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

In the Matter of	)	
	)	
Request of PTC-220, LLC for Waivers of Certain 220 MHz Rules	)	**WT Docket No. 08-256**
	)	
	)	
Construction Progress Report	)	

To: Chief, Wireless Telecommunications Bureau

PTC-220, LLC
CONSTRUCTION PROGRESS REPORT

I. INTRODUCTION

PTC-220, LLC ("PTC-220") submits this Construction Progress Report to satisfy the requirements of paragraph 16 of the Memorandum Opinion and Order ("*Waiver Order*") adopted by the FCC on June 25, 2009.[1] This Report details the progress made during the past six months in implementing the Systemwide Build-out Plan (the "Build-out Plan") submitted by PTC-220 on November 1, 2010, in the above-referenced docket. The Build-out Plan explained how PTC-220's 220 MHz licenses ("Licenses") would be used in deploying a nationwide positive train control ("PTC") system, as required by Federal statute. The construction of the Licenses will be undertaken in large part by each of PTC-220's member railroads, although PTC-220 will also coordinate construction activities by non-member railroads.

[1] *Request of PTC-220, LLC for Waivers of Certain 220 MHz Rules*, Memorandum Opinion and Order, 24 FCC Rcd 8537 (2009).

II. SITE BUILD-OUT ACTIVITY

As reported in Section II.B of the Build-out Plan, the actual installation of fixed PTC radios (bases and wayside stations) could not begin in earnest until production quantities were available some time in 2012. Since PTC-220 filed its last Construction Progress Report on May 1, 2012, production radios have become available, and most PTC-220 member railroads began the process of procuring and installing them. In parallel, all PTC-220 member railroads have continued to prepare sites to accept the radio equipment as it is received. This preparatory work has included: coverage predictions, site selection, installation of antenna systems, upgrade of site power supplies, site pre-wiring, backhaul planning, and clearing rack space for the PTC radios. The table set forth below reflects, by state and member railroad, the number of base station sites where this preparatory work is complete or substantially complete, as well as where radios have been installed. In many cases, the installed radios are on the air as part of various testing programs, although in other cases, the installed radios have been tested on the air, but await a final coordinated area frequency plan before being placed in service.

State	BNSF		CN		CP		CSX		KCS		NS		UP	
	Site Prep	Radio	Site Prep	Radio	Site Prep	Radio	Site Prep	Radio	Site Prep	Radio	Site Prep	Radio	Site Prep	Radio
AL	3						17				12	7		
AR	4												1	
AZ	17	17											6	
CA	42	26											22	2
CO	8	8											5	
FL							26	3						
GA							12	1			31			
IA	26	22			22								14	
ID	8												2	
IL	13	8	14		4		7	1			4		23	1
IN			3				38				9			

State	BNSF		CN		CP		CSX		KCS		NS		UP	
	Site Prep	Radio	Site Prep	Radio	Site Prep	Radio	Site Prep	Radio	Site Prep	Radio	Site Prep	Radio	Site Prep	Radio
KS	20	15											3	1
KY			1				39	1			8			
LA	5	5	8						26		2	2	10	
MA							12							
MD							12	1			2	1		
MI			6				7							
MN	30	10			4									
MO	32	26			1				3				16	
MS			8						15		10	10		
MT	50													
NC							32	15			15	1		
ND	21	11			10									
NE	17	17											27	
NJ							2							
NM	25	25											5	
NY					14		39							
OH							38	4			6	5		
OK	15	12												
OR													6	
PA			1		9		12				7	3		
SC							5				15	9		
SD	2													
TN	2		6				21	1			25			
TX	15	10							21				37	
UT													5	
WA	46	14											4	
WI													2	
WV							77							
WY													18	
VA							43				19			
Total	**401**	**226**	**47**	**--**	**64**	**--**	**439**	**27**	**65**	**--**	**165**	**38**	**206**	**4**

Totals	
Site Prep	**Radio**
1387	**295**

In addition to base stations, fixed wayside stations, as described in Section II.C of the Build-out Plan, will be deployed along PTC rights-of-way. Preparatory work similar to that which has been performed for the base stations is proceeding for these wayside sites, and many wayside radios have already been installed. Likewise, preparation and development of the PTC mobile radios that will be used onboard the locomotives continue to progress in due course.

