GSM carriers has lagged behind that for carriers using other interfaces that are more widely used in the United States, such as AMPS, CDMA, and TDMA."³ Since its waiver was granted, VoiceStream has continued to conduct critical field tests to develop and validate the E-OTD standard, to demonstrate that it would be possible to develop E-OTD equipment that would likely meet Commission requirements, to further develop handset specifications, and to develop specifications for the deployment of the equipment throughout a commercial network. Once specifications for

³ *Waiver Order*, at 17461-2 ¶ 56.

the technology were sufficiently settled, VoiceStream issued RFPs for necessary equipment. To date VoiceStream has issued approximately \$35 million in purchase orders, and a budget of approximately \$80 million for FY 2002 is pending final management approval.

Thus, VoiceStream's commitment to its NSS/E-OTD solution has not flagged. What *has* changed since the Commission's approval of VoiceStream's waiver -- and what justifies the limited modifications now requested -- is that specification development, lab and field testing of software and hardware, and establishment of interoperability among three network and three primary handset manufacturers have all required more time than VoiceStream and the vendors anticipated. What has also changed is the state of the global economy, particularly in the telecommunications manufacturing sector. The creation of a robust mobile location capability, operational on a network built by four manufacturers and interoperable among multiple handset manufacturers, is a significant engineering and operational feat.⁴ In the case of NSS/E-OTD on the VoiceStream network, it is a feat nigh well accomplished.

It is, in fact, due to VoiceStream's concerted efforts that the development of ALI technologies for GSM has progressed successfully. VoiceStream was the first operator to consult with the Commission regarding its ALI solution and has kept the Commission fully advised of its progress. VoiceStream has shared the results of its tests freely with other operators and manufacturers. VoiceStream's efforts were validated earlier this year

⁴ The Commission, too, has recognized not only that "the E911 deployment schedule was aggressive in light of the need for further technological advancement," but also that its timetables were based on a "*predict[ion]* that ALI technologies would generally be available in sufficient time for carriers to comply." *Request for Waiver by AT&T Wireless Services*, Order, FCC 01-294, CC Docket No. 94-102, at ¶ 6 (rel. October 12, 2001) ("*AT&T Wireless Waiver Order*").

when Cingular Wireless, LLC (“Cingular”) and AT&T Wireless Services, Inc. (“AT&T Wireless”) revealed plans to migrate their systems to GSM-based platforms and accordingly sought waivers to permit use of E-OTD technology.⁵ These announcements put to rest the debate over which Phase II technology the largest North American GSM operators would use. These substantial commitments reduced uncertainty and should provide financial support and incentive for the infrastructure and handset manufacturers to ensure timely delivery of E-OTD components over the coming months.

II. Background

A. The Existing Waiver

Fifteen months ago, the Commission recognized the hurdles surpassed and the challenges remaining in VoiceStream’s implementation of a GSM E911 Phase II solution. In September 2000, the Commission approved VoiceStream’s plan to adopt a hybrid network/handset solution. This plan has two components. First: the implementation of a network-based NSS solution covering *all* network users, immediately upon introduction. Second: the inclusion of E-OTD technology in new handsets and network upgrades, to provide more refined location measurement as the handsets are introduced. In order to pursue this solution, VoiceStream required a waiver of Section 20.18(h)(2) because its E-OTD solution would not immediately meet the

⁵ See, e.g., *AT&T Wireless Services, Inc. Request for Waiver of the E911 Phase II Location Technology Implementation Rules*, CC Docket No. 94-102 (filed April 4, 2001) (“*AT&T Wireless Waiver Request*”); *Cingular Wireless LLC’s Petition for Limited Waiver of Sections 20.18(e)-(h)*, CC Docket No. 94-102 (filed July 6, 2001) (“*Cingular Waiver Request*”).

Commission's fifty-meter accuracy requirements for handsets (though it would exceed the one hundred meter requirement for network solutions).⁶

The Commission granted the waiver based on findings that GSM carriers face limited options and the NSS/E-OTD solution "offers substantial public safety benefits."⁷ Scrutinizing technological development to date, the Commission recognized that as the only major U.S. carrier then committed to a GSM platform, VoiceStream "faces special circumstances."⁸ The Commission found that "NSS/E-OTD may be the only method available for GSM carriers for compliance with Phase II for some time."⁹ This conclusion rested on the fact that location-technology providers indicated they had focused on solutions for analog, CDMA, and TDMA cellular systems, and had not yet begun to test any solution for GSM.¹⁰ Because VoiceStream carried only 3.5 percent of national subscribership in 2000, it is not surprising that manufacturers dedicated greater resources to other solutions.¹¹

The Commission further recognized the substantial public interest benefits that would accrue from implementation of the NSS/E-OTD solution. From the outset, NSS provides ALI enhancements to *everyone* on the network, including roamers and users of

⁶ 47 C.F.R. § 20.18(h)(2) requires that handset-based technologies be accurate to 50 meters 67 percent of the time and 150 meters 95 percent of the time at the time of deployment. VoiceStream sought a slightly relaxed standard for the first two years of its E-OTD handset activations (100 and 300 meters, respectively).

