

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

In the Matter of)	
)	
Amendment of Part 22 of the Commission’s Rules To Benefit the Consumers of Air-Ground Telecommunications Services)	WT Docket No. 03-103
)	
Biennial Regulatory Review—Amendment of Parts 1, 22, and 90 of the Commission’s Rules)	
)	
Amendment of Parts 1 and 22 of the Commission's Rules To Adopt Competitive Bidding Rules for Commercial and General Aviation Air-Ground Radiotelephone Service)	WT Docket No. 05-42
)	
Application of Verizon Airfone Inc. for Renewal of 800 MHz Air-Ground Radiotelephone License, Call Sign KNKG804)	File No. 0001716212
)	

**REPORT AND ORDER
AND
NOTICE OF PROPOSED RULEMAKING**

Adopted: December 15, 2004

Released: February 22, 2005

By the Commission: Chairman Powell issuing a statement, Commissioners Copps and Adelstein approving in part, dissenting in part, and issuing separate statements.

Comment Date: 20 days after publication in the Federal Register
Reply Comment Date: 30 days after publication in the Federal Register

TABLE OF CONTENTS

Heading	Paragraph #
I. INTRODUCTION.....	1
II. REPORT AND ORDER	7
A. 800 MHz Air-Ground Radiotelephone Service	7
1. Background	9
2. Market for Air-Ground Wireless Communications Services	12
3. Reconfiguration of the 800 MHz Air-Ground Radiotelephone Service Band	24
a. Spectrum Reconfiguration Proposals.....	25
b. Available Air-Ground Band Plans	29
(i) Location of Ground Stations	34
(ii) Provision of Deck-to-Deck Service.....	35

(iii) Competitive Considerations	37
(iv) Air-Ground Services.....	52
4. Technical Standards	54
5. Incumbent Station KNKG804	73
a. Transition of Incumbent System.....	75
b. Reimbursement of Relocation Costs.....	77
c. Renewal of Call Sign KNKG804.....	79
6. Construction Requirements	83
B. 400 MHz Air-Ground Radiotelephone Service	86
1. Form 409, Airborne Mobile Radio Telephone License Application.....	87
2. Idle Tone	93
3. Construction Period for General Aviation Ground Stations.....	95
4. AGRAS	97
C. Revision of Part 22 Non-Cellular Rules	99
1. Scope and Authority—Authorization Required, General Eligibility, and Definitions.....	99
2. Licensing Requirements and Procedures.....	104
a. Construction Prior to Grant of Application	104
b. Computation of Distance	106
c. Computation of Terrain Elevation	109
d. ASSB	111
3. Operational and Technical Requirements	113
a. Channel Assignment Policy.....	113
b. Interference Protection.....	115
c. Emission Types and Emission Masks.....	117
d. Standby Facilities.....	120
e. Directional Antennas	122
f. Wave Polarization.....	124
g. Access to Transmitters.....	126
h. Replacement of Equipment.....	128
i. Auxiliary Test Transmitters.....	130
j. In-building Radiation Systems.....	132
4. Developmental Authorizations.....	134
a. Developmental Authorization of 43 MHz Paging Transmitters	135
b. Developmental Authorization of 928-960 MHz Fixed Transmitters.....	137
c. Developmental Authorization of Meteor Burst Systems	139
5. Paging and Radiotelephone Service Rules.....	141
a. Composite Interference Contour Over Water.....	141
b. Nationwide Network Paging Channels.....	145
c. Additional Channel Policies	147
d. Provision of Rural Radiotelephone Service on Paging Channels	149
e. Transmission Power Limits	151
f. Dispatch Service	153
g. Hawaiian UHF Channels for Point-to-Point Operation	155
h. Channels for Point-to-Point Operation—Microwave Channels	157
i. Effective Radiated Power Limits	160
j. Channel Usage Reports.....	162
6. Rural Radiotelephone Service Rules—Channels for Basic Exchange Telephone Radio Systems	165
7. Offshore Radiotelephone Service Rules.....	167
III. NOTICE OF PROPOSED RULEMAKING – COMPETITIVE BIDDING.....	169
A. Incorporation by Reference of the Part 1 Standardized Auction Rules	170

B. Provisions for Designated Entities.....	172
IV. PROCEDURAL MATTERS.....	179
A. Comment Filing Procedures.....	179
B. <i>Ex parte</i> Rules —Permit-But-Disclose.....	180
C. Congressional Review Act.....	181
D. Final Regulatory Flexibility Analysis.....	182
E. Initial Regulatory Flexibility Analysis.....	183
F. Paperwork Reduction Act of 1995.....	184
G. Contact Information.....	187
V. ORDERING CLAUSES.....	188

Appendix A — Commenting Parties

Appendix B — Final Rules

Appendix C — Final Regulatory Flexibility Analysis

Appendix D — Initial Regulatory Flexibility Analysis

I. INTRODUCTION

1. In this Report and Order,¹ we revise our rules governing the four megahertz of dedicated spectrum in the 800 MHz commercial Air-Ground Radiotelephone Service band.² In order to facilitate the provision of new, innovative wireless telecommunications services, including broadband services, to the public onboard aircraft, we adopt a flexible regulatory approach to determine the configuration of the band. Specifically, we adopt rules that enable interested parties to bid on spectrum licenses according to the band configuration that they believe will best meet their needs for the provision of air-ground services. Based on the band configurations proposed by the parties in this proceeding, the Commission will make available nationwide air-ground licenses in three configurations: (1) band plan 1, comprised of two overlapping, shared, cross-polarized 3 MHz licenses (licenses A and B, respectively),³ (2) band plan 2, comprised of an exclusive 3 MHz license and an exclusive 1 MHz license (licenses C and D, respectively),⁴ and (3) band plan 3, comprised of an exclusive 1 MHz license and an exclusive 3 MHz license (licenses E and F, respectively), with the blocks at opposite ends of the band from the second configuration.⁵ Licenses will have a ten-year term. Licenses will be awarded to winning bidders for the

¹ Appendix A includes a list of commenting parties and short citations to such parties, which are used in this document.

² See 47 C.F.R Pt. 22, Subpt. G; Amendment of Part 22 of the Commission's Rules to Benefit the Consumers of Air-Ground Telecommunications Services, Biennial Regulatory Review—Amendment of Parts 1, 22, and 90 of the Commission's Rules, *Notice of Proposed Rule Making*, 18 FCC Rcd 8380 (2003) (“*Notice*”). The spectrum currently consists of an uplink band at 849-851 MHz and a downlink band at 894-896 MHz. 47 C.F.R. § 22.857.

³ Licenses A and B would authorize transmission of radio waves that are vertically and horizontally polarized, respectively, and would initially share 1.5 MHz at 849.000-850.500 MHz paired with 1.5 MHz at 894.000-895.500 MHz. Once Verizon Airfone’s incumbent system ceases operations in the upper 0.5 MHz of each band, licensee B would shift its operations to 1.5 MHz at 849.500-851.000 MHz paired with 1.5 MHz at 894.500-896.000 MHz. If band plan 1 is implemented, the parties may agree to a different implementation scheme.

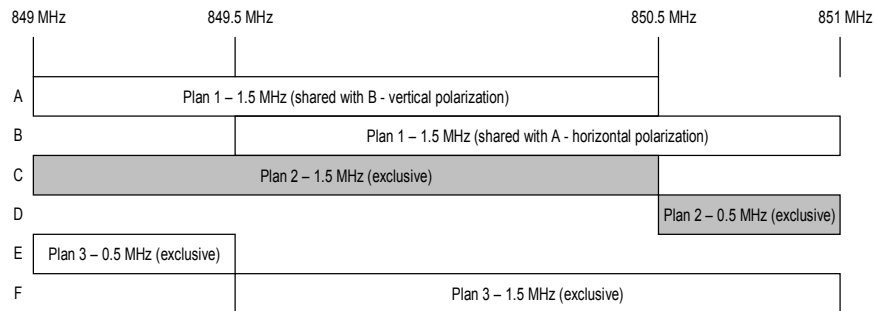
⁴ License C would be located in the lower 1.5 MHz portion of each 2 MHz band (1.5 MHz at 849.000-850.500 MHz paired with 1.5 MHz at 894.000-895.500 MHz). License D would be located in the upper 0.5 MHz portion of each 2 MHz band (0.5 MHz at 850.500-851.000 MHz paired with 0.5 MHz at 895.500-896.000 MHz).

⁵ License E would be located in the lower 0.5 MHz portion of each 2 MHz band (0.5 MHz at 849.000-849.500 MHz paired with 0.5 MHz at 894.000-894.500 MHz). License F would be located in the upper 1.5 MHz portion of each 2 MHz band (1.5 MHz at 849.500-851.000 MHz paired with 1.5 MHz at 894.500-896.000 MHz).

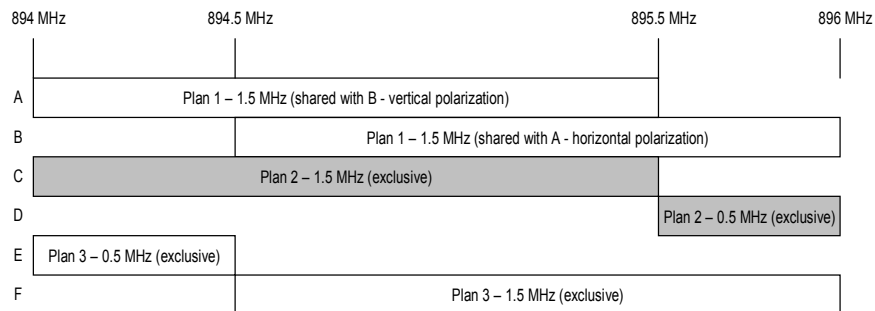
licenses comprising the configuration that receives the highest aggregate gross bid, subject to long-form license application review. In order to promote competition in the 800 MHz air-ground band, we will prohibit any party from obtaining a controlling interest, either at auction or by a post-auction transaction, in more than three megahertz of spectrum (either shared or exclusive) in the band. No single party, therefore, may hold more than one license in any of the available band configurations. In this item, we also contemporaneously issue a *Notice of Proposed Rulemaking (Notice)* in which we seek comment on competitive bidding rules to be used for the new spectrum licenses we make available today and on competitive bidding rules to resolve pending as well as future mutually exclusive applications for licenses in the 400 MHz general aviation Air-Ground Radiotelephone Service.⁶

Air-Ground Band Plan Options

Ground



Airborne



2. *New 800 MHz Air-Ground Radiotelephone Service Band Plans.* We adopt a flexible regulatory framework that will enable licensees to provide air-ground communication services using any existing or future technology that can fit within their assigned spectrum block. Licenses A, B, C, and F could accommodate spectrally-efficient broadband technologies such as Code Division Multiple Access

⁶ In addition to the 800 MHz commercial air-ground spectrum, there is spectrum in the 454/459 MHz band allocated for general aviation air-ground stations. 47 C.F.R. § 22.805.

(CDMA) 2000 1xEV-DO,⁷ Fast Low-latency Access with Seamless Handoff Orthogonal Frequency Division Multiplexing (FLASH-OFDM),⁸ and Global System for Mobile Communication Enhanced Data Rates for Global Evolution (GSM EDGE),⁹ as well as Integrated Dispatch Enhanced Network (iDEN)¹⁰ technology and other technologies. Licenses D and E also could accommodate iDEN and an array of narrowband technologies. The licensees will be required to provide service to airborne locations. Air-ground service may be any type (e.g., voice, data, broadband internet, etc.) and may be provided to any or all aviation markets (e.g., commercial, government, and general). New licensees also may reconfigure their licensed frequencies to accommodate multiple overlapping or exclusive air-ground systems through spectrum leasing, partitioning, disaggregation, or a combination of these mechanisms.

3. The new rules for the 800 MHz Air-Ground Radiotelephone Service that we adopt today will promote key spectrum policy objectives of the Commission, and will lead to greater technical, economic, and marketplace efficiency.¹¹ Our new framework for flexible spectrum access in this band will facilitate the provision of broadband services to consumers by eliminating unnecessary regulatory restrictions, and thereby provide greater flexibility in deploying the spectrum to respond to evolving market demands. We further our goal to “foster innovation and offer consumers meaningful choice in services”¹² by replacing the existing narrowband spectrum sharing approach—which limits services to voice and very slow speed data—with a highly flexible licensing approach. We also further our goal “to encourage the growth and rapid deployment of innovative and efficient communications technologies and services”¹³ by providing flexibility to deploy current broadband technologies, which heretofore could not be used in the 800 MHz Air-Ground Radiotelephone Service band, as well as future technologies that can be deployed within the designated spectrum and consistent with technical regulations necessary to prevent harmful interference to adjacent frequency bands, especially those used for public safety communications. We also believe that providers of broadband air-ground service in this band will be well-positioned to compete against satellite-delivered broadband air-ground telecommunications services currently being offered or under development.

4. *Incumbent Transition.* Verizon Airfone is the sole incumbent currently operating in the

⁷ CDMA2000 1xEV-DO (1x Evolution – Data Optimized) is an air interface standard for Wireless Internet officially known as IS-856. 1xEV-DO achieves a peak data rate of 2.45 Mbps on the forward link (from the Base Station, BTS, to the user). The technology is well-suited for high-speed mobile as well as fixed wireless Internet services. See also <http://www.wordiq.com/definition/CDMA2000>.

⁸ OFDM is a modulation scheme that divides a single digital signal across multiple signal carriers simultaneously (FDM). The signals are spaced at precise frequencies, which prevents the demodulators from seeing frequencies other than their own (hence, orthogonal) so they do not interfere with each other. See also http://www.flarion.com/products/flash_ofdm.asp.

⁹ EDGE is a faster version of GSM wireless service, which enables data to be delivered at rates up to 384 Kbps. The standard is based on the GSM standard and uses TDMA multiplexing technology. See also http://www.wordiq.com/definition/Enhanced_Data_Rates_for_Global_Evolution (GSM EDGE definition); http://www.ericsson.com/products/white_papers_pdf/edge_wp_technical.pdf (GSM EDGE White Paper).

¹⁰ iDEN is a high-capacity digital trunked radio system providing integrated voice and data services to its users. The iDEN system uses M16-QAM digital modulation and VSELP (Vector Sum Excited Linear Predictor) speech coding techniques coupled with Time Division Multiple Access (TDMA) channel access methodology to enhance channel capacity and system services.

¹¹ See FCC Staff Report, *Spectrum Policy Task Force Report*, ET Dkt. No. 02-135 (rel. Nov. 2002). This document is available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-228542A1.doc.

¹² Federal Communications Commission, Strategic Plan FY 2003-FY 2008 at 5 (2002).

¹³ *Id.*

800 MHz air-ground band. In April 2004, the company filed an application for renewal of its authorization to operate in the band, which is pending.¹⁴ We are granting Verizon Airfone a non-renewable license for a five-year term on the effective date of this Report and Order. As explained below, the record reflects that unencumbered paired 1.5 MHz channels are necessary to deploy broadband technologies in the 800 MHz air-ground band. We seek to ensure that the air-ground spectrum can be used to provide broadband air-ground telecommunications services in the near future. If band plan 1 or 2 is the winning configuration at auction, Verizon Airfone's incumbent system must cease operations in the lower 1.5 MHz portion of each 2 MHz air-ground band within 24 months of the initial date of grant of a new license or licenses. Verizon Airfone may relocate its incumbent operations to the upper 0.5 MHz portion of each 2 MHz band (0.5 MHz at 850.500-851.000 MHz paired with 0.5 MHz at 895.500-896.000 MHz) and may continue to operate under the renewal authorization until the end of the five-year license term. If band plan 3 is the winning configuration at auction, Verizon Airfone's incumbent system must cease operations in the upper 1.5 MHz portion of each 2 MHz air-ground band within 24 months of the initial date of grant of license F; Verizon Airfone may relocate to the lower 0.5 MHz portion of each 2 MHz band (0.5 MHz at 849.000-849.500 MHz paired with 0.5 MHz at 894.000-894.500 MHz) and may continue to operate under the renewal authorization until the end of the five-year license term. We note that if Verizon Airfone acquires a new spectrum authorization as a result of competitive bidding, it could elect to continue its incumbent operations using such new authorization.

5. *Part 22 Biennial Review.* We also revise and eliminate, pursuant to our biennial review of regulations under Section 11 of the Communications Act of 1934¹⁵ as well as a staff-initiated assessment of our Part 22 regulations, certain non-cellular Part 22 Public Mobile Services (PMS) rules that we find are no longer warranted as a result of technological change, increased competition in Commercial Mobile Radio Services (CMRS), supervening changes to related Commission rules, or a combination of these factors.¹⁶ We implement certain staff recommendations¹⁷ under Section 11 and our general regulatory authority for deleting or modifying various rules in Parts 1, 22, and 90.¹⁸ Many of the

¹⁴ See File No. 0001716212 (filed Apr. 28, 2004).

¹⁵ 47 U.S.C. § 161. Section 11 requires us to review our regulations applicable to providers of telecommunications service and to “determine whether any such regulation is no longer necessary in the public interest as the result of meaningful economic competition between providers of such service,” and to repeal or modify any regulation that we find no longer necessary in the public interest. 47 U.S.C. §§ 161(a)(2) & (b).

¹⁶ 47 C.F.R. Pt. 22. Part 22 contains 10 subparts. The first three subparts—Subparts A (Scope and Authority), B (Licensing Requirements and Procedures) and C (Operational and Technical Requirements)—apply generally to all Part 22 licenses. The fourth subpart, Subpart D, contains rules for developmental authorizations. Each of the next five Subparts (E through I) contain rules applicable to one of the five Part 22 services: (1) Paging and Radiotelephone; (2) Cellular Radiotelephone; (3) Rural Radiotelephone; (4) Air-Ground Radiotelephone; and (5) Offshore Radiotelephone. Finally, Subpart J implements the Communications Assistance for Law Enforcement Act (CALEA) as it applies to Part 22 services. See Pub. L. No. 103-414, 108 Stat. 4279 (1994) (codified as amended in scattered sections of 18 U.S.C. and 47 U.S.C. §§ 229, 1001-1010, 1021).

¹⁷ See Biennial Regulatory Review, CC Docket No. 00-175, *Report*, 16 FCC Rcd 1207 (2001) (“*2000 Biennial Review Report*”); Biennial Regulatory Review 2000 Updated Staff Report (rel. Jan. 17, 2001); 2002 Biennial Regulatory Review, *Report*, 18 FCC Rcd 4726 (2003); The Commission Seeks Public Comment in the 2002 Biennial Review of Telecommunications Regulations Within the Purview of the Wireless Telecommunications Bureau, *Public Notice*, 17 FCC Rcd 18933 (2002).

¹⁸ In our *Cellular Year 2000 Biennial Report and Order*, we stated that “section 11 places the burden on the Commission to make the requisite determinations; no particular burden is placed on the opponents or proponents of a given rule.” Year 2000 Biennial Regulatory Review—Amendment of Part 22 of the Commission’s Rules to Modify or Eliminate Outdated Rules Affecting the Cellular Radiotelephone Service and Other Commercial Mobile Radio Services, *Report and Order*, 17 FCC Rcd 18401, 18404 ¶4 (2002) (“*Cellular Year 2000 Biennial Report and* (continued....)

rules that we revise or eliminate today reflect outdated policies and technical concerns or unnecessarily limit the flexibility of Part 22 licensees to respond to the marketplace and meet the needs of consumers. Our action today serves the public interest as it corrects these deficiencies and should facilitate technological innovation.