III. TTCI ACTIVITIES

As PTC-220 has described in its prior reports to the Commission, Transportation Technology Center, Inc. ("TTCI") is PTC-220's contractor for technical support services related to PTC. These services include RF network design as well as management and coordination of PTC-220's spectrum holdings.

One of TTCI's first assignments was to assess the PTC spectrum needs in two key areas: Chicago and the Los Angeles Basin. These tasks were finished in early December 2011. Since PTC-220 filed its last Construction Progress Report in May 2012, TTCI has finished its spectrum needs analysis for Kansas City (KS and MO), and is now nearing completion of the St. Louis, MO analysis.[2] These cities represent the next tier of rail complexity and congestion, after Chicago. TTCI is in the beginning stages of analyses for New Orleans, LA; Toledo, OH; and the New York/Newark area.

TTCI is also actively working on extensions to its Frequency Application Management System ("FAMS"). FAMS will be the system used to hold and manage information about PTC networks, including frequency and slot assignments. TTCI has achieved some important

[2] In the May 2012 Construction Progress Report, PTC-220 explained that TTCI was also conducting a spectrum needs analysis in Philadelphia. Since that filing, however, TTCI discovered that Philadelphia did not meet the criteria for a PTC congested area because it did not have three or more PTC operators in the area. Accordingly, a spectrum needs analysis for that area is not necessary.

milestones in this effort, including the development of an operating interface with new tools that are being created to aid in network design.[3]

IV. EQUIPMENT DEVELOPMENT

As noted in PTC-220's May 2012 Construction Progress Report, Meteorcomm LLC ("Meteorcomm")[4] has secured Part 90 Equipment Certifications for all four radio models—wayside, locomotive, and two base models with different power supply voltages.[5] Since that time, Meteorcomm has officially frozen the hardware designs and has released them for manufacture.

There are currently two manufacturers set up for production of the PTC radios, and production units have become available. The radios are shipping with software that supports functionality sufficient for testing and basic PTC operation, while enhanced functionality will be offered in a series of scheduled software updates to be released in the future.

V. FIELD TESTING

Most PTC-220 member railroads are involved in PTC testing programs, either individually, in collaboration with other member or non-member roads, or both. For example, Norfolk Southern is preparing a 200-mile test route in North Carolina and South Carolina for an extended test program to begin in early 2013 and will conduct joint testing with CSX in the Charlotte, NC, area. Similarly, in August of this year, Union Pacific, BNSF, and Metrolink conducted comprehensive joint testing in the L.A. basin specifically to test handoff and message

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[3] *See infra* Section VII.

[4] Meteorcomm is PTC-220's radio design vendor responsible for developing hardware, firmware, and software for the PTC radios (base, wayside, and locomotive).

[5] The FCC IDs for these radios are BIB63010, BIB63020, BIB63030-24, and BIB63030-48.

routing functionality. Canadian Pacific is working on Demonstration Runs for the FRA in eastern Iowa. These and other field and laboratory testing activities serve to identify and correct anomalies in the operation or functionality of PTC equipment and software, and to help design the next phases of testing.

To date, the testing programs for PTC communications systems have been productive in building expertise and identifying potential deployment and operational problems. The test results have generally been encouraging and no material problems have been identified.

VI. SPECTRUM

On December 15, 2011, PTC-220 presented to the Commission the results of the spectrum needs studies for L.A. and Chicago.[6] This presentation demonstrated that, although PTC-220 may hold enough spectrum to support PTC for the near term in L.A., it does not have enough spectrum to support PTC operations in Chicago. Accordingly, PTC-220 is now actively engaged in the acquisition of additional 220 MHz spectrum for the Chicago area. Subsequent work on spectrum needs in various congested areas indicates that PTC-220 probably holds enough spectrum to support PTC operations in most other areas.