⁷ *Waiver Order*, 15 FCC Rcd at 17463, ¶ 60.

⁸ *Id.* at 17461-62, ¶ 56.

⁹ *Id.*

¹⁰ *Id.* at n. 106 (citing July 6 Meeting *Ex Parte* Summary at 6-7). While GSM is the dominant standard globally, the world market has not supported E-OTD for second-generation applications because other countries have not required Phase II services for public safety organizations.

legacy handsets. This benefit simply will not be available on networks with only a handset-based solution. NSS achieves a marked improvement over the accuracy of Phase I,¹² and VoiceStream has committed to deploying NSS nationwide, even without receipt of a PSAP request. As a condition of the waiver, the Commission imposed an accuracy requirement for NSS of 1,000 meters, or better, for 67 percent of calls, with deployment to be complete by December 31, 2001.

With respect to E-OTD, the Commission required that VoiceStream achieve 95 percent penetration of ALI-capable handsets among its subscribers no later than December 31, 2005, the same date as required of carriers using other air interfaces. The Commission also required that all new E-OTD handsets activated on or after October 1, 2003, comply with an accuracy requirement of 50 meters for 67 percent of calls, and 150 meters for 95 percent of calls. The standard was relaxed for the first two years of deployment to an accuracy level of 100 meters, 67 percent of the time and 300 meters, 95 percent of the time.

A set of waiver requirements was keyed to the Commission's expectation that carriers would begin Phase II service by October 1, 2001. The Commission's rules require VoiceStream, like other carriers, to implement the necessary network or infrastructure upgrades and begin providing Phase II location information by October 1, 2001, or within six months of a PSAP request, whichever is later. They also require

¹¹ Today VoiceStream has approximately 6.3 million subscribers of a total of 128 million nationwide. This renders it the sixth in size, following Verizon Wireless (28 million), Cingular Wireless LLC ("Cingular") (21 million), AT&T Wireless Services (18 million), and Sprint PCS (11 million).

¹² The Phase I rules require location information only at the level of the cell site or base station from which the 911 call originates. 47 C.F.R. § 20.18(d). In contrast, the Commission required that

carriers to begin selling ALI-capable handsets by October 1, 2001, so that they would be available to consumers when the first PSAPs could receive and use Phase II information. Pursuant to its waiver, however, VoiceStream was required to ensure that 50 percent of its handsets newly activated as of October 1, 2001, and 100 percent by March 31, 2002, are ALI capable --- requirements greater than those imposed by rule.¹³

It is these interrelated Phase II timetables -- to begin Phase II service by October 1, 2001, to deploy NSS by December 31, 2001, and to achieve 50 percent and 100 percent E-OTD handset penetration by October 1, 2001 and March 31, 2002, respectively (all dependent on development and delivery of hardware and software from vendors) -- that VoiceStream now seeks to adjust. VoiceStream's request is necessitated by intervening events that it previously reported to the Commission,¹⁴ including delay in availability of technology that the Commission itself has recognized is not ready for deployment.¹⁵

B. Developments of the Intervening Year

VoiceStream (via its acquisition of Aerial Communications, Inc.) began to focus on the development of E-OTD as a solution for GSM in early 1999, when it became apparent that no other solution would likely satisfy the Commission's requirements for

VoiceStream's NSS solution be accurate to 1,000 meters 67 percent of the time. *Waiver Order*, 15 FCC Rcd at 17463, ¶ 61.

¹³ The general rule for handset-based solutions requires the following: introduction of one entry-level E-OTD capable handset by October 1, 2001; 25 percent of activations by December 31, 2001; 50 percent of activations by June 30, 2002; and 100 percent of activations by December 31, 2002. 47 C.F.R. § 20.18(g)(1).

¹⁴ See e.g., *Ex Parte* Presentation of VoiceStream Wireless, CC Docket No. 94-102 (filed July 6, 2001) ("July 6 *Ex Parte*").

ALI. One of its infrastructure vendors, Nokia, also began focusing in earnest on E-OTD in 1999. Field tests conducted in early 2000 were necessary simply to demonstrate that E-OTD was a solution *potentially* capable of meeting the Commission's regulatory requirements, including the fifty-meter handset accuracy requirement that the Commission announced in October 1999.¹⁶

Since its waiver was granted, VoiceStream has continued to push location technology from engineering concept to operational reality. Over the course of the past year, VoiceStream has been in continuous contact with the Commission, reporting on the development and testing of the many components of its Phase II solutions.¹⁷ As described more fully in its reports and *ex parte* notices, VoiceStream and its vendors have made tremendous progress on the NSS and E-OTD solutions during this time. Through lab and field trials, VoiceStream and its technology vendors have found that E-OTD will very likely meet, and potentially exceed, the Commission's initial accuracy requirements. VoiceStream also has worked to incorporate the priorities of the public safety community in its Phase II deployment plan.¹⁸

¹⁵ *Request for Waiver by Cingular Wireless LLC, Cingular Order*, CC Docket No. 94-102, FCC 01-296 (rel. October 12, 2001), at ¶ 17 (granting Cingular's request to complete, by December 31, 2002, all outstanding valid PSAP received by July 1, 2002).