6. We also seek to harmonize our rules, where appropriate, across various wireless services. For example, we afford licensees of nationwide paging channels flexibility to provide other services and revise our rules that currently limit the provision of dispatch service by paging licensees. We also recodify certain Part 22 rules to Part 1 to provide uniform methods for the calculation of terrain elevation and distance for most wireless services. In addition to eliminating unnecessary regulatory hurdles, many of the rule changes that we adopt today will provide licensees with greater flexibility regarding the use of their spectrum and thereby enable them to better respond to market demands.

II. REPORT AND ORDER

A. 800 MHz Air-Ground Radiotelephone Service

7. We initiated this proceeding, *inter alia*, to reexamine our 800 MHz Air-Ground Radiotelephone Service band plan and service rules. Although the Commission initially licensed six 800 MHz air-ground nationwide licensees, only one licensee (Verizon Airfone) continues to provide service in the band, and our service rules allow it to provide only a limited range of narrowband voice and data services.¹⁹ This circumstance led us to question in the *Notice* whether our existing rules were impeding the provision of telecommunications services desired by the public onboard aircraft.²⁰ Nearly all parties commenting on these issues agree that our existing band plan and rules have hindered the efficient, competitive provision of services desired by the public. Based on our review of the record in this proceeding, we conclude that the specified narrow bandwidth (6 kHz) of the existing 800 MHz Air-Ground Radiotelephone Service communications channels has constrained the ability of licensees to provide the type of broadband air-ground services desired by the traveling public. We find that the public interest will be served by adopting flexible rules that will enable interested parties to bid on licenses in three possible band configurations. The three band configurations are based on proposals submitted by parties in this proceeding and each includes at least one spectrum block that will permit the provision of high-speed telecommunications services to the public onboard aircraft.

8. In reexamining the current band plan and service rules, we must address both competitive

(Continued from previous page) _____

Order”), citing *In the Matter of 2000 Biennial Regulatory Review Spectrum Aggregation Limits for Commercial Mobile Radio Services, Report and Order*, 16 FCC Rcd 22628, 22679 ¶25 (2001); *see also* *Year 2000 Biennial Regulatory Review—Amendment of Part 22 of the Commission’s Rules to Modify or Eliminate Outdated Rules Affecting the Cellular Radiotelephone Service and other Commercial Mobile Radio Services, Second Report and Order*, 17 FCC Rcd 18485 (2002); *Erratum*, 17 FCC Rcd 22140 (2002).

¹⁹ *See* Welcome to Airfone web site, www22.verizon.com/airfone and www.22.verizon.com/airfone/service/af_service.htm. Another commercial air-ground licensee, AT&T Wireless, discontinued operations on September 1, 2002, and cancelled its license. *See* Claircom Licensee Corporation Application for Cancellation of License, Call Sign KNKG801, File No. 0001161399 (filed Jan. 16, 2003). Skyway Aircraft, Inc. has authority to operate in the commercial air-ground band under the current rules on a shared basis pursuant to a Special Temporary Authorization (STA). *See infra* para. 11.

²⁰ *Notice*, 18 FCC Rcd at 8389-8391 ¶¶17-21. The remaining five licenses have been unassigned for some time, and no one has formally requested that the Commission open another application filing window. Pursuant to Section 22.875 of our rules, applications for authorization in this service may only be filed during window filing periods announced by public notice. 47 C.F.R. § 22.875.

issues (*i.e.*, how many competitors can the spectrum and the market support) and technical considerations (*i.e.*, how much spectrum is necessary to efficiently and effectively support a range of air-ground service offerings, including voice and broadband applications, and the technical parameters to minimize the potential for air-ground systems to cause interference). We resolve these interrelated issues by adopting flexible rules to determine the best technological configuration of the band and the number of competitors for air-ground communications over multiple platforms (*i.e.*, terrestrial and satellite). We note that six companies—AirTV, ARINC, Boeing, Inmarsat, OnAir, and Row 44—are developing or have commenced offering broadband air-ground services using satellite-based systems.²¹ We find that reconfiguration of the 800 MHz air-ground band will facilitate competition with these satellite-based offerings in the provision of high-speed air-ground services to commercial and other aircraft. We also note that other spectrum is available for the provision of air-ground communications services.²² Based on our review of the record developed in this proceeding and for the reasons stated below, we conclude that a flexible licensing approach coupled with flexible technical and operational rules will promote the highest valued use of the 800 MHz air-ground spectrum for the provision of air-ground services that better meet the needs of the public.

1. Background

9. In 1990, the Commission allocated four megahertz of spectrum for commercial Air-Ground Radiotelephone Service, authorizing operation at 849-851 MHz (ground stations) and 894-896 MHz (airborne mobile stations).²³ Each band is divided into ten paired channel blocks,²⁴ which are allotted to specific geographic locations (essentially a national grid).²⁵ Each channel block contains 29 narrowband (6 kHz) communications channels and 6 very narrowband (3.2 kHz) control channels.²⁶ Under the current service rules, each licensee has an exclusive control channel, shares all the communication channels with the other licensees in the band,²⁷ and must provide nationwide service.²⁸ To promote interoperable communications and to manage interference, some of the ground station locations in North America and channel block assignments have been predetermined consistent with bilateral agreements with Mexico and with Canada.²⁹ The number of communications channels limits the

²¹ See *infra* paras. 14-20.

²² See *infra* para. 45.

²³ See Amendment of the Commission's Rules Relative to Allocation of the 849-851/894-896 MHz Bands, *Report and Order*, 5 FCC Rcd 3861 (1990), *recon. granted in part*, In the Matter of Amendment of the Commission's Rules Relative to Allocation of the 849-851/894-896 MHz Bands, *Memorandum Opinion and Order*, 6 FCC Rcd 4582 (1991).

²⁴ 47 C.F.R. § 22.857.

²⁵ 47 C.F.R. § 22.859.

²⁶ 47 C.F.R. § 22.857. The Wireless Telecommunications Bureau has granted a waiver allowing two of the control channels to be combined and used as a thirtieth communication channel while there are fewer than six licensees. See Claircom Licensee Corporation and GTE Airfone Incorporated Requests for Waivers of Air-ground Radiotelephone Service Rules, *Order*, 16 FCC Rcd 17959 (WTB, CWD 2001).

²⁷ 47 C.F.R. §§ 22.865, 22.869.

²⁸ 47 C.F.R. § 22.873(b).

²⁹ See "Arrangement Between the Department of Communications of Canada and the Federal Communications Commission of the United States of America Concerning the Use of the Bands 849-851 and 894-896 MHz," signed August 18, 1992 (U.S.A.) and August 28, 1992 (Canada), Section 4. See also "Protocol Concerning the Use of the 849-851 and 894-896 MHz Bands for Public Air-To-Ground Radio Service," signed June 16, 1994 by the Government of the United States and the Government of Mexico, Article IV.

number of voice calls that can be simultaneously handled in a particular area, and the narrow bandwidth of these channels limits a service provider to voice and low-speed data services.³⁰

10. The current 800 MHz Air-Ground Radiotelephone Service rules contemplate six competing licensees providing voice and low-speed data services. Six entities were originally licensed under these rules, which required all systems to conform to detailed technical specifications to enable shared use of the air-ground channels. Only three of the six licensees built systems and provided service, and two of those failed for business reasons. Only Verizon Airfone remains as an incumbent in the band.³¹ The prescriptive command-and-control nature of the current air-ground service rules, the regulatory requirement to share only four megahertz of spectrum among up to six licensees, and the limited data capacity of the narrow bandwidth (6 kHz) communications (slow dial-up modem speed) preclude the provision of broadband services to the public.

11. We note that Skyway Aircraft, Inc. acquired the former “ClairCom” air-ground system and has authority to operate in the 800 MHz air-ground band under the current rules on a shared basis pursuant to a Special Temporary Authorization (STA).³² In this proceeding, SkyWay has argued that it has an expectancy to use the air-ground spectrum,³³ and supported retention of the existing 800 MHz Air-Ground Radiotelephone Service rules.³⁴

2. Market for Air-Ground Wireless Communications Services

12. There is substantial and rapidly growing consumer, airline, and service provider interest in access to high-speed Internet and other wireless services onboard aircraft.³⁵ Market research suggests that 38 percent of frequent flyers are willing to pay for high-speed access to the Internet and their

³⁰ When the Commission adopted the rules for this service, it implemented policies and technical constraints consistent with the experimental air-ground system licensed to Airfone, Inc. (now Verizon Airfone) six years prior to the order establishing the service in Part 22. *See* Amendment of the Commission’s Rules Relative to Allocation of the 849-851/894-896 MHz Bands, *Report and Order*, 5 FCC Rcd 3861 (1990). The Commission sought to promote open entry, which required that the licensees be technically compatible and coordinate with one another.

³¹ As noted above, Verizon’s license expired in July 2004, and its renewal application currently is pending. *See* File No. 0001716212 (filed Apr. 28, 2004).

³² SkyWay’s STA (call sign WPYZ281) expired November 30, 2004, and the company has filed a request to extend the STA, which is pending. *See* File No. 00019331747 (filed Nov 11, 2004). The STA provides that “SkyWay has no future entitlement to hold an authorization to provide air-ground telecommunications services as currently authorized by this STA,” and requires SkyWay to advise any customers of the potentially temporary nature of its operating authority.

³³ Skyway Comments at 5 (filed Apr. 1, 2004). We note that the STA is explicitly conditioned on the outcome of this proceeding.

³⁴ Skyway Comments at 5 (filed Nov. 26, 2003).

³⁵ *See, e.g.*, White Paper, Satellite Competition to Terrestrial Air-to-Ground Service,” transmitted by Letter from Donald C. Brittingham, Director-Wireless/Spectrum Policy, Verizon, to Marlene H. Dortch, Secretary, Federal Communications Commission, dated Sept. 7, 2004; Letter from Rich Farr, Senior Manager, Radio Communications, American Airlines, to Marlene H. Dortch, Secretary, Federal Communications Commission, dated Aug. 30, 2004, *clarified by* Letter from Rich Farr, Senior Manager, Radio Communications, American Airlines, to Marlene H. Dortch, Secretary, Federal Communications Commission, dated Sept. 28, 2004 (collectively, “American Airlines Letters”); AirCell *Ex parte* Presentation, Business Structure & Market Outlook for Inflight Communications Services at 12-31 (July 26, 2004); In Search of an In-Air Connection, Readers are Willing to Pay Airlines for a Good Web Connection in the Sky, Wall St. Journal, Apr. 6, 2004, available at <http://webreprints.djreprints.com/974390656496.html>.

corporate network.³⁶ A September 2003 market study, moreover, indicates that 43 percent of adults who travel by commercial aircraft are interested in using their own wireless phones, and 34 percent would like to connect to the Internet with a laptop while onboard an aircraft.³⁷ American Airlines and Continental Airlines both state that passenger demand for in-flight connectivity for Internet access, email, and text messaging is increasing, and that passengers expect high-speed data rates.³⁸

13. We see great potential for air-ground wireless services for commercial, government, and general aviation. These user markets can be served by satellite systems, systems using the spectrum subject to this rulemaking, by AirCell (and potentially others) using the cellular or other CMRS bands,³⁹ and by Air-Ground Radiotelephone Automated Service (AGRAS) stations in the 454/459 MHz bands serving general aviation. We also consider, in a separate *Notice of Proposed Rulemaking*, the possibility of modifying Section 22.925 of our rules,⁴⁰ which prohibits the use of cellular phones onboard airborne aircraft.⁴¹ We intend in that companion proceeding to examine, inter alia, the possible use of onboard pico cells to control cellular handsets on airborne aircraft. We note, however, that as the expert agency responsible for air traffic safety, the Federal Aviation Administration (FAA) also regulates the use of cellular phones and other personal electronic devices on aircraft because of the potential for interference to aircraft communications and navigation systems.⁴² Thus, the scope of use of cellular phones onboard airborne aircraft remains subject to FAA regulations, regardless of the action we may take in the companion proceeding.

14. Boeing has been authorized by the Commission to deploy up to 800 transmit and receive earth stations on aircraft in the 14 GHz uplink and the 12 GHz downlink bands.⁴³ By the terms of the

³⁶ The study was conducted by Forrester Research. See Boeing Press Release, “Infonet and Connexion by Boeing Announce Plans to Deliver ‘Wi-Fi in the Sky’ Capabilities to MobileXpress™ Customers,” available at http://www.boeing.com/news/releases/2004/q2/nr_040510j.html.

³⁷ The study, conducted by telephone, included a random sample of 1,009 U.S. adults, and is available at http://www.ce.org/events/event_info/downloads/Presentation_Bates_Wireless_Devices_on_Planes.ppt.

³⁸ Comments of Continental Airlines (filed Sept. 29, 2004); American Airlines Letters, *supra* note 35.

³⁹ AirCell operates in the cellular band under a Commission-granted waiver of Section 22.925, 47 C.F.R. § 22.925, which prohibits use of cellular telephones in airborne aircraft. AirCell received the waiver based on its use of technology specifically designed to avoid interference to ground-based cellular systems. See *infra* note 89.

⁴⁰ 47 C.F.R. § 22.925. In the *Notice*, we asked whether we should repeal or modify Section 22.925. See *Notice*, 18 FCC Rcd at 8390-8391 ¶22. This prohibition was initially adopted to prevent harmful interference to terrestrial cellular systems. See Amendment of Sections of Part 22 of the Commission's Rules in the Matter of Airborne Use of Cellular Telephones and the Use of Cell Enhancers in the Domestic Public Cellular Radio Service, *Report and Order*, 7 FCC Rcd 23 (1991).

⁴¹ See Amendment of the Commission's Rules to Facilitate the Use of Cellular Telephones and other Wireless Devices Aboard Airborne Aircraft, WT Dkt No. 04-435, *Notice of Proposed Rulemaking*, FCC 04-288 (rel. Feb. 15, 2005).

⁴² See 14 C.F.R. § 91.21; Federal Aviation Administration Advisory Circular No. 91.21-1A, “Use of Portable Electronic Devices aboard Aircraft” (Oct. 2, 2000).

⁴³ See In the Matter of The Boeing Company, Application for Blanket Authority To Operate up to Eight Hundred Technically Identical Transmit and Receive Mobile Earth Stations Aboard Aircraft in the 14.0-14.5 GHz and 11.7-12.2 GHz Frequency Bands, File No. SES-LIC-20001204-02300, Call Sign: E000723, *Order and Authorization*, 16 FCC Rcd 22645 (IB 2001) (“*Boeing Transmit-Receive Order*”). A waiver of Section 2.106 of the Commission's rules was necessary because at that time the U.S. Table of Frequency Allocations did not include allocations for Aeronautical Mobile Satellite Service (AMSS) downlinks in the 12 GHz band and AMSS uplinks in the 14 GHz band. However, the Commission has since added a secondary allocation in the 14-14.5 GHz band for AMSS, (continued....)

grant, Boeing's authority to communicate with these satellites is limited geographically to the airspace above the United States and its territorial waters.⁴⁴ Boeing currently has pending before the Commission an application to expand its authority by seeking to communicate with several foreign satellites from aircraft flying over the high seas (*i.e.*, over international waters).⁴⁵ Boeing has also filed a petition for rulemaking, which is pending before us, seeking establishment of licensing and service rules for the Aeronautical Mobile Satellite Service (AMSS).⁴⁶

15. In 2004, Connexion by Boeing launched a broadband in-flight Internet, data, and entertainment service on commercial flights operated by non-U.S. airlines,⁴⁷ using a Ku-band satellite system. Boeing states that it can provide a forward link data rate of up to 5 megabits, and a reverse link of 512 kbps.⁴⁸ Each plane equipped with the Connexion service offers either an Ethernet Local Area Network (LAN) connection or a wireless 802.11b network connection, or both.⁴⁹ The company has entered into agreements with numerous carriers,⁵⁰ and reportedly expects to generate service revenues of \$500,000 per airplane per year and annual revenues of \$2 billion.⁵¹ Boeing projects that by 2010, the market for passenger Internet service will mature, and the company's market share will range from 4,500 to 5,000 of the 14,000 aircraft that will be flying at that time.⁵² Boeing's Connexion service is currently available only on foreign airlines such as Lufthansa; however, some routes of these foreign carriers cover

(Continued from previous page) _____

following the addition of an international AMSS allocation in that band at the 2003 World Radiocommunication Conference. *See* Amendment of the Parts 2, 25, and 87 of the Commission's Rules to Implement Decisions from World Radio Communications Conferences Concerning Frequency Bands Between 28 MHz and 36 GHz and to Otherwise Update the Rules in this Frequency Range, *Report and Order*, 18 FCC Rcd 23426 (2003). Under its current authorization, Boeing is not permitted to cause harmful interference to other allocated services in the 11.7-12.2 GHz and 14-14.5 GHz frequency bands, and must accept all interference from authorized users of these bands. *Boeing Transmit-Receive Order*, 16 FCC Rcd at 22653-54 ¶19.

⁴⁴ *Boeing Transmit-Receive Order*, 16 FCC Rcd at 22653-54 ¶19.

⁴⁵ *See* The Boeing Company, Application to Modify Blanket AMSS Earth Station Authorization Call Sign E000723, File No. SES-MOD-20040301-00304, filed Mar. 1, 2004 ("*Boeing AMSS Modification Application*").

⁴⁶ Amendment of Parts 2 and 25 of the Commission's Rules to Allocate Spectrum in the 14-14.5 GHz Band to the Aeronautical Mobile-Satellite Service ("AMSS") and To Adopt Licensing and Service Rules for AMSS Operations in the Ku-Band, The Boeing Company, Petition for Rulemaking, filed July 21, 2003.

⁴⁷ *See* <http://www.connexionbyboeing.com>.

⁴⁸ *See* Satcom Shakeout, Business & Commercial Aviation, Fred George, at 89 (Sept. 2004).

⁴⁹ *See* <http://www.connexionbyboeing.com/index.cfm?p=cbb.aboutservice&l=en.US&ec>. Rates for unlimited internet access through the Connexion service are based on the flight duration: \$14.95 for short-haul flights less than three hours, \$19.95 for medium-haul flights between three to six hours, and \$29.95 for long-haul flights over six hours. *See* <http://www.connexionbyboeing.com/index.cfm?p=cbb.pricing&l=en.US&ec>. Alternatively, users can purchase 30 minutes of Internet access for an initial fee of \$7.95 on flights under three hours and \$9.95 for flights over three hours, and \$0.25 per minute thereafter. *Id.*

⁵⁰ Connexion has definitive service agreements with Lufthansa, Scandinavian Airlines System (SAS), and Japan Airlines to equip their long-haul fleets with the Connexion service. In addition, British Airways has completed a successful service demonstration, and both All-Nippon Airways and Singapore Airlines have announced their intent to install the Connexion service on their long-range aircraft. *See* <http://www.connexionbyboeing.com>.