Also on December 15, 2011, PTC-220 indicated that it may need to seek a waiver request to improve the efficient use of its spectrum holdings. On February 3, 2012, PTC-220 made a presentation to the Commission concerning the contemplated waiver request,[7] noting that it will likely seek a waiver of the power and antenna height restrictions for frequencies in the "mobile

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[6] *See* Ex Parte Letter from Michele C. Farquhar, Hogan Lovells US LLP, Counsel to PTC-220, LLC, to Marlene H. Dortch, Secretary, Federal Communications Commission, WT Docket Nos. 11-79 and 08-256 (Dec. 16, 2011).

[7] *See* Ex Parte Letter from Michele C. Farquhar, Hogan Lovells US LLP, Counsel to PTC-220, LLC, to Marlene H. Dortch, Secretary, Federal Communications Commission, WT Docket Nos. 11-79 and 08-256 (Feb. 7, 2012).

side" (221-222 MHz) of the band.[8] On October 2, 2012, PTC-220 made another presentation to the Commission setting forth a possible approach to the rule waiver, explaining that allowing higher power operations in the 221-222 MHz band would maximize the performance of PTC networks, reduce the need to seek additional spectrum, and help make more spectrum available for other entities deploying PTC.[9] PTC-220 is actively working on this waiver request, and may file it before the end of 2012.

PTC-220 also continues to field inquiries about providing leased spectrum to non-member PTC operators. Recently, PTC-220 executed its first non-member spectrum lease with the Southern California Regional Rail Authority (SCRRA), which operates as Metrolink in the L.A. area. Several other non-member spectrum leases are nearing completion. PTC-220 has also entered into a number of no-cost, short-term leases with various entities to support their testing of 220 MHz equipment and coverage.

On July 10, 2012, PTC-220 conducted a meeting in Chicago for the PTC operators in the Chicago area. The goal of the meeting was primarily to share information regarding PTC implementation so that the local rail operators could better understand PTC-220's approach to PTC design of congested areas, as well as to explain how PTC entities could access PTC-220's spectrum.

On October 23-24, 2012, PTC-220 participated in a national PTC conference in St. Louis, sponsored jointly by the Association of American Railroads (AAR), American Short Line Rail

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[8] 47 C.F.R. § 90.729(b). At that time, PTC-220 also raised the possibility of seeking a waiver for the base station transmit channels in its licensed J Block spectrum (Channels 196-200). However, PTC-220 may enter into an agreement to swap its J Block spectrum with another 220 MHz license holder, which would make a waiver request for such spectrum unnecessary.

[9] *See* Ex Parte Letter from Michele C. Farquhar, Hogan Lovells US LLP, Counsel to PTC-220, LLC, to Marlene H. Dortch, Secretary, Federal Communications Commission, WT Docket Nos. 11-79 and 08-256 (Oct. 3, 2012).

Road Association (ASLRRA), and American Public Transit Association (APTA). Although the scope of the meeting was broader than just RF communications, there was significant interest in PTC spectrum issues at the conference.

VII. NETWORK PLANNING TOOLS

In its May 2012 Construction Progress Report, PTC-220 explained that it had engaged Meteorcomm to design a custom extension to the Mentum Planet RF prediction tool to directly support PTC protocols. This tool will provide valuable engineering guidance that can be used to assign slots in congested areas, and will support a link to the FAMS package developed by TTCI, such that frequency plans computed by Mentum Planet will be automatically entered into FAMS for frequency coordination. Although that tool is not yet in final form, its development continues to progress well and yield positive results.

Also in May 2012, PTC-220 explained that it had contracted with Mentum to provide hosting services for the coverage and network planning tools, which will provide a centralized repository for the tools, databases, and other information related to PTC RF communications projects. This service is now online and available for developing PTC projects, not only for PTC-220 member railroads, but also for non-member lessees and their contractors.

VIII. CONCLUSION

PTC-220 continues to make substantial and steady progress in executing its Build-out Plan. Although PTC-220 believes that it will likely need to seek a future waiver from the power and antenna height restrictions applicable to certain of its licenses to optimize the efficiency of its spectrum holdings and facilitate the deployment of PTC, it continues to see no material obstacles to meeting the 2014 deadline.

Respectfully submitted,

/s/ Michele C. Farquhar

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