¹⁶ *Revision of the Commission's Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems*, Third Report and Order, 14 FCC Rcd. 17388 (1999).

¹⁷ VoiceStream has filed four reports and seven written *ex parte* presentations with the Commission since its waiver was granted. (The *ex parte* presentations represent more than two dozen meetings and telephone conferences between VoiceStream and Commission staff.) *See, e.g.* VoiceStream Wireless First Semi-Annual Report, CC Docket No. 94-102 (filed October 2, 2000); VoiceStream Wireless Report on Implementation of Phase II Automatic Location Information, CC Docket No. 94-102 (filed November 9, 2000); VoiceStream Wireless Second Semi-Annual Report, CC Docket No. 94-102 (filed April 2, 2001); VoiceStream Wireless Third Semi-Annual Report, CC Docket No. 94-102 (filed October 2, 2001).

¹⁸ VoiceStream has shared its deployment plans with the Association of Public Safety Communications Officials ("APCO"). VoiceStream will follow APCO's "Project LOCATE" guidelines once it is able to begin delivering Phase II data.

Developing, testing and revising this mobile location technology has been an iterative process, involving constant adjustment and refinement. For example, although Stage I of the E-OTD field trials in Houston, Texas, had been completed by the time the Commission granted the waiver, VoiceStream and location technology vendor Cambridge Positioning Systems (“CPS”) launched Stage Two trials in Fall 2000. Among other things, Stage Two tested E-OTD location measurements during live calls and from calls made inside buildings. These tests identified problems with test mobile devices for which a solution was developed, and then tested, in March 2001.¹⁹ As another example, VoiceStream in March 2001 initiated its first trial of an NSS system in Miami, Florida.²⁰ This trial helped to verify that NSS would meet the Commission’s accuracy requirements. By April 2001, two VoiceStream handset vendors had begun testing prototype handsets on the Houston field trial E-OTD network.²¹

It is important to remember that there was substantial uncertainty, even after the Commission granted VoiceStream’s waiver, about the primacy of E-OTD or other technology as the most achievable location identification solution for the GSM air interface. Indeed, even as of September 2000, one of VoiceStream’s three infrastructure vendors had not firmly agreed to offer E-OTD enhancements for its systems. As another example, in November 2000, Cingular indicated to the Commission that it would use assisted GPS (A-GPS) solutions rather than E-OTD for ALI.²² Subsequently, it reported

¹⁹ VoiceStream Second Semi-Annual Report, CC Docket No. 94-102 (filed April 2, 2001) at 5.

²⁰ *Id.* at 3.

²¹ *Id.* at 4.

²² Cingular Wireless, LLC, Report on Implementation of Wireless E911 Phase II ALI, CC Docket No. 94-102 (filed November 9, 2000).

difficulties implementing A-GPS.²³ With North American GSM operators potentially pursuing different location identification solutions, the Houston E-OTD tests were critical to assure manufacturers that E-OTD could eventually meet Commission requirements. Ultimately, of course, in July 2001 Cingular announced that it too would implement E-OTD.

By May 2001, even though it had not concluded the Houston field trials, VoiceStream had developed sufficient information to allow it to issue a Request for Pricing (“RFP”) to its equipment vendors, requesting the deployment of NSS/E-OTD systems to meet the waiver requirements. At that time, VoiceStream received full technical and commercial details of the vendor’s proposed systems together with projected dates that equipment would be available for lab and field testing and network-wide deployment. In June and July, Nortel and Ericsson informed VoiceStream that development of network equipment was taking more time than originally anticipated.²⁴ Noting that critical testing had not been conducted for its NSS components, Nortel explained:

Interworking among multiple parties and technologies is key to successful delivery of location information to the PSAP. Not only must the multiple elements making up the core wireless networking technology interwork, but the core wireless networking technology must interwork with the technology contributions from the other parties, such as the Local Exchange Carrier (and ALI interface) and location technology solution vendors, needed for the successful transmission of the E911 Phase 2 location information.²⁵

²³ Letter of Brian Fontes, Vice President-Federal Relations to Magalie Roman Salas, Secretary, FCC, CC Docket No. 94-102 (filed January 30, 2001).

²⁴ July 6 *Ex Parte*, Attachments 2 and 3.

²⁵ Letter from Tony Smith, Nortel Networks, to Brian O’Connor, VoiceStream Wireless Corp. (June 1, 2001). July 6 *Ex Parte*, Attachment 1.

Ericsson, stating that “carriers deploying other standards will also face the challenges of rolling out equipment in commercially available quantities in time periods specified by [the Commission’s] E911 Phase II requirements,”²⁶ indicated that it could not deliver E-OTD network components before the first quarter of 2002. Ericsson predicted that rollout on a regional basis would take a minimum of 12 months beyond the early 2002 delivery.