⁵¹ *See* Coffee, Tea or Broadband, Quentin Hardy, *Forbes* (June 17, 2004), available at http://www.forbes.com/technology/networks/2004/06/17/cz_qh_0617wifi.html.

⁵² *See* Stuck in the Air? Surf the Web, Boeing's Internet service lands first airline contract, Kelly Quigley, *Crain's Chicago Business* (Mar. 25, 2004).

U.S. territory.⁵³ Boeing also has approached a number of U.S. airlines regarding installation of the Connexion service on their U.S.-registered aircraft.⁵⁴ Connexion Service currently is available in the United States on executive jet platforms the size of a Boeing 737 and larger, including Airbus aircraft.⁵⁵ Boeing has also announced that, in cooperation with Rockwell Collins eXchange service, service will be available in early 2005 on a majority of the global routes flown by business jet operators, including the entire Bombardier Global family of aircraft.⁵⁶

16. Aeronautical Radio Inc. (ARINC) is currently pursuing several efforts in order to bring broadband service to both business and commercial aircraft. The company has filed an application with the Commission seeking authority to offer, on a non-interference basis, a service similar to Boeing's Connexion.⁵⁷ While this application remains pending before the Commission, ARINC has begun testing a Ku-band satellite system pursuant to a grant of experimental authority.⁵⁸ ARINC claims that its proposed SKYLink service can offer aircraft passengers uplink speeds between 512 kbps and 3 Mbps and downlink speeds up to 128 kbps.⁵⁹ The company recently announced that it is conducting talks with three domestic airlines interested in the service.⁶⁰ The company claims that "SKYLink is the only broadband Internet solution suited to 95 percent of the world's passenger aircraft."⁶¹ The commercial SKYLink hardware package, which weighs 150 pounds (including its low-profile antenna), reflects advances in technology that enable deployment of increasingly lighter weight satellite-based air-ground systems.⁶²

17. SITA INC, Airbus and Tenzing recently formed OnAir, a company that intends to offer a

⁵³ See *id.* at 2; Boeing AMSS Modification Application, Public Interest Statement at 5.

⁵⁴ See "Battle of the Bands," Flight International (Sept. 22, 2004).

⁵⁵ See <http://www.connexionbyboeing.com/index.cfm?p=cbb.executivejet&l=en.US&ec>.

⁵⁶ See *id.*

⁵⁷ Aeronautical Radio Inc., Application for Blanket Authority to Operate Aboard Aircraft up to 1000 Technically-Identical Transmit and Receive Mobile Earth Stations in the 11.7-12.2 and 14.0-14.5 GHz Frequency Bands, File No. SES-LIC-20030910-01261, filed Sept. 10, 2003, and Amendment, File No. SES-AMD-20031223-01860, filed Dec. 23, 2003.

⁵⁸ The Commission recently renewed ARINC's experimental authority to conduct a limited market study of its SKYLink service on 15 aircraft until May 1, 2006. See File No. 0130-EX-RR-2004 (Call Sign WC2XPE). A previous grant had modified ARINC's experimental authority to conduct a limited market study on up to 120 aircraft (originally authority was granted for only 15 aircraft). See File No. 0054-EX-PL-2001, modified by File No. 0029-EX-ML-2003 and File No. 0029-EX-ML-2004. Informal objections challenging the increase in the number of aircraft requested for the limited market study were filed by Boeing and Rockwell Collins Corporation. See In the Matter of Aeronautical Radio Inc., Experimental License Modification to Expand Limited Market Study, Informal Objections of The Boeing Company and Rockwell Collins Corporation, filed Sept. 13, 2004. Upon consideration of these objections, the Commission again modified ARINC's experimental authority to allow only 15 aircraft in its limited market study.

⁵⁹ ARINC Comments at 1-2.

⁶⁰ See Press Release, "ARINC Will Show New Broadband Internet Solution for Commercial Aircraft at WAEA" (Aug. 24, 2004), available at <http://www.arinc.com/news/2004/08-24-04.html>.

⁶¹ See Press Release, "ARINC SKYLinkSM Offers Internet for Airline Passengers on the Compact PEA Entertainment Unit" (Sept. 21, 2004) (statement by Robert Thompson, Senior Director of ARINC Satellite Services), available at <http://www.arinc.com/news/2004/09-21-04.html>.

⁶² See Press Release, "SKYLinkSM Satellite Broadband Demo Shows Airlines How to Achieve 'Total Aircraft Communications'" (Sept. 21, 2004), available at <http://www.arinc.com/news/2004/09-21b-04.html>.

range of voice and data broadband services to both long- and short-haul fleets across the world.⁶³ The company anticipates that SITA's existing cabin connectivity customers and Tenzing's existing customers will form the OnAir customer base.⁶⁴ OnAir expects to introduce access to corporate Virtual Private Networks and Internet browsing capabilities in 2005.⁶⁵

18. Inmarsat also provides onboard wireless services to airlines,⁶⁶ corporate and private users,⁶⁷ and governmental entities.⁶⁸ The company uses a constellation of geostationary satellites to provide service to approximately 5,000 aircraft fitted with Inmarsat aeronautical communications systems, including more than 2,000 aircraft operated by major air carriers, including Air France, Continental, Delta, Qantas, United, US Airways, and Virgin Atlantic.⁶⁹ The remaining aircraft are operated by businesses and private individuals, and by a variety of government agencies, including the military.⁷⁰ Inmarsat delivers services to aircraft using seven different systems.⁷¹ Swift64 is Inmarsat's latest service offering and provides enough data bandwidth for applications such as high-quality voice, email, Internet and intranet access, and videoconferencing.⁷² Inmarsat states that Swift64 terminals now offer up to four 64 kbit/s channels that can be bonded to produce a 256 kbit/s data rate.⁷³ It also claims that application of compression and acceleration techniques can boost the effective rate to beyond half a megabit per second.⁷⁴

19. On September 22, 2004, Row 44, LLC,⁷⁵ a provider of data communication services and equipment to the aviation industry, announced an agreement with Hughes Network Systems (HNS)⁷⁶ to bring broadband connectivity to North American commercial and business aircraft.⁷⁷ The company

⁶³ See http://www.sita.com/index.asp?activeDir=/home/News_Centre/Press_releases/Press_releases_-_2004/&activeFile=Going_On_Air.html.

⁶⁴ Over 60 airlines use SITA's current cabin connectivity services on 1,100 aircraft, including American Airlines, Air France, Asiana Airlines, KLM, Delta Airlines, Emirates, Singapore Airlines, Qantas, Saudi Arabian Airlines, Alitalia and Malaysia Airlines. Tenzing's cabin connectivity services are currently available on airlines including Cathay Pacific Airways, Continental Airlines, Emirates, Northwest Airlines, United Airlines, US Airways and Virgin Atlantic Airways. Tenzing has developed a system using software and existing onboard communications equipment to deliver text and data to and from aircraft. See <http://www.tenzing.com/about/>. Tenzing email and text-messaging systems are on more than 800 commercial aircraft flown by Cathay Pacific Airways, Continental Airlines, Iberia, Northwest Airlines, United Airlines and Virgin Atlantic. *Id.*

⁶⁵ See http://www.onair.aero/en/vision/vision_strategy_en.pdf.

⁶⁶ See http://aero.inmarsat.com/markets/air_transport.aspx?top_level_id=5&sub_level_id=1.

⁶⁷ See http://aero.inmarsat.com/markets/business_aviation.aspx?top_level_id=5&sub_level_id=2.

⁶⁸ See http://aero.inmarsat.com/markets/government.aspx?top_level_id=5&sub_level_id=3.

⁶⁹ See http://aero.inmarsat.com/markets/default.aspx?top_level_id=5.

⁷⁰ *Id.*

⁷¹ See http://aero.inmarsat.com/services/default.aspx?top_level_id=3.

⁷² See http://aero.inmarsat.com/services/swift_64.aspx?top_level_id=3&sub_level_id=1.

⁷³ See http://aero.inmarsat.com/technology/enabling_technologies.aspx?top_level_id=6&sub_level_id=4.

⁷⁴ *See id.*

⁷⁵ See <http://www.row44.com/>.

⁷⁶ *See id.*

⁷⁷ See Press Release, "Row 44 Announces Strategic Relationship with Hughes Network Systems" (Sept. 21, 2004), available at http://www.row44.com/press/2004_09_21.htm.

intends to leverage the existing HNS DIRECWAY® satellite platform, which it claims is capable of high-speed connectivity of up to 30 Mbps to aircraft, to provide in-flight entertainment, consumer services, security, flight deck data, cabin crew operations, operational services, and emergency medical support.⁷⁸ The system supports both wired and wireless WiFi (802.11) installations and uses a lightweight low-profile radome (*i.e.*, a dome-shaped antenna enclosure) and steerable antenna (only three inches thick) that can simultaneously provide DBS television and two-way Internet traffic.⁷⁹ Row 44 is in discussions with a number of major airlines and owners of business jet fleets, and system testing is targeted to begin in early 2005.⁸⁰

20. On September 23, 2004, AirTV announced that it has signed a launch services agreement with Arianespace⁸¹ to deliver in-flight entertainment and connectivity for airlines worldwide.⁸² AirTV states that its system will provide more than 60 channels of live television (in multiple languages) and 40 Mbps of Internet, e-mail, and data services to aircraft.⁸³ AirTV has adopted an incremental approach for rollout of its system. AirTV plans to launch its initial satellite in 2007 over the North Atlantic Ocean. This satellite will cover airline routes from Europe and the Middle East to North America (roughly one-third of all airline traffic).⁸⁴ AirTV's subsequent three satellites will be launched soon after, providing coverage for aircraft flying over nearly all of the commercial airline routes around the globe.⁸⁵

21. Although they do not currently provide the types of passenger-based phone and internet access services that the Aeronautical Mobile Satellite Service is capable of providing, the two operating Big LEO (Low Earth Orbit) systems, Iridium Satellite LLC (Iridium) and Globalstar USA (Globalstar), serve the aviation market for their private communication needs.⁸⁶ Aviation users can access the Iridium network to send and receive voice, messaging, and data regardless of their positions on or above the earth.⁸⁷ Globalstar provides specially designed communication solutions for in-flight voice and data services aboard both helicopters and fixed-wing aircraft.⁸⁸ Globalstar also provides internet connectivity

⁷⁸ *Id.*

⁷⁹ *Id.*

⁸⁰ *Id.*

⁸¹ See http://www.arianespace.com/site/about/about_index.html.

⁸² See Press Release, "AirTV Signs With Arianespace to Launch its First Broadband In-Flight Entertainment/Communications Satellite in 2007" (Sept. 23, 2004), available at http://www.airtv.net/press_release_092304.html.

⁸³ *Id.*

⁸⁴ See <http://www.airtv.net/overview.html>.

⁸⁵ *Id.*

⁸⁶ "Big LEO" refers to low Earth orbit mobile-satellite services above 1 GHz. Big LEO systems are subject to 47 C.F.R. § 25.136(a) ("User transceiver units associated with the 1.6/2.4 GHz Mobile-Satellite Service . . . may not be operated on civil aircraft unless the earth station has a direct physical connection to the aircraft cabin or cockpit communication system."). For more detail regarding the Big LEO licensees, see generally Review of the Spectrum Sharing Plan Among Non-Geostationary Satellite Orbit Mobile Satellite Service Systems in the 1.6/2.4 GHz Bands, *Report and Order, Fourth Report and Order and Further Notice of Proposed Rulemaking*, 19 FCC Rcd 13356 (2004).

⁸⁷ See http://www.iridium.com/market/iri_market-detail.asp?solutionid=22.

⁸⁸ See <http://www.globalstarusa.com/en/products/aviation.php>.

for aircraft through two airborne satellite telephone systems.⁸⁹

22. AirCell also is interested in providing service to commercial airline passengers. In conjunction with its cellular licensee partners, AirCell currently provides, pursuant to waiver, air-ground services to more than 1,400 general aviation aircraft using traditional cellular networks and frequencies.⁹⁰ The AirCell operations employ existing ground-based cellular networks pursuant to agreements with 23 cellular providers.⁹¹ While, to date, AirCell has provided air-ground service only to general aviation aircraft over its network, it has announced plans to begin testing the service in commercial aircraft.⁹² AirCell has participated extensively in this proceeding and stated an interest in providing services in the 800 MHz air-ground spectrum.

23. Verizon Airfone is the sole incumbent operating in the 800 MHz air-ground spectrum. The company's service is available on approximately 4,500 aircraft (including 1,500 commercial aircraft).⁹³ Verizon Airfone generally charges a connection fee of \$3.99 for each voice call, plus \$3.99 per minute of air time.⁹⁴ Verizon Airfone has taken several steps to enhance its services in recent years. The company launched an in-flight data service called JetConnect(SM) in September 2002 on some commercial U.S. flights, including planes operated by Continental Airlines, Inc.⁹⁵ JetConnect service includes instant messaging, online games, and current news, priced at \$5.99 for an entire flight.⁹⁶ In 2004, the company introduced two new pricing plans for Verizon Airfone voice calls made by Verizon Wireless subscribers—\$10.00 per month and \$0.10 per minute, or \$0.69 per minute with no monthly fee.⁹⁷ Despite these efforts, demand for Verizon Airfone Service has waned in recent years. American Airlines, for example, has suspended Verizon Airfone service due to a sharp decline in passenger

⁸⁹ *Id.*

⁹⁰ AirCell and its partners have been granted waivers of the Commission's rule, 47 C.F.R. § 22.925, prohibiting the use of cellular phones on planes in order to implement an air-ground service. AirCell's system uses specially designed mobile units and ground equipment to allow users to access the existing networks of AirCell's cellular licensee partners without causing the harmful interference against which Section 22.925 was designed to protect. See *In the Matter of AirCell, Inc., Petition, Pursuant to Section 7 of the Act, For a Waiver of the Airborne Cellular Rule, Or, in the Alternative, for a Declaratory Ruling, Order*, 14 FCC Rcd 806 (WTB 1998), recon. granted in part, denied in part, *Order on Reconsideration*, 14 FCC Rcd 18430 (WTB 1999), app. for rev. denied, *Memorandum Opinion and Order*, 15 FCC Rcd 9622 (2000), affirmed in part and remanded in part sub nom., *AT&T Wireless Services, Inc., et al., v. FCC*, 270 F.3d 959, 968 (D.C. Cir. 2001), pet. for reh'g denied Jan. 29, 2002, *Order on Remand*, 18 FCC Rcd (2003), pet. for rev. denied sub nom., *AT&T Wireless Services, Inc. v. FCC*, 365 F.3d 1095 (D.C. Cir. 2004).

⁹¹ See www.Aircell.com/about.

⁹² See *id.* AirCell has indicated that, to the extent any additional or modified waiver authority or experimental license is required in order to conduct the desired tests on commercial aircraft, it will obtain such necessary authorization. See *In the Matter of AirCell, Inc., Petition, Pursuant to Section 7 of the Act, for a Waiver of the Airborne Cellular Rule, or, in the Alternative, for a Declaratory Ruling, Order*, 17 FCC Rcd 19586, 19586-87 ¶2 (WTB, CWD 2002). Nothing in AirCell's current waiver prohibits operation on commercial, as opposed to general aviation, aircraft.

⁹³ Verizon Airfone Comments at 12.

⁹⁴ See http://www22.verizon.com/airfone/service/af_service_genrates.html.

⁹⁵ See http://www22.verizon.com/airfone/service/af_service_genrates.html#JetConnect.

⁹⁶ *Id.*

⁹⁷ See http://www22.verizon.com/airfone/vzw/vzw_airfone_service.html.

demand.⁹⁸ The service has declined from up to 15 users per flight, at prices comparable to today's rates, to two or three users per flight today.⁹⁹

3. Reconfiguration of the 800 MHz Air-Ground Radiotelephone Service Band

24. In the *Notice*, we asked parties to assess our current rules and policies affecting the 800 MHz Air-Ground Radiotelephone Service and identify restrictions or policies that impede the competitive provision of services designed to meet consumers' needs.¹⁰⁰ We asked whether any changes to our rules could provide greater opportunities for the competitive provision of air-ground services, leading to lower prices to consumers and increased choices in wireless services and enhancements while traveling by plane.¹⁰¹ We specifically asked parties to make suggestions for rules and policies that would achieve more effective consumer choice,¹⁰² and whether this spectrum should be limited to air-ground use, or whether we should allow for more flexible use.¹⁰³ We sought comment on increasing the operational flexibility afforded to air-ground licensees and whether such flexibility would raise any co-channel, adjacent channel, or other interference issues, *e.g.*, with respect to existing or future services in the 800 MHz band.¹⁰⁴ We also sought comment regarding whether the 800 MHz air-ground spectrum is being efficiently used and possible changes to our rules that would encourage the use of more innovative, spectrum-efficient technologies that could be utilized in this spectrum and how best to promote deployment of such technology.¹⁰⁵

a. Spectrum Reconfiguration Proposals

25. In response to the *Notice*, four parties—AirCell,¹⁰⁶ Boeing,¹⁰⁷ Space Data,¹⁰⁸ and Verizon

⁹⁸ See American Airlines Letters, *supra* note 35.

⁹⁹ See Joe Sharkey, "Almost here: Cell phones at 37,000 feet," N.Y. Times, Oct. 10, 2004, at C6 (statement of William E. Pallone, President, Verizon Airfone).

¹⁰⁰ *Notice*, 18 FCC Rcd at 8389-8390 ¶¶17-21.

¹⁰¹ *Id.* at 8389 ¶17.

¹⁰² *Id.*

¹⁰³ *Id.* at 8390 ¶21.

¹⁰⁴ *Notice*, 18 FCC Rcd at 8390 ¶20. The 849-851 MHz air-ground band is immediately adjacent to 800 MHz General Category land mobile channels at 851-854.75 MHz that are used by both public safety and commercial SMR systems and that are discussed in our pending proceeding on 800 MHz public safety interference issues. See Improving Public Safety Communications in the 800 MHz Band; Consolidating the 900 MHz Industrial/Land Transportation and Business Pool Channels, *Notice of Proposed Rule Making*, 17 FCC Rcd 4873 (2002), *Erratum*, 17 FCC Rcd 7169 (2002). The Commission recently issued an Order in that proceeding, which provides, *inter alia*, that the NPSAC public safety channels will be moved to spectrum just above 851 MHz. See *Report and Order, Fifth Report and Order, Fourth Memorandum Opinion and Order, and Order*, 19 FCC Rcd 14969, 15050 at ¶151 (2004), as amended by *Erratum*, 19 FCC Rcd 19651 (2004), and *Erratum*, 19 FCC Rcd 21818 (2004) ("800 MHz Order"), order clarified by *Supplemental Order and Order on Reconsideration*, FCC 04-294, 2004 WL 2973805 (F.C.C.) (rel. Dec. 22, 2004). Below, we adopt a rule that subjects ground stations that operate in the 849-851 MHz air-ground band to the cellular interference rule adopted in the *800 MHz Order*. See *infra* para. 67.