Based on what was then the most current information from its network vendors and its principal handset manufacturers (Motorola, Ericsson, and Nokia), in July 2001, VoiceStream met with Commission staff and filed a detailed revised timetable for deployment.²⁷ VoiceStream projected that it would be able to complete NSS deployment around year-end,²⁸ although the manufacturers’ revised availability dates for NSS – ranging from November 2001 to January 2002 – indicated that for a least one manufacturer NSS deployment would be close, but not prior, to December 31, 2001. Moreover, although VoiceStream still hoped to receive one or two models of handsets by October 1, 2001, it made clear that E-OTD could only be deployed in a “limited fashion” in 2001. Availability for the rest of E-OTD ranged from March to May 2002.²⁹

The fact that unforeseen obstacles arose as vendors grappled with location technologies and integrating those technologies with other network equipment is not at all surprising, especially as the Commission’s E911 requirements presented carriers and

²⁶ *Id.*, Attachment 2.

²⁷ July 6 *Ex Parte*.

²⁸ *Id.* at 1.

²⁹ July 6 *Ex Parte*, Slide 4.

manufacturers with a complicated directive and no clear “off-the-shelf” technological solution. Moreover, as a legacy of its history arising from the merger of four different companies (*i.e.*, Omnipoint Corporation, Aerial Communications, Inc. and Powertel, Inc. and VoiceStream) each with unique infrastructure configurations, VoiceStream had to rely on three different infrastructure vendors – Ericsson, Nortel and Nokia – to integrate E-OTD technology into their network components, and to ensure interoperability among components and manufacturers. Ericsson and Nortel relied on CPS and Nokia used internal resources to develop its own underlying E-OTD technology. Thus, after VoiceStream and CPS conducted the Houston field trials, the technology had to be transferred to the network infrastructure manufacturers for integration. CPS shared information with Nokia, even though Nokia was developing a proprietary E-OTD solution. Further, VoiceStream uses several handset vendors (including Motorola, Nokia and Samsung), all of whom must design and test their products against the equipment being produced by the network manufacturers. CPS has made a test bed available in Cambridge, England, that these handset manufacturers are using to refine their E-OTD handset software.

Delays in specification and development of critical equipment have cascaded through the entire deployment process. Because components must interoperate, there is a dependency, during testing and development, of each component upon the others. At any location in the network, new hardware and software must be integrated with modified elements and the existing network, the functionality of each piece affecting all of the others. And handsets must work with the systems of not only all three VoiceStream

network infrastructure vendors, but also all other GSM network vendors (*e.g.*, Lucent and Siemens), in order to support roaming worldwide.

The NSS and E-OTD solutions use the same basic data delivery infrastructure. In order to implement both NSS and E-OTD, new software is required in two major components of the existing network, the **Mobile Switching Center** (“MSC”), which provides the digital access and cross-connect system, and the **Base Station Controller** (“BSC”), which provides the control and supervisory functions for the base stations. In addition, a new element, the **Serving Mobile Location Center** (“SMLC”), which performs location calculations for both NSS and E-OTD, must be installed.³⁰ A delay in any one of these elements will delay the deployment of the NSS. Moreover, because each manufacturer develops the BSC, MSC, and SMLC hardware and software upgrades for use with its own existing equipment, the successful development of upgrades for one type of equipment for one manufacturer does not mean that those components can be ported to the corresponding equipment of another manufacturer. Each manufacturer must successfully complete each stage of the process.

For E-OTD, in some cases the SMLC must be upgraded beyond the level necessary to provide NSS and a new piece of equipment, the **Location Measurement Unit** (“LMU”), must be ready for deployment. The LMU is a small measurement receiver located at each base station to measure the relative time differences among base

³⁰ The SMLC captures data from the handset and the relevant network elements (Mobile Switching Center, Base Station Controller and Location Measurement Unit) and computes the positional information when requested by the **Gateway Mobile Location Center** (“GMLC”). The GMLC is another new network element, providing the interface between VoiceStream’s network and the PSAPs. It initially triggers the request for a positional request and subsequently presents the calculated latitude/longitude information to the PSAP.

stations. Delays in providing any of the basic elements necessary for NSS, or in providing an upgraded SMLC or the LMU, will delay deployment of E-OTD.

E-OTD capable handsets pose another complication. Before handsets can be released to the commercial market, they must be tested on operational E-OTD upgraded networks. Network trials with pre-production handsets are underway in Washington, D.C. and Seattle/Bellevue, Washington, using development infrastructure equipment.³¹ As a minimum test of interoperability, a handset will not be approved for commercial production and release until it has been tested on at least one manufacturer's commercial E-OTD system in the field and another manufacturer's E-OTD system in the lab. Accordingly, delay in getting at least one commercial E-OTD system up and running in the field, or delay in delivering equipment for a second system to the lab, translates to delays in testing and certifying handsets for commercial deployment.

This testing cannot be overlooked or short-circuited. The dangers of introducing E-OTD handsets before they are fully tested involve not only the risk of malfunctioning handsets, but also the risk of potentially serious disruptions to any GSM network in the world where that handset may be taken. And because these units are sold to millions of consumers nationwide, the potential for a recall is no substitute for complete testing up-front.