¹⁰⁵ *Notice*, 18 FCC Rcd at 8390 ¶19.

¹⁰⁶ See AirCell Comments; AirCell Reply Comments; Letter from Michele C. Farquhar, Hogan & Hartson, to Marlene H. Dortch, Secretary, Federal Communications Commission, dated July 27, 2004, transmitting "Business Structure & Market Outlook for Inflight Communications Services"; Letter from Michele C. Farquhar, Hogan & Hartson, to Marlene H. Dortch, Secretary, Federal Communications Commission, dated Sept. 9, 2004, transmitting "AirCell Response to FCC Questions" at 3-7 ("AirCell September 9 Response to FCC"); Letter from Michele C. (continued....)

Airfone¹⁰⁹—submitted detailed proposals regarding revision of the 800 MHz Air-Ground Radiotelephone Service band plan and rules. These parties uniformly agree that the 800 MHz air-ground band should be reconfigured, and urge us to adopt a band plan and rules that would enable a licensee to deploy spectrally-efficient broadband technologies, including CDMA2000 1xEV-DO and FLASH-OFDM. The parties, however, offer different proposals for reconfiguration of the band.

26. AirCell and Boeing jointly propose that we reconfigure the four megahertz of spectrum in the band into two co-primary, overlapping 3.0 MHz licenses.¹¹⁰ The parties propose that each licensee would initially share three megahertz of spectrum in the band (1.5 MHz at 849.000-850.500 MHz paired with 1.5 MHz at 894.000-895.500 MHz).¹¹¹ They propose that one licensee use vertical radio wave polarization and the other use horizontal radio wave polarization in order to mitigate potential inter-system interference.¹¹² This approach would provide one megahertz of spectrum (the upper 0.5 MHz of

(Continued from previous page) _____

Farquhar, Hogan & Hartson, to Marlene H. Dortch, Secretary, Federal Communications Commission, dated Sept. 30, 2004, transmitting “Passenger Benefits from Competition in Broadband Airline Communications” and “Providing Deck-to Deck Coverage;” Letter from Michele C. Farquhar, Hogan & Hartson, to Marlene H. Dortch, Secretary, Federal Communications Commission, dated Oct. 4, 2004, transmitting “AirCell October 1 Presentation to FCC;” Letter from Michele C. Farquhar, Hogan & Hartson, to Marlene H. Dortch, Secretary, Federal Communications Commission, dated Dec. 6, 2004, transmitting “Air-to-Ground Myths & Realities” at 4 (“AirCell Air-to-Ground Myths & Realities”); Declaration of Paul A. London on behalf of AirCell, dated Dec. 7, 2004 (“AirCell London Declaration”).

¹⁰⁷ See Connexion by Boeing Proposed Rules Governing Operation of Multiple 800 MHz Air to Ground Systems (Sept 10, 2004); Letter from Howard J. Symons, to Marlene H. Dortch, Secretary, Federal Communications Commission, dated Dec. 8, 2004 (“Boeing December 8 *Ex parte*”).

¹⁰⁸ See Space Data Reply Comments; Space Data’s Proposed ATG Rules (June 10, 2004); Letter from Cheryl A. Tritt, Morrison & Foerster LLP, to Marlene H. Dortch, Secretary, Federal Communications Commission, dated Sept. 9, 2004, transmitting “Space Data Corporation: Air-to-Ground Analysis” (“Space Data September 9 Analysis”); Letter from Cheryl A. Tritt, Morrison & Foerster LLP, to Marlene H. Dortch, Secretary, Federal Communications Commission, dated Nov. 17, 2004, transmitting “Space Data November 16, 2004 Presentation;” Letter from Cheryl A. Tritt, Morrison & Foerster LLP, to Marlene H. Dortch, Secretary, Federal Communications Commission, dated Nov. 29, 2004, transmitting “AirCell’s Criticisms of Space Data’s ATG Proposals are Inaccurate and Completely Unsubstantiated” (“Space Data November 29 Analysis”); *Ex parte* Presentation of Gerald Knoblach, CEO, Space Data dated Dec. 8, 2004 (“Space Data December 8 *Ex parte*”).

¹⁰⁹ See Verizon Airfone Comments; Verizon Airfone Reply Comments; Verizon Airfone has Legal and Equitable Rights as the Only Qualified Licensee Providing In-Flight Services to the Public at 5-6 (Sept. 9, 2004) (“Verizon Airfone September 9 Statement”); Verizon Airfone Response to Air-to-Ground Licensing Scenario Under Consideration by the FCC at 5 (Sept. 10, 2004) (“Verizon Airfone September 10 Response to FCC”).

¹¹⁰ See AirCell Further Notes on the Deployment of Two Cross-Polarized Systems in the ATG Band and Response to Verizon Airfone/Telcordia at 3 (Nov. 23, 2004) (“AirCell Further Notes on the Deployment of Two Cross-Polarized Systems”); Letter from Michele C. Farquhar, Hogan & Hartson, to Marlene H. Dortch, Secretary, Federal Communications Commission, dated Nov. 12, 2004, transmitting “AirCell Two Cross-Polarized Systems in the ATG Band;” Letter from Michele C. Farquhar, Hogan & Hartson, to Marlene H. Dortch, Secretary, Federal Communications Commission, dated Oct. 21, 2004, transmitting “Deployment of two Cross-Polarized Systems in the ATG Band” (“AirCell/Boeing Joint Proposal”). See Letter from Howard J. Symons, to Marlene H. Dortch, Secretary, Federal Communications Commission, dated Oct. 21, 2004 (confirming Boeing’s concurrence in joint proposal with AirCell). AirCell and Boeing each filed several separate proposals to reconfigure the air-ground spectrum during the course of this proceeding before submitting the AirCell/Boeing Joint Proposal.

¹¹¹ See AirCell/Boeing Joint Proposal at 4.

¹¹² See *id.* at 3-4.

each 2 MHz band) to accommodate Verizon Airfone's incumbent system for a limited transition period.¹¹³ Following the transition period, the licensee using horizontal radio wave polarization would shift its operations to 1.5 MHz at 849.500-851.000 MHz paired with 1.5 MHz at 894.500-896.000 MHz, and each licensee's spectrum would overlap the other's spectrum by 60 percent. The parties suggest that the Commission specify ground station spacing based on the existing site list for the air-ground service.¹¹⁴ The parties propose that sites serving the same airspace be located within two miles of each other and that the licensees coordinate the location of new sites.¹¹⁵

27. Verizon Airfone, the sole incumbent in the 800 MHz air-ground band, initially proposed that the four megahertz of spectrum in the band be licensed to one exclusive licensee, and contended that it should receive the license without an auction based on its incumbent status.¹¹⁶ More recently, Verizon Airfone supports reconfiguring the band into an exclusive 3 MHz license and an exclusive 1 MHz license.¹¹⁷

28. Space Data proposes the use of combinatorial bidding to determine configuration of the 800 MHz air-ground band.¹¹⁸ Based on the outcome of an auction, Space Data's proposal would accommodate one of three band configurations—(1) a shared licensing approach with overlapping 2.75 MHz and 3 MHz licenses, (2) exclusive 3 MHz and 1 MHz licenses, or (3) exclusive 2.75 MHz and 1.25 MHz licenses.¹¹⁹ Space Data also has proposed the use of combinatorial bidding procedures to auction three exclusive 1.33 MHz spectrum blocks or two exclusive 1.5 MHz blocks and two shared 1.0 MHz blocks.¹²⁰ The latter approach would permit either exclusive or shared licensing of the band.¹²¹

b. Available Air-Ground Band Plans

29. We have reviewed the extensive record in this proceeding and carefully weighed the parties' competing proposals to reconfigure the 800 MHz air-ground spectrum band. We conclude that the public interest will be served by adopting a flexible framework that will enable interested parties to bid on spectrum licenses according to the band configuration that they believe will best meet their needs for the provision of air-ground services. Interested parties may bid on spectrum licenses in any of the following three band plans,¹²² including two overlapping, shared, cross-polarized spectrum licenses (band plan 1) as advocated by AirCell and Boeing and exclusive spectrum licenses (band plans 2 and 3) as proposed by Space Data and Verizon Airfone. Licenses will have a ten-year term.

¹¹³ *See id.* at 4.

¹¹⁴ *See id.* at 8. *See* 47 C.F.R. § 22.859.

¹¹⁵ *See* AirCell/Boeing Joint Proposal at 8.

¹¹⁶ Verizon Airfone Comments at 8-12.

¹¹⁷ *See, e.g.*, Verizon Airfone September 10 Response to FCC.

¹¹⁸ *See* Space Data November 16, 2004 Presentation at 7-9.

¹¹⁹ *See id.* at 8.

¹²⁰ *See* Space Data October 13 Presentation at 3-6.

¹²¹ Space Data also has proposed two exclusive 1.6 MHz licenses for GSM, and a single 0.8 MHz license to accommodate the incumbent system. *See* Space Data November 16, 2004 Presentation. Alternatively, the company suggested that an additional 100 kilohertz of spectrum be allocated to accommodate 2.5 MHz and 1.6 MHz spectrum blocks for CDMA and GSM, respectively. *Id.*

¹²² The band configurations are illustrated above at paragraph 1.

Band plan 1—two overlapping, shared, cross-polarized 3 MHz licenses (licenses A and B, respectively).¹²³

Band plan 2—an exclusive 3 MHz license and an exclusive 1 MHz license (licenses C and D, respectively).¹²⁴

Band plan 3—an exclusive 1 MHz license and an exclusive 3 MHz license (licenses E and F, respectively), with the blocks at opposite ends of the band from the third configuration.¹²⁵

The Commission will award licenses to winning bidders for the licenses comprising the band plan that receives the highest aggregate gross bid, subject to long-form license application review. In order to further competition and ensure maximum use of this frequency band for air-ground services, no party will be eligible to hold more than one of the spectrum licenses being made available.¹²⁶

30. We believe this flexible approach to configuration of the band will promote our goal in this proceeding of facilitating the highest valued use of this scarce spectrum resource, resulting in the provision of wireless communications services that better meet the needs of the traveling public onboard aircraft.¹²⁷ We also further our strategic objective “to encourage the growth and rapid deployment of innovative and efficient communications technologies and services”¹²⁸ by adopting rules that will permit licensees to deploy any current or future technology with an occupied bandwidth that fits within its assigned spectrum and to provide any kind of air-ground service to any type of aircraft. As explained below, we also provide a transition period for the incumbent system currently operated by Verizon Airfone.¹²⁹

31. The parties urge us to reconfigure the air-ground band to enable the deployment of CDMA2000 1xEV-DO and/or FLASH-OFDM technologies in the air-ground band in order to deliver high-speed communications services to consumers onboard aircraft.¹³⁰ We conclude that a 3 MHz spectrum block (comprised of 1.5 MHz paired channels) will provide sufficient spectrum to deploy these technologies in the air-ground band. The originators of these technologies, QUALCOMM Incorporated

¹²³ Licenses A and B would be vertically and horizontally polarized, respectively, and would initially share 1.5 MHz at 849.000-850.500 MHz paired with 1.5 MHz at 894.000-895.500 MHz. If band plan 1 is implemented, the parties may agree to a different implementation scheme. Once Verizon Airfone’s incumbent system ceases operations in the upper 0.5 MHz of each band, licensee B would shift its operations to 1.5 MHz at 849.500-851.000 MHz paired with 1.5 MHz at 894.500-896.000 MHz.

¹²⁴ License C would be located in the lower 1.5 MHz portion of each 2 MHz band (1.5 MHz at 849.000-850.500 MHz paired with 1.5 MHz at 894.000-895.500 MHz). License D would be located in the upper 0.5 MHz portion of each 2 MHz band (0.5 MHz at 850.500-851.000 MHz paired with 0.5 MHz at 895.500-896.000 MHz).

¹²⁵ License E would be located in the lower 0.5 MHz portion of each 2 MHz band (0.5 MHz at 849.000-849.500 MHz paired with 0.5 MHz at 894.000-894.500 MHz). License F would be located in the upper 1.5 MHz portion of each 2 MHz band (1.5 MHz at 849.500-851.000 MHz paired with 1.5 MHz at 894.500-896.000 MHz).

¹²⁶ See *infra* paras. 39-44.

¹²⁷ See *Notice*, 18 FCC Rcd at 8389 ¶17.

¹²⁸ Federal Communications Commission, Strategic Plan FY 2003-FY 2008 at 5 (2002).

¹²⁹ See *infra* paras. 75-76.

¹³⁰ AirCell, Boeing, Space Data, and Verizon Airfone each urge us to enable the deployment of CDMA. See, e.g., AirCell October 13 Presentation at 5; Boeing Proposed Rules at n.2. Verizon Airfone also urges us to enable the deployment of FLASH-OFDM. See Verizon Airfone Response to FCC at 5.

(CDMA) and Flarion Technologies Inc. (OFDM), both state that 125 kHz guard bands are required on each side of a 1.25 MHz wide carrier to deploy their respective technologies,¹³¹ and that a 3 MHz spectrum block (comprised of 1.5 MHz paired channels) would provide sufficient spectrum to deploy these technologies in the band. AirCell, Boeing, and Verizon Airfone concur that guard bands are necessary.¹³² Accordingly, in view of the foregoing and our goal to encourage the deployment of spectrally efficient technologies in the air-ground band, each of the three band plans includes at least one spectrum license of 3 MHz.

32. In addition, future licensees in the 800 MHz air-ground band, as well as other interested parties, will have the opportunity to engage in spectrum leasing under our rules.¹³³ Future licensees will also be permitted to engage in partitioning and/or disaggregation of their licenses.¹³⁴ These regulatory opportunities are intended to provide the air-ground marketplace greater flexibility to respond to consumer demand.

33. Below, we address the location of ground stations, the provision of deck-to-deck service (*i.e.*, service from takeoff to landing), competitive considerations, and the provision of services in the air-ground band.

(i) Location of Ground Stations

34. Band plans 2 and 3 provide for exclusive spectrum licensing and will afford new licensees significant flexibility to configure and modify their systems to address current and future market conditions. For example, licensees will be able to initially configure their systems to best meet the needs of their customers, and may flexibly reconfigure or add ground stations to respond to future demand for air-ground services.¹³⁵ An exclusive licensee also could deploy new technologies in response to changing market conditions—without having to coordinate its choice of technology with another licensee in the band.¹³⁶ If the band is comprised of two overlapping 3 MHz licenses (band plan 1), the new licensees will be required to jointly file a spectrum sharing and site selection plan with the Wireless Telecommunications Bureau within six months of the initial grant of their spectrum licenses,¹³⁷ and will be required to notify the Bureau of any changes to the plan. The Wireless Telecommunications Bureau will issue a public notice prior to the Commission's auction of new 800 MHz air-ground spectrum

¹³¹ See Letter from Dean R. Brenner, Senior Director, Government Affairs, QUALCOMM Incorporated, to Marlene H. Dortch, Secretary, Federal Communications Commission, dated Sept. 3, 2004, at 2; Letter from Michael J. Thornton, Flarion Technologies Inc., to Marlene H. Dortch, Secretary, Federal Communications Commission, dated Sept. 2, 2004, at 1.

¹³² See AirCell October 13 Presentation at 5; Boeing Proposed Rules at n.2; Verizon Airfone Response to FCC at 5. Space Data, however, suggests that CDMA could be deployed in 2.5 MHz. See Space Data December 8 *Ex parte*.

¹³³ See 47 C.F.R. § 1.9005.

¹³⁴ See 47 C.F.R. §§ 1.948(e) & (f).

¹³⁵ The FAA forecasts that, over the ten-year period from 2005 through 2015, aviation passenger traffic is expected to increase by 45 percent, to over one billion passengers. See Views and Estimates of the Committee on Transportation and Infrastructure for FY 2005, located at <http://www.house.gov/transportation/views2005.html>.

¹³⁶ Certain spacing requirements are necessary in border areas.

¹³⁷ In the event that the parties determine that more than six months is required to prepare and file the plan, they may request an extension of the six-month period.

licenses in which it will specify the filing requirements for the plan.¹³⁸ This approach would provide parties with overlapping spectrum licenses flexibility to configure their systems without having to adhere to minimum spacing requirements or site locations dictated by the Commission. AirCell, which supports spectrum sharing in the band, observes that parties with overlapping licenses would act with “enlightened self-interest” and cooperate in the site selection process.¹³⁹

(ii) Provision of Deck-to-Deck Service

35. The record reflects that parties desire deck-to-deck service (*i.e.*, service from terminal to terminal). The Federal Air Marshal (FAM) Service, for example, urges us to ensure that communications capabilities in the air-ground band are fully operational during all phases of a commercial flight.¹⁴⁰ We note that air-ground communications services are currently provided to Federal, State, and local agencies, including the FBI, the U.S. Department of Energy, and the U.S. Customs Service,¹⁴¹ and that the air-ground spectrum can be used to support aircraft management, other public safety services, and homeland security communications. In view of the foregoing and in light of our statutory mandate to promote the safety of life and property,¹⁴² we have selected three band plans that would enable licensees to provide deck-to-deck service.

36. An exclusive licensing approach (band plans 2 and 3) would facilitate the provision of service continuously because ground stations can be located without inter-system coordination and would not have to be limited in power or sector orientation by the presence of an overlapping licensee. If a spectrum sharing approach (band plan 1) is selected by the auction winners, the record indicates that the parties will have to agree on power limits and sharing rules to facilitate the full provision of deck-to-deck service. AirCell suggests that a licensee could deploy a hybrid system that uses terrestrial spectrum (such as cellular or PCS spectrum) to provide service at low altitudes in the vicinity of airports.¹⁴³ As noted above, in the event that applicants seeking band plan 1 win at auction, the new licensees will have to jointly file a spectrum sharing plan with the Wireless Telecommunications Bureau, which may include terms to facilitate the provision of deck-to-deck service.

(iii) Competitive Considerations

37. AirCell and Boeing urge us to configure the 800 MHz air-ground band into two overlapping 3.0 MHz licenses, claiming that because shared use is possible under rules that they propose, consumers would benefit from having two providers in the band each with access to three megahertz of spectrum.¹⁴⁴ As noted above, however, such a spectrum sharing regime would require the Commission to

¹³⁸ We note that the parties may seek confidential treatment of the plan in accordance with the Commission’s rules and policies. *See, e.g.*, 47 C.F.R. § 0.459.

¹³⁹ *See* AirCell Further Notes on the Deployment of Two Cross-Polarized Systems at 3.

¹⁴⁰ *See* Letter from Robert S. Bray, Deputy Assistant Director, Federal Air Marshal Service, U.S. Immigration and Customs Enforcement, U.S. Department of Homeland Security, to Marlene H. Dortch, Secretary, Federal Communications Commission, dated Nov. 2, 2004.

¹⁴¹ *See, e.g.*, AirCell October 1 Presentation to FCC at 3.

¹⁴² 47 U.S.C. § 151.