Interoperation of component equipment is a time-consuming fact of life for wireless network upgrades. Major upgrade integration rarely, if ever, has been

³¹ These trials test the E-OTD basic positioning function but do not look at the network signaling requirements nor generate the E-OTD positioning automatically in response to an emergency call.

conceived, designed, tested and deployed in as short a period of time as it has been for E-OTD.

The chart below shows the progression, over the past six months, in the estimated availability dates of VoiceStream’s infrastructure vendors for the critical network software and hardware components discussed above. These dates represent when the components have passed testing by both the vendor and operator on a live network and in a laboratory setting and are ready for mass deployment in VoiceStream markets. As can be seen, some equipment has already been delivered, and other components will be completed shortly. Although some dates slipped between May 2001 and October 2001, VoiceStream worked with its vendors to improve some delivery dates since the October estimates were provided.

Manufacturer	Estimated Delivery Dates		
	May 2001	October 2001	Current
Ericsson			
R9.0 MSC/VLR	10/01/01	10/01/01	02/01/02
R9.0 BSC	11/01/01	11/01/01	delivered
SMLC/MPS 4.0 (NSS)	10/01/01	01/01/02	02/01/02
LMU Type A (E-OTD)	2/28/02	12/15/01	01/15/02
SMLC/MPS 5.0 (E-OTD)	2/28/02	07/31/02	06/01/02
Nortel			
MSC –GSM13	09/01	09/01/01	delivered
BSC-V12.4+	06/01	12/10/01	01/21/01
SMLC-NSS	01/02	02/21/02	02/21/02
SMLC-E-OTD	04/02	07/20/02	04/26/02
LMU-A (E-OTD only)	05/02	06/01/02	05/20/02
Nokia			
S10– BSC/SMLC combined	12/15/01	01/15/02	02/21/02
MSC	delivered (M10)	11/15/01 (M11)	delivered
LMU B (E-OTD)	11/15/01	11/15/01	01/11/02

Of course, having equipment available for installation is not the same as having it installed. Implementing E-OTD requires installations in switching offices and at cell

sites. Cell site changes can, in some cases, require local zoning and building code approvals and landlord consent. VoiceStream generally expects that network installations and modifications will take ninety days from the date a manufacturer makes equipment generally available, though any particular site or locality may take longer. Likewise, once a handset model is approved for distribution, it must then move through distribution channels.³²

Based on the current dates, many of which are imminent, VoiceStream is confident that it will begin deployment of NSS for all of its manufacturers in the March 2002 timeframe and complete deployment in June 2002. Simultaneously, the vendors will be working on live market tests of E-OTD, with Nokia beginning in February 2002, Nortel in May 2002, and Ericsson in June 2002. Should those tests progress successfully, VoiceStream will proceed with E-OTD rollout on a market-by-market basis, working with APCO's Project LOCATE Guidelines. By December 2002, all PSAP markets with valid requests as of June 2002 should be operational.

With respect to handsets, because the live network must be in place for at least one network vendor and lab testing completed with another, VoiceStream cannot begin approvals for commercial release until June 2002 at the earliest. Motorola and Nokia have represented that they will deliver E-OTD capable handsets for testing with

³² VoiceStream has consistently apprised the Commission of the time necessary for network installations and handsets distribution. For example, in its November 2000 Report, VoiceStream explained that in order for it to meet the December 31, 2001 date for NSS to be in full operation, "its network vendors must deliver all of the necessary equipment [SMLC, MSC, and BSC] to VoiceStream during the third quarter of 2001. VoiceStream needs a minimum of ninety days to install and test the equipment throughout its nationwide network." Furthermore, to meet an October 1, 2001 deadline for satisfying PSAP requests filed on or before April 1, 2001, VoiceStream would "require that its vendors deliver by July 1, 2001, a sufficient number of LMUs so that it has time to install and test LMUs within the requesting PSAP's service area." VoiceStream Wireless Report on Implementation of Phase II Automatic Location Information, CC Docket No. 94-102, filed November 9, 2000), at 12.

VoiceStream in January of 2002. Contingent upon completion of the requisite network testing during the second quarter of 2002, both manufacturers have committed to commence volume shipments of E-OTD capable handsets at the start of the third quarter of 2002. (Further, Motorola and Nokia have committed that after April 1, 2002 *only* E-OTD capable handsets will be submitted for VoiceStream's approval.) Pushing handsets through distribution channels and into the hands of consumers may take up to eight weeks (*i.e.*, up to September 1, 2002). Based on experience, VoiceStream has confidence that it will be achieve 50 percent new activations of handsets with E-OTD capability by February 28, 2003, and 100 percent by June 30, 2003.

C. *The Modification Proposal*

VoiceStream requests authorization for the following modifications to its existing waiver:

- (1) The NSS solution will be fully deployed by June 30, 2002, without regard to PSAP request;
- (2) All valid PSAP requests for Phase II service pending as of June 30, 2002, will be fully implemented by December 31, 2002, and valid PSAP requests received after June 30, 2002, will be implemented in six months of receipt, in full compliance with Commission rules; and
- (3) One E-OTD handset model will be available to consumers by September 1, 2002; 50 percent of new handsets activated after February 28, 2003 will be E-OTD capable; and 100 percent of new handsets activated after June 30, 2003 will be E-OTD capable.

The dates listed above remain challenging but are achievable. At this point, the manufacturers have a much clearer picture of the path to full Phase II compliance than they did, certainly in 1996, but also 15 months ago, when the Commission approved VoiceStream's waiver. Better still, the path today is much shorter. Furthermore, the Commission has already recognized that infrastructure deployment any earlier is not

feasible because these infrastructure deployment dates are the same as those it granted to Cingular.

Most importantly, the modifications listed above relate to *interim deployment benchmarks* and do not interfere with VoiceStream's satisfaction of what Chairman Powell has indicated is the Commission's "one objective: the full availability of enhanced 911 by the original deadline established by the Commission."³³

III. Justification of the Modifications Requested

A. The Commission Should Grant the Requested Modifications Because Extant Deadlines Were and Still Are Technically Impossible and VoiceStream's Plan As Modified Continues to Be In the Public Interest

When the public interest requires, the Commission has the authority to waive a regulation, such as Section 20.18, that is not required by statute. Indeed, the Commission *must* grant a waiver where failure to do so would be an abuse of discretion.³⁴ Section 1.3 provides that that the Commission may waive its rules "for good cause shown."

Generally a waiver is appropriate if "special circumstances warrant deviation from the general rule and such deviation will serve the public interest."³⁵

³³ Separate Statement of Chairman Michael Powell, *Revision of the Commission's Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems, requests for Waiver by Cingular Wireless LLC, Sprint Spectrum L.P. d/b/a Sprint PCS, Verizon Wireless, AT&T Wireless Services, Inc., Nextel Communications, Inc.*, Orders, Docket 94-102 (rel. October 12, 2001). Likewise, Commissioner Abernathy has observed that the "critical date for E911 Phase II deployment is December 31, 2005 when 95 percent of all handsets must be E911 Phase II compatible and meet our accuracy requirements." Separate Statement of Commissioner Kathleen Abernathy, *Revision of the Commission's Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems, requests for Waiver by Cingular Wireless LLC, Sprint Spectrum L.P. d/b/a Sprint PCS, Verizon Wireless, AT&T Wireless Services, Inc., Nextel Communications, Inc.*, Orders, Docket 94-102 (rel. October 12, 2001) ("Separate Statement of Commissioner Abernathy").

³⁴ *NTN Bearing Corp. v. U.S.*, 74 F.3d 1204, 1207 (Fed. Cir. 1995).

³⁵ *Northeast Cellular Telephone Co. v. FCC*, 897 F.2d 1164, 1166 (D.C. Cir. 1990). *See also, WAIT Radio v. FCC*, 418 F. 2d 1153, 1159 (D.C. Cir. 1969).

Importantly, the Commission has consistently concluded that a waiver of a regulatory deadline is appropriate when noncompliance “is due to circumstances beyond the licensee’s control.”³⁶ For example, the Commission granted numerous waivers of the TTY deadlines for digital wireless systems because there was no solution available for carriers to implement.³⁷ As one network vendor aptly stated recently, “A carrier simply cannot implement a [Phase II] solution before it is available.”³⁸ Indeed, the Commission plainly lacks authority to require wireless carriers to implement technical requirements that have not yet been fully developed.³⁹

The Commission has recognized throughout this proceeding that waivers and extensions of its five-year Phase II deadline may become necessary due to the complexity of developing a new technology. The Commission noted in its first order in this docket

³⁶ See, e.g., *McElroy Electronics*, 13 FCC Rcd 7291, 7295 ¶ 8 (1998) (“We grant extensions of construction deadlines when the failure to construct is due to circumstances beyond the licensee’s control.”); *Norris Satellite*, 12 FCC Rcd 22299, 22303 ¶ 9 (1997) (“This non-contingent requirement has been strictly construed and only waived when delay in implementation is due to circumstances beyond a licensee’s control.”); *21st Century Telesis*, 15 FCC Rcd 25113 ¶ 18 (2000) (“The Division has granted waivers of the upfront payment deadline in cases where the applicant’s actions demonstrated that, but for reasons outside the control of the applicant, it would have been able to meet the upfront payment deadline.”).

³⁷ See, e.g., *Revision of the Commission’s Rules To Ensure Compatibility with Enhanced 911 Emergency Calling Systems Memorandum Opinion and Order*, 12 FCC Rcd. 22665 (1997) (“*First E911 Reconsideration Order*”). The Commission observed, “Despite our reluctance to delay the implementation deadline for TTY compatibility requirements, . . . the Commission must also recognize the present existence of technical barriers.” *Id.* at 22693 ¶ 55.