¹⁴³ AirCell states that a handoff of traffic between an air-ground system and a terrestrial system at 500 feet would facilitate the provision of deck-to-deck service. *See* AirCell Two Cross-Polarized Systems in the ATG Band at 3-5. *See also* AirCell Further Notes on the Deployment of Two Cross-Polarized Systems at 4-7.

¹⁴⁴ *See* AirCell September 9 Response to FCC at 1-2; Boeing Response to Verizon Airfone’s *Ex parte* Presentation of September 3 and 10, 2004 at 4-5.

dictate rules such as requiring that the parties coordinate ground station locations or adhere to spacing criteria. AirCell, moreover, notes that if licensees that share spectrum wish to deploy incompatible technologies, one of the licensees may have to acquire spectrum in another band suitable for air-ground service.¹⁴⁵ We conclude that adopting only the spectrum sharing proposal of AirCell and Boeing and incorporating it into our rules may unnecessarily limit a licensee's ability to respond to changing market conditions and provide optimal air-ground broadband services to the public. We therefore make available a sharing plan that would permit the licensees, rather than the Commission, to determine appropriate and necessary sharing rules. In order to provide potential licensees requiring additional flexibility with the ability to operate without sharing requirements, we also make available exclusive licensing plans as well. The holder of an exclusive spectrum block could, for example, flexibly site its ground stations and select any technology without having to coordinate with another operator in the band. Accordingly, we provide for both shared and exclusive licensing options.

38. The flexible band configuration approach that we adopt today will enable interested parties to bid on overlapping spectrum licenses (band plan 1) as proposed by AirCell and Boeing in the event that they believe spectrum sharing will best meet their needs for the provision of air-ground services. Under this approach, the individual licensees—rather than the Commission, as suggested by AirCell and Boeing—would determine the criteria for ground station locations and other technical requirements necessary to facilitate the provision of broadband services on an overlapped basis. Moreover, in lieu of codifying their sharing plan into the Commission's rules, any sharing plan that the winning bidders develop between themselves can be modified at any time without their having to seek a change in the rules. If band plan 1 is implemented, we expect the parties to engage in good faith negotiations in developing and implementing their spectrum sharing plan. If the two licensees cannot agree on a spectrum sharing plan or if a dispute arises under their initial or amended agreement, we would encourage them to use binding arbitration or other alternative dispute resolution procedures. Alternatively, either party may request that the Commission resolve major disputes by filing, for example, a petition for declaratory ruling; the Commission would endeavor to resolve such matters expeditiously.

39. *Eligibility Restriction.* A number of commenting parties urge us to promote competition in the 800 MHz air-ground band.¹⁴⁶ T-Mobile USA, for example, supports licensing multiple providers in the band if it is technically feasible.¹⁴⁷ AirCell, Boeing, and Space Data state that we should limit eligibility to prevent a single entity from obtaining all four megahertz of spectrum in the band.¹⁴⁸ Verizon

¹⁴⁵ See AirCell Air-to-Ground Myths & Realities at 4.

¹⁴⁶ See, e.g., Letter from the Honorable Fred Upton, Chairman, House Energy and Commerce Subcommittee on Telecommunications and the Internet, to Michael Powell, Chairman, Federal Communications Commission, dated Dec. 10, 2004 (the Commission should “enable competition in the air-to-ground marketplace”); Letter from the Honorable Conrad Burns, Deputy Whip, United States Senate, to Michael Powell, Chairman, Federal Communications Commission, dated Dec. 1, 2004 (the Commission should “formulate a policy that promotes competition in air-ground services”); Letter from Robert C. Land, Vice President of Government Affairs and Associate General Counsel, JetBlue Airways, to Marlene H. Dortch, Secretary, Federal Communications Commission, dated Dec. 6, 2004; Letter from Luisa L. Lancetti, Vice President, Wireless Regulatory Affairs, Sprint, to Marlene H. Dortch, Secretary, Federal Communications Commission, dated Dec. 3, 2004; Letter from Edward P. Faberman, Executive Director, Air Carrier Association of America, to Marlene H. Dortch, Secretary, Federal Communications Commission, dated Oct. 4, 2004.

¹⁴⁷ See Letter from Thomas J. Sugrue, Vice President, Government Affairs, T-Mobile USA, to Marlene H. Dortch, Secretary, Federal Communications Commission, dated Nov. 15, 2004.

¹⁴⁸ See AirCell Air-to-Ground Myths & Realities at 4; Letter from Howard J. Symons, Mintz Levin Cohn Ferris Glovsky and Popeo, to Marlene H. Dortch, Secretary, Federal Communications Commission, dated Nov. 16, 2004, (continued....)

Airfone, however, contends that we should make available all four megahertz of spectrum in the band to a single party on an exclusive basis.¹⁴⁹

40. In developing the available band plan options, we have considered the potential harms and benefits that may accrue from the possibility of a single provider in this band versus opportunities for multiple service providers. We have also weighed the possible harms and benefits in the context of our goal in this proceeding of facilitating the highest valued use of this spectrum, resulting in the provision of wireless telecommunications services onboard aircraft that better meet the needs of the traveling public.¹⁵⁰ Included in this balancing, we have considered not only the existence of emerging satellite-based competition¹⁵¹ but also the availability of other spectrum for the provision of air-ground service.¹⁵² In addition, we have taken into account the fact that our new air-ground band plan and rules will provide an adequate amount of spectrum for the provision of new high-speed wireless services using the 800 MHz air-ground spectrum that cannot be provided under our current rules, and we anticipate that any future provider will take advantage of the new rules to provide services that will compete more directly with broadband air-ground providers operating from different platforms. Therefore, we find that the air-ground band plan and the flexible service rules that we adopt today are likely to enhance intermodal air-ground competition even if ultimately only one entity operates in the 800 MHz air-ground band.

41. Nevertheless, in light of the very limited amount of spectrum (four megahertz) available in the 800 MHz air-ground band, we conclude that the public interest would be served by ensuring access to this spectrum by more than one entrant by prohibiting any single party from controlling more than three megahertz of spectrum in the band. Although other spectrum and platforms will be available for the provision of domestic air-ground service, the 800 MHz air-ground band constitutes the only four megahertz of spectrum dedicated specifically to the commercial air-ground service in the United States. Thus, there is currently no guarantee that any spectrum other than the 800 MHz air-ground band and the spectrum used by satellite services will in fact be used for commercial air-ground service. We accordingly conclude that it is in the public interest to promote competition by ensuring that at least two parties will have an opportunity to provide service in the 800 MHz air-ground band. Other providers will be able to access the spectrum through secondary markets, resale or similar means.¹⁵³ In addition, the record demonstrates that no more than three megahertz of spectrum is required to deliver high-speed air-ground services using today's broadband technologies.¹⁵⁴ Permitting one party to control the entire four megahertz of spectrum comprising the band therefore could result in one megahertz of spectrum (25 percent of the band) lying fallow, which would undermine our goal of promoting the highest valued use of this spectrum. As discussed below, we find that the holder of a 1 MHz spectrum block could provide a meaningful competitive alternative to air-ground services currently offered by Globalstar and Iridium, could offer more robust applications than currently provided by AirCell and Verizon Airfone once the latter discontinues its narrowband operations in the 1 MHz spectrum block, and could offer services superior to Air-Ground Radiotelephone Automated Service (AGRAS) stations in the 454/459 MHz band.

(Continued from previous page) _____
transmitting "Bidders in an ATG Auction Should Be Limited To Acquiring a Single License" ("Boeing November 16 *Ex parte*"); Space Data November 16, 2004 Presentation at 7-9.

¹⁴⁹ See Letter from Donald C. Brittingham, Director-Wireless/Spectrum Policy, Verizon, to Marlene H. Dortch, Secretary, Federal Communications Commission, dated Dec. 8, 2004.

¹⁵⁰ See Notice, 18 FCC Rcd at 8389 ¶17.

¹⁵¹ See *supra* paras. 14-20.

¹⁵² See *infra* para. 45.

¹⁵³ See *supra* para. 32.

¹⁵⁴ See *supra* para. 31.

A 1 MHz spectrum block could support such applications as email service, Internet access, messaging services, avionics support, and homeland security services.¹⁵⁵ Given the many potential uses of a 1 MHz spectrum block, restricting the access of any single party to three megahertz of the spectrum not only will increase the air-ground service choices available to consumers, but also will ensure the efficient use of this spectrum. We also believe that promoting competition in the band and with satellite-based service providers will serve the public interest by spurring technological innovation.¹⁵⁶ In light of these findings, we conclude that it is in the public interest to have two licensees in this band.

42. The Commission has previously determined that an eligibility restriction may be imposed when open eligibility poses a significant likelihood of substantial harm to competition in specific markets and when a restriction will be effective in eliminating that harm.¹⁵⁷ AirCell, Boeing, and Space Data argue that we should prevent a single entity from obtaining all four megahertz of spectrum in the 800 MHz air-ground band,¹⁵⁸ but they do not specifically address whether open eligibility in the band would result in a significant likelihood of substantial competitive harm in the air-ground market. In light of our findings above that three megahertz is an adequate amount of spectrum to provide new services and that an eligibility restriction is in the public interest, we conclude that it is unnecessary at this time for us to determine whether there would be “a significant likelihood of substantial harm to competition” if we imposed no eligibility restrictions in this band. Although we do not apply the “competitive harm” standard in this proceeding, as this market develops we will, as in other contexts, consider a waiver of the eligibility rule based on a showing that market conditions and other factors would favor common control of more than three megahertz without resulting in a significant likelihood of substantial competitive harm.¹⁵⁹

43. In view of the foregoing, we will prohibit any party from obtaining a controlling interest, either at auction or by a post-auction transaction, in more than three megahertz of spectrum (either shared or exclusive) in the 800 MHz air-ground band. Each of the three band configurations contains two licenses and each includes at least one 3 MHz license. Accordingly, no party may have a controlling

¹⁵⁵ See *infra* para. 49.

¹⁵⁶ See AirCell London Declaration at 9 ¶16 (noting that “[c]ompetition between providers would encourage innovation and deployment of new technologies”).

¹⁵⁷ See, e.g., Allocations and Service Rules for the 71-76 GHz, 81-86 GHz and 92-95 GHz Bands, *Report and Order*, 18 FCC Rcd 23318, 23346-47 ¶¶69-70 (2003); Amendment of Parts 2 and 25 of the Commission's Rules to Permit Operation of NGSO FSS Systems Co-Frequency with GSO and Terrestrial Systems in the Ku-Band Frequency Range, Amendment of the Commission's Rules to Authorize Subsidiary Terrestrial Use of the 12.2-12.7 GHz Band by Direct Broadcast Satellite Licensees and Their Affiliates, and Applications of Broadwave USA, PDC Broadband Corporation, and Satellite Receivers, Ltd. to Provide a Fixed Service in the 12.2-12.7 GHz Band, *Memorandum Opinion and Order and Second Report and Order*, 17 FCC Rcd 9614, 9677-82 ¶¶159-70 (2002); Amendment of the Commission's Rules Regarding the 37.0-38.6 GHz and 38.6-40.0 GHz Bands, Implementation of Section 309(j) of the Communications Act - Competitive Bidding, 37.0-38.6 GHz and 38.6-40.0 GHz, *Report and Order and Second Notice of Proposed Rule Making*, 12 FCC Rcd 18600, 18619-20 ¶¶32-35 (1997).

¹⁵⁸ See, e.g., AirCell London Declaration at 16 ¶30 (“the FCC should not risk auctioning a single ATG license”); Boeing November 16 *Ex parte* at 1 (noting that the benefits of competition will be negated if a single entity is permitted to occupy the entire air-ground band); Space Data November 16, 2004 Presentation at 4 (noting that a holder of an exclusive 4 MHz license would have no incentive to provide a competitor with access to the air-ground market).

¹⁵⁹ See 2000 Biennial Regulatory Review, Spectrum Aggregation Limits for Commercial Mobile Radio Services, *Report and Order*, 16 FCC Rcd 22668, 22669, 22671, 22704-705, 22708-709 ¶¶2, 7, 78, 88-89 (2001); 1998 Biennial Regulatory Review, Spectrum Aggregation Limits for Wireless Telecommunications Carriers, *Report and Order*, 15 FCC Rcd 9219, 9256 ¶82 (1999).

interest in more than one license in the band plan implemented as a result of the Commission's auction of new air-ground licenses. For purposes of this eligibility restriction, individuals and entities with either de jure or de facto control of a licensee in the band will be considered to have a controlling interest in the licensee.¹⁶⁰

44. We also will apply the definitions of "controlling interests" and "affiliate" currently set forth in Sections 1.2110(c)(2) and 1.2110(c)(5) of the Commission's rules.¹⁶¹ These provisions have worked well to identify individuals and entities that have the ability to control applicants for Commission licenses and therefore are well-suited to our goal here of ensuring that no party will hold a controlling interest in more than three megahertz of spectrum (shared or exclusive) in the 800 MHz air-ground band. We note that Section 1.2110(c)(2) includes the requirement that ownership interests generally be calculated on a fully diluted basis,¹⁶² and also provides that any person who manages the operations of an applicant pursuant to a management agreement, or enters into a joint marketing agreement with an applicant, shall be considered to have a controlling interest in the applicant if such person, or its affiliate, has authority to make decisions or otherwise engage in practices or activities that determine, or significantly influence, the types of services offered, or the terms or prices of such services.¹⁶³ We find that, together with the other provisions of Sections 1.2110(c)(2) and 1.2110(c)(5), these provisions will ensure that no entity will hold a controlling interest in more than three megahertz of spectrum (shared or exclusive) in the 800 MHz air-ground band.

45. *Additional Spectrum.* We note that in addition to the 800 MHz air-ground band, other mobile allocation spectrum is available for the provision of air-ground communications services, including several commercial mobile radio service bands. The allocations for the frequency blocks 698-792 MHz, 1710-1755 MHz, 1850-2000 MHz, and 2110-2175 MHz, for example, do not restrict aeronautical communications and could be used to provide air-ground communications services. We are committed to fostering flexible regulatory schemes to facilitate competitive entry in the provision of air-ground communications. In the *Advanced Wireless Services Notice*, for example, we have sought comment on whether two nationwide 10 MHz licenses (1915-1920 MHz/1995-2000 MHz, and 2020-2025 MHz/2175-2180 MHz) should be issued for services such as air-ground.¹⁶⁴ Sprint Corporation and Verizon Wireless have filed comments in that proceeding noting that this spectrum would be particularly well-suited for the provision of air-ground service, which would be consistent with the band's existing service allocations.¹⁶⁵ T-Mobile USA also notes that this spectrum could be used to provide air-ground

¹⁶⁰ *De jure* control is evidenced by holdings of greater than 50 percent of the voting stock of a corporation, or in the case of a partnership, general partnership interests. *De facto* control is determined on a case-by-case basis.

¹⁶¹ 47 C.F.R. §§ 1.2110(c)(2) & (5). These provisions define controlling interests and affiliates for the purpose of determining auction applicants' eligibility for small business provisions.

¹⁶² 47 C.F.R. § 1.2110(c)(2)(ii)(A)(1).

¹⁶³ 47 C.F.R. §§ 1.2105(c)(2)(ii)(H) & (I).

¹⁶⁴ See *In the Matter of Service Rules for Advanced Wireless Services in the 1915-1920 MHz, 1995-2000 MHz, 2020-2025 MHz and 2175-2180 MHz Bands, Notice of Proposed Rulemaking*, 19 FCC Rcd 19263, 19272 ¶22 (2004) ("*Advanced Wireless Services Notice*"). Sprint suggests that the Commission specifically designate spectrum in these bands for air-ground service. See Letter from Luisa L. Lancetti, Vice President, Wireless Regulatory Affairs, Sprint, to Marlene H. Dortch, Secretary, Federal Communications Commission, dated Dec. 3, 2004.

¹⁶⁵ See *Joints Comments of Sprint Corporation and Verizon Wireless*, WT Dkt No. 04-356, at 5 (filed Dec. 8, 2004).

service.¹⁶⁶

46. *Intermodal Competition.* We conclude that satellite-based systems and terrestrial air-ground systems have the potential to compete with one another.¹⁶⁷ Satellite-based companies currently are developing or already providing high-speed Internet access to passengers onboard aircraft,¹⁶⁸ and intend to provide in-flight entertainment, consumer services, security, flight deck data, cabin crew operations, operational services, and emergency medical support.¹⁶⁹ Boeing notes that aeronautical mobile satellite spectrum is an “appropriate vehicle” for the provision of domestic air-ground communications services, but that it is not “fully substitutable” for terrestrial air-ground service.¹⁷⁰ In its reply comments, however, Boeing suggests that “aeronautical communication services are composed of a broader class of services than ATG operations in the 800 MHz or terrestrial cellular bands” and includes both traditional voice and limited data service (currently offered in the 800 MHz and cellular bands) and advanced broadband communications applications, such as those provided by Connexion by Boeing.¹⁷¹ It states that “aeronautical communication services can be provided using various types of technologies and system architectures, including terrestrial and satellite-based systems.”¹⁷² We agree.

47. Although terrestrial and satellite platforms are not perfect competitive substitutes from which to provide air-ground services, either platform can be used to deliver high-speed broadband connectivity to aircraft. Satellite platforms offer an efficient means to deliver point-to-multipoint services such as multi-channel video services to aircraft. Depending on the system configuration, higher data rates to aircraft can be achieved via satellite.¹⁷³ Boeing states that, at some level of domestic traffic, an air-ground system or a hybrid air-ground/satellite system would be more cost-effective than a satellite-based system.¹⁷⁴ On the other hand, terrestrial systems may be better suited for voice over Internet Protocol (VoIP) services because of lower latency.¹⁷⁵

¹⁶⁶ See Comments of T-Mobile USA, Inc., WT Dkt No. 04-356, at 8 n.17 (filed Dec. 8, 2004). *But cf.* Comments of Nextel Communications, WT Dkt No. 04-356, at 6 (filed Dec. 8, 2004) (asserting that use of this spectrum for air-ground service has the potential to cause interference to services in adjacent spectrum bands).

¹⁶⁷ American Airlines urges us to view the market for the competitive provision of air-ground services as including services in the 800 MHz air-ground band and satellite-based services. See American Airlines Letters, *supra* note 34.

¹⁶⁸ See *supra* paras. 14-20.

¹⁶⁹ See *id.*

¹⁷⁰ See Boeing Response to Verizon Airfone’s *Ex parte* Presentations of September 3 and 10, 2004 at 3.

¹⁷¹ Boeing Reply Comments at 7.

¹⁷² See *id.*

¹⁷³ See Satcom Shakeout, Business & Commercial Aviation, Fred George, at 89 (Sept. 2004) (noting that Ku-band satellite communications systems have the potential to provide 10 Mbps satellite-to-aircraft download speeds).

¹⁷⁴ See Letter from Carlos M. Nalda, Steptoe and Johnson, to Marlene H. Dortch, Secretary, Federal Communications Commission, dated Dec. 11, 2003, transmitting “Connexion by Boeing Aeronautical Broadband” at Slide 9. See also Broad Verizon, Shepard’s Inflight, Vol. 10, No. 3 at 11 (Autumn 2004) (noting that, according to Verizon Airfone, terrestrial infrastructure may be more economical than satellite infrastructure to serve domestic markets). See also Amendment of the Commission’s Rules Relative to Allocation of the 849-851/894-896 MHz Bands, *Report and Order*, 5 FCC Rcd 3861, 3863 ¶19 (1990) (noting that the cost of providing air-ground services “via satellite is likely to be greater, at least initially, than the cost of such service over terrestrial-based facilities”).