³⁸ Letter from Diane Law Hsu, Lucent Corporate Counsel, to Magalie Salas, FCC Secretary, Docket No. 94-102, at 1 (Aug. 30, 2001). Lucent further explains, “due to the complexity of the solutions and the need for complete testing between handset, switch and other vendor software and equipment, *no manufacturer, including Lucent, has an E911 solution that will be commercially available in time for carriers to meet the current phase ii deadline.*” (emphasis added).

³⁹ As noted in paragraph 6 of the *Waiver Order*, the Commission initiated this proceeding in 1994 “pursuant to our authority under Sections 301 and 303(r) of the Act.” Those provisions, of course, merely authorize the Commission to adopt rules “necessary to carry out the provisions of this Act,” which does not require the provision of E911 service. In the Wireless Communications and Public Safety Act of 1999, Pub. L. No. 106-81, Congress specifically authorized the Commission to “encourage and support” the development of wireless 911 networks. *Id.*, § 3(b), adopting 47 U.S.C. § 615. However, that provision

that there may be circumstances “where deployment of E911 may not be technically or economically feasible within the five-year deadline. We believe that these cases can be dealt with through individual waivers.”⁴⁰ Subsequently, the Commission “recognize[d] the technical challenges for the new digital carriers” and reiterated that “if a covered carrier cannot comply with the Phase II requirements by October 1, 2001, despite its good faith efforts, such carrier may file a waiver request to us along with its implementation plan.”⁴¹ And only last year, the Commission acknowledged that “technology-related issues” may render it impossible for a carrier to deploy Phase II by October 1, 2001.⁴²

When the Commission approved VoiceStream’s Phase II plan and granted its waiver request, it observed that several important public interest benefits would accrue from that decision. For example, VoiceStream committed to deploy *two* Phase II solutions: one, a “safety net” solution (NSS) available to all subscribers and roamers, regardless of handset used; and the other, a highly accurate handset solution (E-OTD) that would eventually be phased in for all of VoiceStream’s customers.

The same remains true today. VoiceStream will implement the NSS solution and the highly accurate E-OTD handset based solution, and it will do so promptly. Both the viability and accuracy of VoiceStream’s solutions have been established. Further, VoiceStream has made significant progress toward implementing Phase II. Since the

specifically states that it does not “authorize or require the Commission to impose obligations or costs on any person.”

⁴⁰ *Revision of the Commission’s Rules To Ensure Compatibility with Enhanced 911 Emergency Calling Systems*, Report and Order and Further Notice of Proposed Rulemaking, 11 FCC Rcd 18676, 18718 ¶ 84 (1996) (“*First E911 Report and Order*”). See also *id.* at 18710 ¶ 66 and 18711 ¶ 69.

⁴¹ *First E911 Reconsideration Order*, 12 FCC Rcd 22665, 22724 ¶ 122 (1997).

⁴² *Waiver Order* at ¶ 43.

Commission recognized that E-OTD “may be the only solution available to GSM carriers,” it has been adopted as an industry standard for GSM.⁴³ Two other major U.S. service providers, Cingular and AT&T Wireless, have now announced their adoption of the E-OTD solution for their GSM platforms.

It is unfortunate that delays have set back the schedule for achieving these benefits, but they remain fully within our grasp. Under the terms of the requested modifications, NSS will be available next summer and, soon after that, all handsets that are activated will be E-OTD capable. And, of course, the Commission’s ultimate objective for 95 percent E-OTD penetration will be fully and timely satisfied.

The Commission recently granted Cingular a waiver to implement E-OTD on its GSM network, adopting deployment benchmark dates in recognition of the fact that the necessary equipment simply is not yet available.⁴⁴ VoiceStream's network infrastructure vendors -- Nokia, Nortel and Ericsson -- are also Cingular network infrastructure vendors, and the same technological difficulties afflict both carriers. As laudable as the Commission’s objectives for E911 are, it is true that no adequate technology existed at the time the requirements were adopted, and that the technology is still being developed into a commercially deployable form. As discussed above, VoiceStream is far from having sole control over the process of development and implementation, but is reliant upon the ability of its technology developers and manufacturers to develop heretofore

⁴³ 3GPP TS 43.059 V4.1.0, Functional Stage 2 Description in GERAN. The functional equivalent of E-OTD for 3G, known as “OTDOA-IPDL,” has been adopted as a standard as well. 3GPP TS 25.305 V5.2.0.

⁴⁴ *Cingular Order* at ¶ 16-17.

non-existent solutions, and the cooperation of the PSAPs, the LECs, local building/zoning code authorities, and cell site landlords.

B. The Modifications, Like the Original Waiver Request, Satisfy the Standards Set Forth in the Fourth Memorandum Opinion and Order

In the *ALI Reconsideration Order*, the Commission articulated specific criteria for waivers of Section 20.18. Though it cautioned that waivers should not generally be warranted, the Commission acknowledged that “technology-related issues” or “exceptional circumstances”⁴⁵ could necessitate a delay in initial implementation. The Commission indicated that a waiver request should be “specific, focused and limited in scope”; it should demonstrate that the carrier has undertaken concrete steps to come as close as possible to full compliance; and it should articulate a “clear path to full compliance.”⁴⁶ The Commission found that VoiceStream satisfied these standards when it granted its waiver. The proposed modifications satisfy them as well.