¹⁷⁵ Latency refers to the delay between when a TCP/IP packet is transmitted through the system and when it is received.

48. The regulatory flexibility afforded by the licensing approach that we adopt today will enable at least one licensee in each of the three band plans to deploy advanced broadband technologies and thereby provide a meaningful competitive alternative to services offered or being developed by a number of satellite-based competitors.¹⁷⁶ Spectrum blocks A, B, C, and F each provide sufficient bandwidth to deliver an array of broadband services to passengers onboard aircraft, including access to the Internet, corporate virtual private networks, personal email accounts, and VoIP services. These spectrum blocks also are well-suited for the provision of homeland security applications (e.g., services to federal air marshals, the military, and first responders), communications with aircraft personnel, and monitoring of critical avionic systems.

49. Band plans 2 and 3 each include exclusive 1 MHz and 3 MHz spectrum blocks. While the holder of a 1 MHz spectrum block may not be able to provide the same level of broadband services as satellite providers such as Connexion by Boeing, or the holder of a 3 MHz spectrum block in the air-ground band, it could provide a meaningful competitive alternative to air-ground services currently offered by Globalstar and Iridium, which use satellite systems.¹⁷⁷ Space Data, for example, notes that a 1 MHz license could accommodate iDEN and most narrowband technologies, which would provide sufficient capacity for voice and short messaging services (SMS) that could compete with another operator in the band.¹⁷⁸ Once Verizon Airfone discontinues its narrowband operations in the 1 MHz spectrum block, our flexible regulatory approach would enable the holder of an exclusive 1 MHz spectrum block to offer more robust applications than currently provided by AirCell¹⁷⁹ and Verizon Airfone. A 1 MHz exclusive spectrum block also would be superior to Air-Ground Radiotelephone Automated Service (AGRAS) stations in the 454/459 MHz band, which serve the general aviation market, because AGRAS is analog and limited to 20 kHz emissions within 12 paired channels spaced at 25 kHz.¹⁸⁰ Given the variety of applications desired by the various aviation markets,¹⁸¹ a 1 MHz spectrum block could be used to serve niche markets and customers with different service demands than larger passenger aircraft. Such applications might include email service, Internet access, messaging services, avionic support, and homeland security services. Accordingly, we find that a 1 MHz spectrum block would facilitate the competitive provision of a variety of air-ground voice and data applications.

50. *Competitive Safeguards.* AirCell expresses concern that an air-ground licensee could unfairly favor a particular class of subscribers or unreasonably refuse to provide service to certain airlines.¹⁸² AirCell points out that Verizon Airfone currently offers lower service rates to subscribers of

¹⁷⁶ See *supra* paras. 14-20.

¹⁷⁷ See *supra* para. 21.

¹⁷⁸ Space Data November 29 Analysis at 2.

¹⁷⁹ See *supra* para 22. AirCell serves more than 1,400 customers and uses no more than six cellular channels (360 kHz authorized bandwidth) per ground station.

¹⁸⁰ AGRAS provides two-way telephone service with only 520 kHz of authorized bandwidth in the United States and Canada.

¹⁸¹ We note there is a wide variety of airborne operations that could benefit from air-ground services, such as passenger airlines; commercial transport; business jets; general aviation including small business, propeller aircraft, pleasure flying, crop dusting, power line inspection, police and public safety, emergency medical transport, and traffic helicopters; and government aircraft. Many aircraft fly at 5,000 to 10,000 feet and would have service demands other than broadband internet.

¹⁸² See, e.g., AirCell Air-to-Ground Myths & Realities at 2 (suggesting major airlines might pressure an air-ground licensee not to serve some market segments).

wireless service provided by its affiliate, Verizon Wireless.¹⁸³ We note that, like other Part 22 licensees, 800 MHz Air-Ground Radiotelephone Service licensees are classified as commercial mobile radio service (CMRS) providers and thus are subject to common carrier regulation under Title II of the Communications Act.¹⁸⁴ While the Commission has previously decided to forbear from applying certain provisions of Title II to CMRS providers,¹⁸⁵ it has determined that it would be inappropriate to exempt CMRS providers from the competitive safeguards embodied in Sections 201 and 202 of the Act.¹⁸⁶ Air-ground licensees therefore are required to provide service upon reasonable request,¹⁸⁷ and their “charges, practices, classifications, and regulations for and in connection with” service must be just and reasonable.¹⁸⁸ Air-ground licensees moreover may not “make any unjust or unreasonable discrimination in charges, practices, classifications, regulations, facilities, or services for or in connection with a like communication service,” and may not afford any undue or unreasonable preference or advantage to any person or class of persons.¹⁸⁹ Accordingly, if an air-ground licensee were to unreasonably discriminate in its service rates, terms, or conditions, it could be subject to enforcement action by the Commission as well as a complaint proceeding initiated pursuant to Section 208 of the Communications Act.¹⁹⁰

51. Although the Commission retains the authority to enforce core provisions of Title II of the Act, the Commission previously determined to forbear from certain Title II provisions, including the tariffing provisions of Section 203, and to apply mandatory detariffing to CMRS providers (including 800 MHz air-ground licensees).¹⁹¹ The Commission relieved CMRS operators of the requirement to file tariffs and prohibited them from filing voluntary tariffs.¹⁹² The Commission based this determination on its finding that CMRS providers, including those in the 800 MHz air-ground band, were not dominant so as to warrant extensive regulation.¹⁹³ The Commission, however, remains free to revisit its determination regarding tariffing requirements should circumstances so warrant. In light of the unique characteristics of air-ground service, the Commission will monitor the development of the marketplace and will reserve the ability to take corrective action if necessary.

¹⁸³ See AirCell London Declaration at 11 ¶20.

¹⁸⁴ See 47 U.S.C. § 332(c)(1); 47 C.F.R. §§ 20.9(a)(8), 20.15(a).

¹⁸⁵ See In The Matter of Implementation of Sections 3(n) and 332 of the Communications Act—Regulatory Treatment of Mobile Services, *Second Report and Order*, 9 FCC Rcd 1411 (1994) (“*CMRS Second Report and Order*”).

¹⁸⁶ See Personal Communications Industry Association's Broadband Personal Communications Services Alliance's Petition for Forbearance for Broadband Personal Communications Services, *Memorandum Opinion and Order and Notice of Proposed Rulemaking*, 13 FCC Rcd 16857 (1998).

¹⁸⁷ See 47 U.S.C. § 201(a).

¹⁸⁸ See 47 U.S.C. § 201(b).

¹⁸⁹ Verizon Airfone states that, in the event it deploys broadband service in the air-ground band, any passenger could access a WiFi hot spot installed on an aircraft regardless of their service provider though roaming agreements with wireless companies, ISPs, and others that provide their customers with WiFi Access. See Letter from Donald C. Brittingham, Director-Wireless/Spectrum Policy, Verizon, to Marlene H. Dortch, Secretary, Federal Communications Commission, dated Oct. 21, 2004.

¹⁹⁰ Sections 201 and 202 are enforced through the formal complaint process established in section 208 of the Act, 47 U.S.C. § 208. Under section 208, any aggrieved party may file a petition with the Commission complaining of an alleged violation of these provisions.

¹⁹¹ *CMRS Second Report and Order*, 9 FCC Rcd at 1418, 1480.

¹⁹² *Id.* at 1480.

¹⁹³ *Id.* at 1469-1470.

(iv) Air-Ground Services

52. We seek to let marketplace forces, rather than prescriptive regulations, determine the highest valued air-ground service applications. Accordingly, a new licensee may provide any type of air-ground service (*i.e.*, voice telephony, broadband Internet, data, etc.) to aircraft of any type, and serve any or all aviation markets (*e.g.*, commercial, government, and general). A licensee must provide service to aircraft. We note that current bilateral agreements between the United States, Canada, and Mexico provide for coordinated use of air-ground frequencies over North American airspace and are based on a narrow bandwidth channel scheme, and therefore may need to be renegotiated to provide for more flexible use of this spectrum.¹⁹⁴

53. In the *Notice*, we asked whether the air-ground spectrum should be limited to air-ground use, or whether we should allow for more flexible use.¹⁹⁵ At this time, we decide not to permit a licensee to provide ancillary land mobile or fixed services in the 800 MHz air-ground spectrum. We agree with T-Mobile that because there is only four megahertz of dedicated air-ground spectrum, it should be used predominantly for the provision of air-ground service.¹⁹⁶ We also note that a number of parties claim that adjacent band interference could arise from the provision of ancillary services.¹⁹⁷ While we believe that it would be possible to address the potential for adjacent band interference, we find that the public interest would be best served at this time by ensuring that this limited spectrum resource is devoted to the provision of air-ground service.

4. Technical Standards

54. We are adopting the minimal set of technical rules for the new air-ground service necessary to implement the three alternative band plan configurations that will be subject to auction. Generally, these rules provide licensees flexibility to deploy any type of transmission technology, provided that the radio emissions produced fit within a licensee's assigned spectrum. The new technical rules limit only transmitting power and the power level of unwanted emissions.

55. Under the new rules, an air-ground licensee will be allowed greater flexibility than under the current rules to deploy the technologies, both now and in the future,¹⁹⁸ that it believes will best enable it to provide services desired by consumers. As a general matter, these new technical rules are crafted to allow sufficient power to provide robust air-ground services, while limiting the potential for harmful interference to services operating in adjacent spectrum.

56. *Transmitting power limits.* In considering how the air-ground power limit rules may need to be modified, we first review the existing air-ground power limit rules. We note that inter-service interference has not been reported to the Commission as a significant problem under these rules. These

¹⁹⁴ See *supra* note 29.

¹⁹⁵ *Notice*, 18 FCC Rcd at 8390 ¶21.

¹⁹⁶ See Letter from Thomas J. Sugrue, Vice President, Government Affairs, T-Mobile USA, to Marlene H. Dortch, Secretary, Federal Communications Commission, dated Nov. 15, 2004.

¹⁹⁷ See AirCell Air-to-Ground Myths & Realities at 1; Boeing December 8 *Ex parte*; Letter from Trey Hanbury, Senior Counsel, Nextel Communications, to Marlene H. Dortch, Secretary, Federal Communications Commission, dated Dec. 8, 2004 (letter regarding ancillary spectrum use); Letter from Luisa L. Lancetti, Vice President, Wireless Regulatory Affairs, Sprint, to Marlene H. Dortch, Secretary, Federal Communications Commission, dated Dec. 3, 2004. See also Cingular Wireless Comments at 6-9; AMTA Comments at 4.

¹⁹⁸ For example, licensees could utilize directional or smart antennas to increase capacity.

rules provide maximum transmitting power limits of 100 Watts ERP for ground stations, 30 Watts ERP for airborne mobiles, and 1 Watt ERP for low power ground stations.¹⁹⁹ These power limits were proposed by The Goeken Group Corporation in General Docket No. 88-96 as a part of a plan for sharing narrowband air-ground channels.²⁰⁰ The principal technical elements of that plan, including the power limits, were ultimately adopted by the Commission.

57. In order to contribute to our goal of providing a viable, competitive terrestrial air-ground service, the new power limit rule must allow transmitting power sufficient to provide a robust broadband service. AirCell, Boeing, and Verizon each seek to provide high-speed Internet service using CDMA2000 1xEV-DO (as well as possibly Flash-OFDM in the case of Verizon Airfone) in the band, and we consider it likely that one of these technologies, or a similar technology, will be used in the reconfigured air-ground band. We therefore adopt a transmitting power level that will allow these broadband technologies to function efficiently. In the case of CDMA2000 1xEV-DO, the transmitting power has to be high enough to maintain a substantial positive signal to interference and noise ratio (SINR) in order to enjoy a high data rate. When the SINR drops below certain values, excessive errors result, and the system technology automatically compensates by changing the modulation type (*e.g.*, from 16QAM to QPSK) and lowering the data rate. In other words, with CDMA2000 1xEV-DO, transmitting power trades off against the data rate. With FLASH-OFDM, high data rates produce an emission envelope having a relatively high peak to average power ratio. These factors suggest that a ground station power limit higher than that in the existing rule is appropriate.

58. The studies and simulations filed in the record assume ground station power levels to be on the order of 400 to 600 Watts ERP.²⁰¹ AirCell asserts that airborne mobile stations may operate satisfactorily with less than 1 Watt ERP.²⁰² Verizon, on the other hand, claims that an airborne mobile power level of 12 Watts ERP is necessary to provide reliable high-speed Internet connectivity.²⁰³ We have considered the various proposed air-ground forward and reverse power examples in the record,²⁰⁴ and we conclude that a ground station maximum power limit of 500 Watts ERP and an airborne mobile station maximum power limit of 12 Watts ERP will allow a licensee to deploy CDMA2000 1xEV-DO and/or FLASH-OFDM with an ample margin. Installations will also be subject to the radiofrequency radiation exposure limits rules set forth in Section 1.1310 of the Commission's rules.²⁰⁵

59. *Potential for interference with adjacent services.* We next address the potential for interference to existing services operating in the spectrum adjacent to the air-ground service. A number of parties, including AirCell,²⁰⁶ CTIA-The Wireless Association (CTIA),²⁰⁷ Motorola,²⁰⁸ Nextel

¹⁹⁹ 47 C.F.R. § 22.867.

²⁰⁰ Comments of The Goeken Group Corporation, Gen. Dkt. No. 88-96, Exhibit B, ¶9 (filed Aug. 8, 1989).

²⁰¹ See, *e.g.*, AirCell/Boeing Joint Proposal at 3-8.

²⁰² AirCell actually specifies 23 dBm EIRP, which is equal to 0.12 Watts ERP.

²⁰³ See Coexistence Analysis for cross-duplex air-to ground system, filed Apr. 12, 2004, at 19. Verizon actually specifies 43 dBm EIRP, which is equal to 12.2 Watts ERP.

²⁰⁴ See, *e.g.*, AirCell/Boeing Joint Proposal at 3-8.

²⁰⁵ 47 C.F.R. § 1.1310.

²⁰⁶ AirCell Response to Nextel's Analysis on Wideband Air-to-Ground Inference, filed Nov. 23, 2004 ("AirCell November 23 *Ex parte*").

²⁰⁷ Letter from Christopher Guttman-McCabe, CTIA, to Marlene H. Dortch, Secretary, Federal Communications Commission, dated Dec. 6, 2004 ("CTIA December 6 *Ex parte*")

Communications, Inc. (Nextel),²⁰⁹ QUALCOMM,²¹⁰ and The Association of Public-Safety Communications Officials International, Inc. (APCO),²¹¹ filed comments regarding the possibility of interference occurring between stations in the reconfigured air-ground band and those in the existing radio services immediately adjacent to the air-ground allotment.²¹²

60. *Interference to air-ground from adjacent services.* Each of the two paired bands comprising the 800 MHz air-ground allocation is adjacent to and just above spectrum allocated to the cellular radiotelephone service. The 849-851 MHz uplink band is adjacent to and just below spectrum allocated to land mobile services, including public safety, which will soon become all public safety pursuant to the 800 MHz Order. The 894-896 MHz downlink band is adjacent to and just below spectrum allocated to land mobile services including 900 MHz SMR. These services are heavily used in many areas. Base stations in these adjacent services are authorized to utilize high power levels. Nextel argues that its experience with cellular out-of-band emissions (OOBE) and its 900 MHz SMR facilities show that such emissions could degrade the new air-ground operations.²¹³

61. The services adjacent to the 849-851 MHz band are subject to rules that limit their potential to cause interference to air-ground service. We do not, at this time, find a need to adopt additional or more stringent rules applicable to the adjacent service licensees to further limit interference potential to the air-ground service.²¹⁴ It would be excessively burdensome and inefficient to apply more stringent OOBE limits to existing adjacent spectrum services, which would apply to their transmitters everywhere, in order to protect a far smaller number of air-ground ground stations that will be located in several hundred and generally widely separated locations. We believe that, under the current rules, new air-ground systems should be able, through careful ground station site selection and technical coordination with the licensees in the adjacent services, to build out their systems. Potential licensees

(Continued from previous page) _____

²⁰⁸ Letter from Steve B. Sharkey, Director, Spectrum and Standards Strategy, Motorola, Inc., to Marlene H. Dortch, Secretary, Federal Communications Commission, dated Nov. 4, 2004 (“Motorola November 4 *Ex parte*”)

²⁰⁹ See Letter from Trey Hanbury, Senior Counsel, Nextel Communications, to Marlene H. Dortch, Secretary, Federal Communications Commission, dated Dec. 8, 2004 (proposing ten adjacent band interference mitigation measures) (“Nextel December 8 *Ex parte*”); Letter from Trey Hanbury, Senior Counsel, Nextel Communications, to Marlene H. Dortch, Secretary, Federal Communications Commission, dated Dec. 8, 2004 (letter regarding ancillary spectrum use); Letter from Trey Hanbury, Senior Counsel, Nextel Communications, to Marlene H. Dortch, Secretary, Federal Communications Commission, dated Dec. 6, 2004, transmitting “Harmful Interference from Wideband Air-to-Ground Systems into Public Safety, Specialized Mobile Radio, and Cellular Operations” (“Nextel December 6 *Ex parte*”); Wideband Air-to-Ground Interference Analysis of Nextel Communications, Nov. 16, 2004 (“Nextel November 16 *Ex parte*”).

²¹⁰ See Letter from Dean R. Brenner, Senior Director, Government Affairs, QUALCOMM Incorporated, to Marlene H. Dortch, Secretary, Federal Communications Commission, dated Dec. 8, 2004 (“QUALCOMM December 8 *Ex parte*”).

²¹¹ See Letter from Robert M. Gurss, Director, Legal & Government Affairs, APCO, to Marlene H. Dortch, Secretary, Federal Communications Commission, dated Nov. 29, 2004 (“APCO November 29 *Ex parte*”)

²¹² These services are the Cellular Radiotelephone Service, the 900 MHz SMR service, and miscellaneous (interleaved) land mobile services, including Business, Industrial, Land Transportation and Public Safety.

²¹³ See Nextel November 16 *Ex parte* at 16. Nextel offers worst-case calculations indicating that OOBE from cellular base stations could increase the noise floor in air-ground ground station receivers. It does not appear that such an increase would cause the effects that constitute harmful interference.

²¹⁴ Existing rules, such as Section 22.917, 47 C.F.R. § 22.917, regarding cellular service, and Section 90.210, 47 C.F.R. § 90.210, regarding the land mobile services, already provide some interference protection to the 800 MHz air-ground band.

should plan on obtaining qualified engineering advice regarding system design and ground station site selection, taking fully into account the existing radio frequency environment at candidate sites.

62. *Interference to Cellular Block B.* The air-ground ground station transmit band at 849-851 MHz is adjacent to the Cellular Radiotelephone Service Block B band, which is used for cellular base station receivers. Noting this adjacency, QUALCOMM asserts that OOB from ground stations could potentially cause interference to cellular base station receivers.²¹⁵ It suggests that we base our rule limiting ground station OOB on a criterion it proposes as the maximum allowable amount of received power from such emissions into the cellular base station receivers.²¹⁶ QUALCOMM claims that in order to meet its criterion, a ground station transmitter would need to use a transmit filter with attenuation of as much as 60 dB at the band edge.²¹⁷ It argues that such filters would be impractical if a CDMA air-ground signal is transmitted with only 125 kHz of guard band between it and the cellular band edge.²¹⁸ QUALCOMM claims that, in order to use such filtering, a CDMA air-ground signal should be transmitted in the middle of the 2 MHz ground station transmit band, to provide 375 kHz of guard band. In making this assertion, QUALCOMM apparently ignores the fact that there is already a small de facto guard band at the top of cellular Block B. We disagree that guard bands greater than 125 kHz are necessary for interference avoidance purposes.²¹⁹

63. We note that no harmful interference problems between the cellular service and the commercial air-ground service have been reported to the Commission during more than ten years of air-ground service operations, despite the fact that the air-ground mobile station and ground station transmit bands are reversed from the adjacent cellular bands.²²⁰ We believe that several factors may explain why there have been no reported interference problems.²²¹ First, both services have OOB limits to suppress undesired signals from adjacent allocations. Second, there are far fewer ground stations in an air-ground system than in a cellular system (*e.g.*, the entire U.S. airspace can be covered at an altitude of 20,000 feet by fewer than 200 ground stations). Third, an air-ground licensee must employ careful site selection practices for its ground stations, including an unobstructed view of the sky and consideration of the local RF environment (*i.e.*, what other stations are nearby). Further, air-ground antennas also are typically up-

²¹⁵ See QUALCOMM December 8 *Ex parte* at 1.

²¹⁶ Specifically, QUALCOMM asserts that the received power from ground station OOB into cellular receivers should be limited to no more than -117 dBm within a 1.25 MHz bandwidth. *Id.* Because QUALCOMM apparently based this specification on preventing more than a *de minimis* increase to the purported noise floor of a cellular base receiver, we do not agree that it is appropriate as a generally applicable metric for determining harmful interference to cellular systems.

²¹⁷ See QUALCOMM December 8 *Ex parte* at 2.

²¹⁸ See *id.*

²¹⁹ QUALCOMM also argues that, in order to protect cellular base station receivers, the guard band within the air-ground band and adjacent to the cellular band should be even larger than it had previously advocated. See *id.* at 1-2.

²²⁰ The 890-902 MHz band is also allocated to radiolocation operations on Government ships, but no new authorizations were to be granted for such operations after 1970. By reversing the base and mobile receive frequencies between the 849 MHz and 894 MHz bands, the potential for ship radiolocation operations to interfere with airborne receivers in the 894 MHz band was eliminated and ground station receivers would not likely be impacted by shipborne radiolocation operations. See 47 C.F.R. § 2.106 footnotes G2, US116 and US268.

²²¹ The current reversal of the base and mobile transmit bands means that the main potential path for interference is from cellular base station to air-ground base stations, and vice versa, and from airborne mobiles to cellular mobiles, and vice versa. The airborne mobiles, however, are generally too far away from terrestrial cellular mobiles when operating for mobile-to-mobile interference to occur.

tilted whereas cellular antennas are often down-tilted, adding some isolation between the two. The rule changes that we adopt to permit broadband air-ground services will not alter any of these factors and, consequently, we expect that these factors will be effective in avoiding inter-service interference under our new air-ground band plan.

64. Furthermore, we do not believe that the use of wider bandwidth technologies in the 800 MHz air-ground spectrum will result in increased interference between air-ground operations and cellular operations. Although spread spectrum emissions typically have broader out-of-band noise skirts, the level of this noise is subject to the Commission's OOB rules. We also note that the broadband spread spectrum based technologies used in the cellular band and those that the parties have proposed for use in the air-ground band are resistant to small amounts of out-of-band noise.²²² In summary, we find that applying our standard OOB rules here is adequate to limit unwanted emissions between ground stations in the air-ground service and base stations in the cellular service. We note that our standard OOB rules also provide that the Commission may require greater attenuation of unwanted emissions in the event it is necessary to prevent interference to other services.²²³

65. The airborne mobile transmit band (894-896 MHz) is adjacent on its lower side to the cellular telephone receivers of the Cellular Block B licensee. There have been no reported instances of harmful interference between airborne mobile stations and cellular telephones. This stems from the large distance separation between aircraft and cellular phones on the ground, and our decision today does not change this factor. We conclude that our OOB limits and the distance separation make it likely that the mobile units in these two services will continue to operate in adjacent spectrum without harmful interference problems. Nevertheless, if an air-ground licensee elects to operate aircraft mobile transmitters on the ground or during approach and take-off, they may find it necessary in some cases to provide additional attenuation of OOB falling into the spectrum below 894 MHz, in order to avoid interference to cellular phones in use in the immediate vicinity of airports.²²⁴

66. *Interference to Public Safety.* The upper edge of the air-ground ground station transmit band at 849-851 MHz is adjacent to what are now mobile receivers for interleaved business, industrial and land transportation, SMR, and public safety radio channels, but which will soon become the National Public Safety Plan Advisory Committee (NPSPAC) public safety channels pursuant to the our recent 800 MHz Order.²²⁵ Nextel asserts that OOB from air-ground ground stations could produce a significant amount of noise energy in nearby public safety receivers.²²⁶ Although we have found that emissions from cellular base stations may have contributed to interference problems with public safety and critical infrastructure mobile receivers above 851 MHz, there is no history of similar interference being caused by the existing air-ground ground stations to mobile receivers. There are again several factors that we believe may explain why air-ground caused interference is rare, including the fact that there are so few air-ground ground stations, as compared to cellular base stations, and the deployment characteristics of

²²² These technologies include GSM, TDMA, CDMA, and OFDM.

²²³ See 47 C.F.R. § 22.917(d). See also *id.* §§ 24.238(d), 27.53(k).

²²⁴ AirCell and Boeing propose to hand off air-ground service to terrestrial services (such as PCS) during take-off, landing, and while on the ground. See AirCell Further Notes on the Deployment of Two Cross-Polarized Systems at 4-7.

²²⁵ See *800 MHz Order*, 19 FCC Rcd at 15050 ¶151.

²²⁶ Nextel November 16 *Ex parte* at 12. For example, Nextel calculates a 53 dB excess over the recently adopted public safety protection level for a public safety receiver located 50 meters (164 feet) away from a broadband air-ground ground station. Nextel's calculations are based on worst-case assumptions with regard to OOB levels and propagation factors.

ground stations (e.g., up-tilted antennas). Further, we note that NPSPAC operations above 851 MHz will be protected by our OOB limit rule, including the provision that allows the Commission to require greater attenuation if necessary to prevent interference.

67. Nevertheless, in light of the substantial efforts of Nextel, APCO, public safety entities, and land mobile organizations to solve the interference problems in the 800 MHz band, we believe that it is prudent to adopt a rule providing that ground stations in the Air-Ground Radiotelephone Service that operate in the 849-851 MHz range will be subject to the same interference abatement obligation rules adopted for the cellular service in the 800 MHz Order.²²⁷ We note that AirCell, APCO, Motorola, and Nextel concur that this would be an appropriate safeguard for public safety and critical infrastructure services.²²⁸ AirCell argues, however, that we should not apply the interference abatement and resolution procedures established in the 800 MHz Order to the Air-Ground Radiotelephone Service.²²⁹ We disagree. While we believe that the potential for adjacent band interference is minimal, we find that the public interest would be served by applying these safeguards to air-ground licensees. The rule we are adopting is essentially the same as that adopted for the cellular service in the 800 MHz Order. We will not require air-ground licensees to participate in the establishment of the electronic notification process because we anticipate that this process will be in place by the time that new air-ground licenses are issued.

68. In addition to applying the 800 MHz Order safeguards to the 800 MHz Air-Ground Radiotelephone Service, Nextel claims that we should adopt further adjacent band interference mitigation measures.²³⁰ Nextel states that we should require air-ground licensees to avoid locating transmitters in public safety hotspots.²³¹ We find no basis for imposing this special requirement in addition to the 800 MHz Order safeguards that we apply. We also note there is no current mechanism for ascertaining the location of “public safety hotspots,” and that such hotspots could change over time. We therefore decline to adopt Nextel’s proposal. Nextel also asserts that we should direct air-ground licensees to submit detailed “documentation” of their system parameters and encourage them to mediate interference disputes with public safety and Critical Infrastructure Industry (CII) licensees.²³² We find that submission of such documentation to the Commission as well as mandatory mediation procedures are unnecessary in light of our application of the interference abatement and resolution procedures established in the 800 MHz Order to the air-ground service, and note as well that such documentation may be competitively sensitive. Nevertheless, we encourage air-ground, public safety, and CII licensees to work collaboratively to resolve interference using mediation and other appropriate forms of alternative dispute resolution procedures.

69. *Interference to 900 MHz SMR base receivers.* The airborne mobile transmit band (894-896 MHz) is adjacent on its upper side to the base station receive band in the 900 MHz SMR service. Distance separation will normally serve to protect 900 MHz SMR base station receivers because airborne stations normally operate at altitudes well above 900 MHz SMR base stations. Nextel, however, contends that there may be a problem where its 900 MHz SMR base stations are located near airport runways, and

²²⁷ See 800 MHz Order at 15029-30 ¶¶105-107 (to be codified at 47 C.F.R. §§ 22.970(b), 90.672).

²²⁸ See AirCell November 23 *Ex parte* at 10-11; APCO November 29 *Ex parte* at 1; Motorola November 4 *Ex parte* at 2-3; Nextel November 16 *Ex parte* at 12. Nextel, however, suggests that we adopt additional adjacent band interference mitigation measures. See Nextel December 6 *Ex parte* at 5 and Nextel December 8 *Ex parte*.

²²⁹ See Letter from William J. Gordon, VP, Regulatory Affairs, AirCell, to Marlene H. Dortch, Secretary, Federal Communications Commission, dated Dec. 7, 2004.

²³⁰ See Nextel December 8 *Ex parte*; Nextel December 6 *Ex parte* at 5.

²³¹ See Nextel December 8 *Ex parte* at 1.

²³² See *id.* at 1, 3.

if there are several aircraft at low altitude nearby at the same time.²³³ This possibility appears to be atypical and we find that it would be best addressed on a case-by-case basis rather than by a broad-based rule. Air-ground licensees and 900 MHz SMR licensees should cooperate to resolve any interference problems of this type.

70. *Miscellaneous interference issues.* Nextel argues that the AirCell/Boeing shared spectrum approach would be less likely than the exclusive license approaches supported by Verizon and Space Data to create interference to services in adjacent spectrum bands.²³⁴ Whether or not this may be true technically, we find that either approach can be deployed without causing harmful interference to adjacent services under the rules that we adopt today, provided that the licensees are aware of the potential for such interference and take necessary measures to comply with our rules to prevent such interference.

71. In view of the foregoing, we do not believe the record justifies adoption of more stringent OOB limits for the Air-Ground Radiotelephone Service. Accordingly, we will apply our harmonized flexible OOB limits rule, which currently applies to cellular and broadband PCS,²³⁵ to the 800 MHz Air-Ground Radiotelephone Service. We note that, in the event that band plan 2 or 3 is implemented, the exclusive licensees would be subject to the OOB standards between their spectrum blocks, as well as outside the air-ground band.

72. *Miscellaneous technical rules.* The existing air-ground rules have provided particular limits on transmitter frequency tolerance²³⁶ and specifications for automated operating procedures.²³⁷ We conclude it is unnecessary to retain such a detailed frequency tolerance rule. Under the legacy band configuration, numerous closely packed air-ground channels were shared by multiple licensees, so we required a frequency tolerance rule that tightly controlled frequency stability to minimize the possibility of adjacent channel interference. By contrast, our new rules establish wider spectrum blocks and we anticipate fewer communications channels. In addition, we expect that the advanced technologies likely to be used in this band will have to be inherently stable in order to work properly and possibly to compensate for Doppler shift as well. Thus, we find that we need only require in our rules that the frequency stability of equipment used be sufficient to ensure that, after accounting for Doppler frequency shifts, the occupied bandwidth of the fundamental emissions remains within the authorized frequency bands of operation. In the event that band plan 1 is implemented and licenses for spectrum sharing are issued, the licensees may choose to agree upon any number of miscellaneous technical standards that may be needed to facilitate shared spectrum operation and include them in the spectrum sharing plan that they would file with the Wireless Telecommunications Bureau.²³⁸

5. Incumbent Station KNKG804

73. Verizon Airfone is the sole incumbent currently operating in the 800 MHz air-ground

²³³ See Nextel November 16 *Ex parte* at 15-16. Nextel offers worst-case calculations indicating that OOB from nearby airborne mobile stations could increase the noise floor in 900 MHz SMR receivers. It does not appear that such an increase would cause the effects that constitute harmful interference.

²³⁴ See Nextel December 6 *Ex parte* at 4.

²³⁵ See 47 C.F.R. §§ 22.917, 24.238.

²³⁶ 47 C.F.R. § 22.863.

²³⁷ 47 C.F.R. § 22.865.

²³⁸ See *supra* para. 34 & notes 137, 138.

band.²³⁹ In April 2004, the company filed an application for renewal of its authorization to operate in the band, Call Sign KNKG804.²⁴⁰ For the reasons stated below, we grant Verizon Airfone a non-renewable license for a five-year term commencing on the effective date of this Report and Order.

74. At the outset, we reject Verizon Airfone's assertion that it has earned the right to exclusive use of the 800 MHz air-ground band based on its past efforts to build and support an air-ground telecommunications system.²⁴¹ Under the existing 800 MHz air-ground band plan and rules, Verizon Airfone is subject to sharing the band with up to five additional competing licensees and is limited to providing voice and slow speed data services. Under the flexible rules that we adopt today, a new air-ground licensee may provide any type of air-ground service (*i.e.*, voice telephony, broadband Internet, data, etc.) to aircraft of any type, and serve any or all aviation markets.²⁴² Exclusive use of the air-ground band would confer fundamentally greater rights and access to substantially more spectrum than is available to Verizon Airfone under its existing license and the current 800 MHz air-ground rules. We note that the 929 Paging Order,²⁴³ cited by the company, lends no support to its claim. In that proceeding, the Commission did not grant flexible spectrum rights or additional spectrum to existing licensees. Rather, the Commission granted exclusivity to existing and future paging licensees to use existing very-narrowband channels to provide paging services, provided that they satisfied certain construction and system loading requirements.²⁴⁴ In view of the foregoing, we find that there is no justification for granting Verizon Airfone exclusive use of the 800 MHz air-ground band, which would provide it with a substantial windfall, and we conclude that permitting competing applications for licenses in this band would better serve the public interest.

a. Transition of Incumbent System

75. The parties, including Verizon Airfone, state that a new broadband air-ground system could not operate efficiently, if at all, in the same spectrum with Verizon Airfone's existing narrowband system.²⁴⁵ The record reflects that paired 1.5 MHz channels will provide the necessary bandwidth to deploy broadband technologies such as CDMA2000 1xEV-DO.²⁴⁶ In order to ensure that the air-ground spectrum can be used to provide broadband air-ground services to the public in the near future, it is imperative to clear the incumbent narrowband system from a minimum of three megahertz of spectrum as soon as reasonably practicable. We conclude that, given the declining and relatively low usage level of Verizon Airfone's system,²⁴⁷ and because the original 800 MHz air-ground band plan was intended to

²³⁹ Skyway, however, has an STA to continue operating the old ClairCom system subject to the outcome of this proceeding. *See supra* note 33.

²⁴⁰ Airfone's application for renewal of its authorization is pending. *See* File No. 0001716212 (filed Apr. 28, 2004).

²⁴¹ *See* Verizon Airfone September 9 Statement at n.5.

²⁴² *See supra* para. 52.

²⁴³ *See* Amendment of the Commission's Rules to Provide Channel Exclusivity to Qualified Private Paging Systems at 929-930 MHz, *Report and Order*, 8 FCC Rcd 8318 (1993), recon. granted in part, 11 FCC Rcd 3091 (1996) ("929 Paging Order").

²⁴⁴ *Id.*

²⁴⁵ *See, e.g.*, AirCell Response to FCC Questions at 7 (noting that "the incumbent system will create severe interference upon the broadband systems"); Verizon Comments at 10.

²⁴⁶ *See supra* para. 31.

²⁴⁷ We note that the demand for Verizon Airfone service has declined 80 percent in recent years, from an average of 15 users to only three users per flight. *See* Joe Sharkey, "Almost here: Cell phones at 37,000 feet," *N.Y. Times*, Oct. 10, 2004, at C6.

accommodate six competing licensees, the existing system can be provided comparable spectrum in one megahertz of spectrum in the air-ground band. Verizon Airfone acknowledges that a one megahertz spectrum block would enable it to continue its narrowband operations.²⁴⁸

76. Verizon Airfone's incumbent system must cease operations in the lower 1.5 MHz portion of each 2 MHz air-ground band within 24 months of the initial date of grant of any license, if band plan 1 or 2 is implemented; Verizon Airfone may relocate its incumbent operations to the upper 0.5 MHz portion of each 2 MHz band²⁴⁹ and may continue to operate under the renewal authorization until the end of the five-year license term. If band plan 3 is implemented, Verizon Airfone's incumbent system must cease operations in the upper 1.5 MHz portion of each 2 MHz air-ground band within 24 months of the initial date of grant of any new license; Verizon Airfone may relocate its incumbent operations to the lower 0.5 MHz portion of each 2 MHz band²⁵⁰ and may continue to operate under the renewal authorization until the end of the five-year license term. We note that this transition period is consistent with Verizon Airfone's request that we provide it a "limited transitional period" for its narrowband system.²⁵¹ In revising our current air-ground rules, we are eliminating all of the command and control technical rules, which enabled dynamic sharing of communication channels under the former licensing scheme.²⁵² Verizon Airfone may reconfigure the narrowband channelization of its existing system in the upper 0.5 MHz portion of each 2 MHz band (or lower 0.5 MHz portion of each band if band plan 3 is implemented) any way it wants, including using control channel(s) of any authorized bandwidth less than 6 kHz (not limited to 3.2 kHz as they are now). We note that if Verizon Airfone acquires a new spectrum authorization as a result of competitive bidding, it could elect to continue its incumbent operations under such new authorization.

b. Reimbursement of Relocation Costs

77. We conclude, contrary to Verizon Airfone's arguments,²⁵³ that it would not be inequitable for the company to bear any costs associated with relocating its narrowband operations within the 24-month period set out above to accommodate a new entrant in the air-ground band. The original 800 MHz air-ground band plan was intended to accommodate six competing licensees in the air-ground band, and Verizon Airfone has never had a right to exclusive use of the band. The new license that we grant Verizon Airfone today, moreover, provides the company a substantial period—two years from the initial grant of any new air-ground license—to relocate its narrowband operations to one megahertz of spectrum in the band. Assuming an auction and initial license grant one year after the effective date of this order, Verizon Airfone would need to limit its operations to one megahertz three years into its 5-year license term. We note that this approach is consistent with the company's request for a "limited transitional period"²⁵⁴ to shift its narrowband operations to a 1 MHz spectrum block in the band.²⁵⁵

²⁴⁸ Verizon Airfone September 10 Statement at 20.