1. Specific, focused and limited in scope

VoiceStream requests three limited modifications to its plan, each of which is necessitated by the lack of necessary equipment. First, a six-month extension on achieving full deployment of its NSS solution. Second, a fifteen-month extension on implementing all valid pending PSAP requests for Phase II service. Third, a fifteen-month extension for achieving the 100 percent activation rate for E-OTD capable handsets. During these periods, VoiceStream expects to receive and test the equipment

⁴⁵ *ALI Reconsideration Order*, at ¶ 43. See also, *First E911 Report and Order*, 11 FCC Rcd at 18718 (1996).

⁴⁶ *ALI Reconsideration Order*, at ¶ 44.

necessary for both the NSS and E-OTD deployments and verification of the E-OTD handsets on the commercial E-OTD network.

Each modification is expressly linked to identified delays in technology development and testing, and each reflects the revised assessments of the vendors. These delays generally flow from challenges in the development of critical network infrastructure equipment, which the Commission recognized in the *Cingular Waiver*. Finally, each requested modification establishes a specific timetable for the accomplishment of each objective. VoiceStream has placed approximately \$35 million in firm purchase orders for E-OTD infrastructure equipment and expects to commit approximately \$80 million for E-OTD infrastructure and handsets in 2002. Thus, the requested modifications are specific, focused and limited in scope.

2. As close as possible to full compliance

As evidenced at length in the discussion above, there can be no question that VoiceStream has “taken concrete steps toward full compliance.” VoiceStream is neither a hardware/software developer, nor a systems integrator, but it has undertaken the initiative to lead the development of E-OTD. VoiceStream has selected its vendors and issued purchase orders for equipment. It has diligently conducted complex trials to ensure the functionality and accuracy of the technology -- lab trials, field trials, trials with commercial grade equipment, and trials on a live network. VoiceStream has worked side-by-side with its vendors, pressing them for rapid development and deployment.

3. With a clear path to full compliance

As stressed throughout, the modifications affect *only interim benchmarks* on the path to full compliance. VoiceStream has not wavered from that path, and it firmly

anticipates meeting its accuracy benchmarks and its ultimate penetration benchmarks as previously established by the Commission.

It is valuable to recall that when the Commission adopted the E911 rules in 1996, it did so in cooperation with the wireless service providers and the public safety community. *All* of the parties wanted E911 to become a reality for wireless subscribers. Yet at the time, “[i]t was a tremendous undertaking, full of uncertainty about the technology, the timing, and the costs.”⁴⁷ The Commission since has reconfirmed that its original schedule -- imposed at a time when there was no known technological solution -- was “aggressive” and acknowledged that it was “predict[ing]” that a solution would be available in time for the deadlines it selected.⁴⁸ Furthermore, PCS companies were just launching their businesses, building networks, and fighting for financing and customers. Throughout the implementation process, manufacturers and carriers have educated the Commission about the steps required and cautioned about the difficulty in meeting these timetables.

The process of making ALI real has been at its best when the parties -- the Commission, service providers, technology developers, vendors, PSAPs, LECs, and building and zoning authorities -- have recognized what each has to contribute and have worked in tandem. It has been an evolutionary process, requiring cooperation and flexibility in the face of unforeseen developments. As an example, when the E911 rules were adopted, it was widely assumed that the ALI solution would be based in the network. When it became apparent that a handset-based solution was also viable, the

⁴⁷ *Separate Statement of Commissioner Abernathy*, at 1.

⁴⁸ *AT&T Wireless Waiver Order*, at ¶ 6.

Commission wisely revised its rules to accommodate and reflect that technological development.

The modifications VoiceStream now requests are part of that iterative process. By granting them, the Commission will take notice of the real challenges in technological development and will facilitate an orderly, efficient process to achieve full deployment of Phase II services in the very near term.

IV. Conclusion

VoiceStream has long been pushing E-OTD from the drawing board to operational reality. Through hard work, innovation, and investment of time and money, the Commission's vision of highly refined mobile location technology is now taking shape. It has, however, proved to be a highly complex engineering and operational project. VoiceStream requests these limited modifications to its waiver so that it can complete its task, and deliver the Phase II location identification solution that the Commission has sought.

Respectfully submitted,

VOICESTREAM WIRELESS CORPORATION

/s/

Brian T. O'Connor, Vice President
Legislative and Regulatory Affairs

Robert Calaff, Corporate Counsel
Governmental and Regulatory Affairs

401 9th Street, N.W.
Suite 550
Washington, D.C. 20004
202-654-59

/s/

John T. Nakahata
Karen L. Gulick
HARRIS, WILTSHIRE & GRANNIS, LLP
1200 18th Street, N.W.
Suite 1800
Washington, D.C. 20036
202-730-1300

Counsel to VoiceStream Wireless Corporation