²⁴⁹ This spectrum includes all of former channel blocks 1 and 2 and approximately half of former channel block 3.

²⁵⁰ This spectrum includes all of former channel blocks 10 and 9 and approximately half of former channel block 8.

²⁵¹ Verizon Airfone Comments at 10.

²⁵² Specifically, Sections 22.857, 22.859, 22.863, 22.865, 22.869, and 22.871 are deleted. Sections 22.861 and 22.867 are amended to provide basic technical parameters for the new licensees.

²⁵³ Verizon Airfone September 9 Statement at 5-6.

²⁵⁴ Verizon Airfone Comments at 10.

²⁵⁵ Verizon Airfone September 10 Statement at 20.

78. We do not foresee harm to the flying public flowing from Verizon Airfone bearing any relocation expenses it may have. As noted above, demand for Verizon Airfone's service has markedly declined in recent years, and the company's system is approaching technological obsolescence. The company, moreover, has had more than ten years to recoup its investment in its air-ground system. We note that a new air-ground licensee could seek to negotiate and compensate Verizon Airfone to relocate earlier than required by the terms of Verizon Airfone's new license; Verizon Airfone, however, will not be obligated to engage in such negotiations. On balance, we conclude that any burden that might be incurred by Verizon Airfone to relocate its operations under the conditions we are adopting should be minimal. Accordingly, we require Verizon Airfone to bear any costs for relocating its narrowband operations in the air-ground band at the end of the 24-month transition period.

c. Renewal of Call Sign KNKG804

79. We reject Verizon Airfone's claim that we must afford it a hearing under Section 316 of the Act in the event that we modify its license to operate in the 800 MHz air-ground band.²⁵⁶ The hearing requirements of Section 316 only apply to modification of an existing license. Verizon Airfone's license expired on July 22, 2004, and Section 316 therefore is inapplicable.

80. We hereby grant Verizon Airfone Inc. a non-renewable license, Call Sign KNKG804, for a five-year term subject to the following conditions:

- If band plan 1 or 2 is implemented, Verizon Airfone must cease its existing narrowband operations in the lower 1.5 MHz portion of each 2 MHz air-ground band within 24 months of the initial date of grant of a new spectrum license.
- If band plan 1 or 2 is implemented, Verizon Airfone may relocate its incumbent operations to the upper 0.5 MHz portion of each 2 MHz band (0.5 MHz at 850.500-851.000 MHz paired with 0.5 MHz at 895.500-896.000 MHz).
- If band plan 3 is implemented, Verizon Airfone must cease its existing narrowband operations in the upper 1.5 MHz portion of each 2 MHz air-ground band within 24 months of the initial date of grant of a new spectrum license.
- If band plan 3 is implemented, Verizon Airfone may relocate its incumbent operations to the lower 0.5 MHz portion of each 2 MHz band (0.5 MHz at 849.000-849.500 MHz paired with 0.5 MHz at 894.000-894.500 MHz).
- The existing Section 22.867 power limits for ground stations (100 Watts ERP) and airborne mobile stations (30 Watts ERP) will become license terms. We are amending Section 22.867 and it will apply to the new licensees only.
- The existing Section 22.861 out-of-band and spurious emission limits will become license terms. We are amending Section 22.861 and it will apply to the new licensees only.
- The authorized emission bandwidth of any transmission from the existing system may not exceed 6 kHz. This license condition replaces Section 22.857(a)(2) because we are

²⁵⁶ Verizon Airfone September 9 Statement at 4.

removing Section 22.857. This condition requires that the existing system remain a narrowband system.

81. Verizon Airfone must coordinate any technical changes within 885 kilometers (550 miles) of the U.S.-Canadian or U.S.-Mexican borders with the appropriate air-ground licensees in those countries prior to requesting appropriate governmental approval.²⁵⁷ Verizon Airfone may locate or relocate ground stations operating at any power level (not exceeding 100 Watts), subject only to international coordination. Verizon Airfone must maintain and provide to the FCC and the new 800 MHz air-ground licensee(s) a current list of the locations and channels used at all ground stations, which will enable the licensee(s) to provide interference protection to the existing system's operations.

82. During the period that the existing system continues to operate and provide service, the licensee of a new spectrum license must not cause harmful interference to it. Protection from interference requires that the signals of the new licensee(s) must not exceed the current adjacent channel emission limit, which is a ground station received power of -130 dBm in 6 kHz, assuming a 0 dBi vertically polarized antenna.²⁵⁸ This limit will provide full interference protection to the existing system.

6. Construction Requirements

83. The record indicates that an air-ground system using broadband technologies, such as FLASH-OFDM and CDMA2000 1xEV-DO, cannot be deployed while the incumbent system operates in the same spectrum,²⁵⁹ and that paired 1.5 MHz channels will provide sufficient bandwidth in which to deploy these technologies.²⁶⁰ As noted above, in order to facilitate the provision of advanced air-ground telecommunications services to the public in the near future, Verizon Airfone must cease operations in the lower 1.5 MHz portion of each air-ground band within 24 months of the initial date of grant of any new spectrum license if band plan 1²⁶¹ or 2 is implemented.²⁶² If band plan 3 is implemented, Verizon Airfone must cease operations in the upper 1.5 MHz portion of each air-ground band within 24 months of the initial date of grant of a new spectrum license.²⁶³

84. In light of these considerations, we find that a five-year substantial service construction requirement for any new spectrum license—other than the 1 MHz spectrum licenses D and E—will serve the public interest and is consistent with our statutory mandate “to prevent stockpiling or warehousing by licensees, and to promote investment in and rapid deployment of new technologies and services.”²⁶⁴ At the end of the five-year construction period, a licensee must provide substantial service to aircraft. We

²⁵⁷ The FCC will submit coordination requests seeking any formal approvals needed under the existing international agreements, and will seek to update these agreements with these countries.

²⁵⁸ 47 C.F.R. § 22.861(b).

²⁵⁹ See, e.g., AirCell Response to FCC Questions at 7 (noting that “the incumbent system will create severe interference upon the broadband systems”); Verizon Comments at 10.

²⁶⁰ See *supra* para. 31.

²⁶¹ If band plan 1 is implemented, licensees A and B initially would share 1.5 MHz at 849.000-850.500 MHz paired with 1.5 MHz at 894.000-895.500 MHz. Once Verizon Airfone's incumbent system ceases operations in the upper 0.5 MHz of each band, licensee B would shift its operations to 1.5 MHz at 849.500-851.000 MHz paired with 1.5 MHz at 894.500-896.000 MHz.

²⁶² See *supra* para. 76.

²⁶³ *Id.*

²⁶⁴ 47 U.S.C. § 309(j)(4)(B).

define substantial service as service that is sound, favorable, and substantially above a level of mediocre service that would barely warrant renewal. We establish two safe harbors that would satisfy this substantial service obligation. First, construction and operation of 20 base stations, with at least one base station in each of the ten FAA regions,²⁶⁵ at the five-year benchmark would constitute substantial service. Alternatively, the construction and operation of base stations capable of serving the airspace of at least 25 of the 50 busiest airports (as measured by annual passenger boardings) at the five-year benchmark would constitute substantial service.²⁶⁶

85. We do not establish a construction requirement for spectrum licenses D and E. If either of these licenses is acquired, the licensee would have to share spectrum with Verizon Airfone's incumbent system until the expiration of Verizon Airfone's non-renewable license term. Depending on system configuration, a licensee of spectrum block D or E might not find it technically desirable to operate an air-ground system while sharing spectrum with the incumbent system. Under these circumstances, a construction requirement could result in a licensee deploying a less than optimal system.

B. 400 MHz Air-Ground Radiotelephone Service

86. The general aviation air-ground service operates in the 454.675-454.975 and 459.675-459.975 MHz bands and involves the provision of telecommunications service to private aircraft such as small single engine craft and corporate jets.²⁶⁷ As explained by one of the commenters in this proceeding, the channels licensed in this service are used for emergency and other purposes.²⁶⁸ These channels are interconnected with the public switched telephone network.²⁶⁹ Pursuant to our biennial review of regulations in the *Notice*, we are revising and eliminating certain rules governing this service.²⁷⁰ We also note that, to date, the Commission has accepted for filing nine sets of mutually exclusive applications in this service. Because the Commission is required under Section 309(j) of the Communications Act to resolve this mutual exclusivity by auction, we propose competitive bidding rules for the general aviation air-ground service in the *Notice* of Proposed Rulemaking below.²⁷¹

1. Form 409, Airborne Mobile Radio Telephone License Application

87. *Background.* In contrast to most Part 22 services, Section 22.3(b)(1) requires an individual authorization to operate a general aviation airborne mobile station—an end user unit—in the Air-Ground Radiotelephone Service.²⁷² This requirement is also reflected in Section 1.903(c) of our rules.²⁷³ Individuals must file FCC Form 409 (Airborne Mobile Radio Telephone License Application) to

²⁶⁵ See <http://www.faa.gov/arp/regions.cfm> (FAA regions).

²⁶⁶ See <http://www.faa.gov/arp/planning/stats/2002/CY02CommSerBoard.pdf> (FAA 2002 passenger boarding data).

²⁶⁷ See 47 C.F.R. §§ 22.805-22.819.

²⁶⁸ SkyTel Comments at 2.

²⁶⁹ *Id.*

²⁷⁰ In addition to the rules revised or eliminated as discussed below, we take this opportunity to update and reorganize the general aviation air-ground rules. In particular, we redesignate current Section 22.803 of the general rules as new Section 22.807 of the general aviation air-ground rules, and delete certain superfluous language therein that relates to the Rural Radiotelephone Service.

²⁷¹ See *infra* paras. 169-178.

²⁷² 47 C.F.R. § 22.3(b)(1).

²⁷³ 47 C.F.R. § 1.903(c).

apply for authority to operate an airborne station or to modify or renew an existing license.²⁷⁴ In the *Notice*, we tentatively concluded that this individual licensing requirement should be eliminated, although we also asked whether there might be any reasons for retaining this requirement or adopting a streamlined version of this requirement.²⁷⁵

88. *Discussion.* Despite the objections of SkyTel and Able Communications, we do not believe that the continued licensing of individual airborne mobile stations is warranted. SkyTel objects to the elimination of the licensing requirement because “there will be no means of knowing whether traffic is legitimate or from a rogue user on the system.”²⁷⁶ It adds that, unlike subscribers in the land mobile services, airborne subscribers are not associated with a single base station licensee, so if individual end user licensing is eliminated, there will be no way to determine the identity and number of potential users for the Air-Ground System.²⁷⁷

89. We have considered these concerns and do not believe they justify the continued use of FCC Form 409. At present, and likely for the foreseeable future, members of the public desiring service using the current Air-Ground Radiotelephone Automated Service (AGRAS) system must first purchase and install an AGRAS-compatible mobile telephone aboard their aircraft. Such mobile units are considerably more expensive and not as readily available as mobile telephones typically used with land-based public mobile systems. Coupled with the fact that the number of general aviation users is relatively small, the probability of “rogue” users is minimal.

90. More importantly, a potential air-ground subscriber must first register with the billing service utilized by the various air-ground licensees to obtain an aircraft telephone number in order to receive service. Therefore, the licensee’s own billing service would know the number and identification of legitimate users of the air-ground AGRAS system. Presumably, if an un-registered or “rogue” user attempted to place calls over the AGRAS system, service would be denied.

91. In addition, the Commission has received few complaints regarding these stations. As pointed out in the *Notice*, Air-Ground equipment is used to communicate with ground facilities that are otherwise licensed by the Commission.²⁷⁸ Moreover, we believe that the requirement to file Form 409 imposes an unnecessary regulatory burden on end users, because it involves preparation of a form as well as payment of a \$50 fee for each subscriber unit.

92. Therefore, in keeping with the Commission’s policy of simplifying, where appropriate, its licensing procedures and easing the administrative burden on licensees and other users of Wireless Radio Services, we eliminate, by revising Sections 1.903(c) and 22.3(b), the requirement that an authorization be obtained to operate general aviation airborne mobile stations in the Air-Ground Radiotelephone Service. We also eliminate FCC Form 409 and delete references to that form in Sections 1.1102 and 1.2003 of our rules.²⁷⁹

²⁷⁴ FCC Form 409 was adopted in 1976. See Amendment of Part 21, Domestic Public Radio Services (Other than Maritime Mobile) and Adoption of FCC Form 409, *Order*, 63 FCC 2d 228 (1976).

²⁷⁵ *Notice*, 18 FCC Rcd at 8391 ¶25.

²⁷⁶ SkyTel Comments at 2. See also Able Communications Comments at 3.

²⁷⁷ SkyTel Comments at 3.

²⁷⁸ *Notice*, 18 FCC Rcd at 8392 ¶27.

²⁷⁹ 47 C.F.R. §§ 1.1102, 1.2003.

2. Idle Tone

93. *Background.* Section 22.811 provides that, when a ground station transmitter authorized to transmit on any Air-Ground Radiotelephone Service channel listed in Section 22.805 (for general aviation air-ground service) is available for service but idle, it must continuously transmit a modulated signal on that channel with a power between 10 and 20 dB lower than the normal transmitting power.²⁸⁰ In the *Notice*, we pointed out that all U.S. Air-Ground stations are currently required to operate using Air-Ground Radiotelephone Automated Service (AGRAS), and that as a result, the idle tone rule, which was intended to facilitate manual Air-Ground service, appears to have become obsolete.²⁸¹ We thus tentatively concluded that Section 22.811 should be eliminated.²⁸²

94. *Discussion.* Both commenters on this issue express their desire to maintain the idle tone requirement. In particular, SkyTel argues that the rule is not obsolete, because idle tone transmissions facilitate the directing of calls to the correct channel.²⁸³ Able Communications adds that eliminating the control tone in the AGRAS air-ground service would adversely affect users, as new AGRAS system improvements are “backwards compatible,” relying on older protocols.²⁸⁴ Despite these comments, we continue to believe that the deletion of Section 22.811 from our rules is warranted. We take this opportunity to point out that the removal of this rule in no way prohibits carriers from employing the idle control tone. To the contrary, the action we take today is permissive. To the extent that idle tone transmissions are deemed valuable by system operators, they are free to continue to use them. In light of today’s automated system, however, we do not believe that mandating their continued use is warranted.

3. Construction Period for General Aviation Ground Stations

95. *Background.* Section 22.815 provides that “[t]he construction period (see § 22.142) for general aviation ground stations is 12 months.”²⁸⁵ In the *Notice*, we pointed out that former Section 22.142²⁸⁶ was consolidated into current Section 1.946²⁸⁷ as part of the implementation of the Universal Licensing System rules.²⁸⁸ We therefore proposed to eliminate the reference to former Section 22.142 in Section 22.815 and replace it with a reference to Section 1.946.

96. *Discussion.* As proposed in the *Notice*, we correct the reference in Section 22.815 to specify the actual rule section, Section 1.946.

²⁸⁰ 47 C.F.R. § 22.811.

²⁸¹ *Notice*, 18 FCC Rcd at 8408 ¶73.

²⁸² *Id.*

²⁸³ SkyTel Comments at 4.

²⁸⁴ Able Communications Comments at 2. The commenter also states that older equipment still uses the idle control tones.

²⁸⁵ 47 C.F.R. § 22.815.

²⁸⁶ 47 C.F.R. § 22.142 (1997).

²⁸⁷ 47 C.F.R. § 1.946.

²⁸⁸ *Notice*, 18 FCC Rcd at 8408 ¶ 74; see Biennial Regulatory Review—Amendment of Parts 0, 1, 13, 22, 24, 26, 27, 80, 90, 95, 97 and 101 of the Commission’s Rules to Facilitate the Development and Use of the Universal Licensing System in the Wireless Telecommunications Services, *Report and Order*, 13 FCC Rcd 21027 (1998) (“*ULS Report and Order*”); *Memorandum Opinion and Order on Reconsideration*, 14 FCC Rcd 11145 (1998).

4. AGRAS

97. *Background.* Section 22.819 provides that, after January 1, 1996, stations transmitting on the general aviation air-ground service channels must operate in compliance with the requirements set forth in the document, "Technical Reference, Air-ground Radiotelephone Automated Service (AGRAS), System Operation and Equipment Characteristics," dated April 12, 1985.²⁸⁹ Previously, air-ground radiotelephone service was manual in nature, requiring operator assistance and intervention in handling all calls. The AGRAS protocols advanced this service so that calls could be directly dialed.²⁹⁰ In addition, the automated system allows two or more competing ground stations in a location to share control channels.²⁹¹ In the *Notice*, we stated that the industry is currently developing a new operating technology that may be superior to AGRAS.²⁹² We sought comment on the best way in which to facilitate such technical innovation.²⁹³

98. *Discussion.* We disagree with SkyTel that the Commission should continue to require this particular technology, and will delete Section 22.819.²⁹⁴ SkyTel comments that maintenance of the AGRAS protocol will ensure that any nascent standard is "implemented with backwards compatibility" and will therefore "protect owners of existing hardware and systems" that might not be able immediately to implement a new technology when it arrives.²⁹⁵ We point out that our deletion of the rule does not mean that the AGRAS protocols are prohibited. To the contrary, technological advancements in this area may continue to utilize AGRAS protocols if developers believe it would be appropriate. Despite SkyTel's concerns, we are unwilling at this time to mandate the use of a particular technology when the market is more suited to make these decisions. We also believe that it is unlikely that the industry would simply forsake the current users of these systems.

C. Revision of Part 22 Non-Cellular Rules

1. Scope and Authority—Authorization Required, General Eligibility, and Definitions

99. *Background.* Section 22.3(b) provides that, except for certain stations in the Rural Radiotelephone Service and the Air-Ground Radiotelephone Service, the operation by subscribers of mobile or fixed stations in the Public Mobile Services is covered by "the authorization held by the common carrier providing service to them."²⁹⁶ In the *Notice*, we proposed to eliminate the restriction that license holders in Part 22 may only be current or future "common carriers."²⁹⁷ We tentatively concluded that the term "common carrier" in Section 22.3(b) should be replaced with the term "licensee," and that

²⁸⁹ 47 C.F.R. § 22.819.

²⁹⁰ See "Technical Reference, Air-ground Radiotelephone Automated Service (AGRAS), System Operation and Equipment Characteristics," REF: 650-0244-000, dated Apr. 12, 1985.

²⁹¹ *Id.*

²⁹² *Notice*, 18 FCC Rcd at 8408 ¶74.

²⁹³ *Id.* at 8408-09 ¶75.

²⁹⁴ 47 C.F.R. § 22.819.

²⁹⁵ SkyTel Comments at 4.

²⁹⁶ 47 C.F.R. § 22.3(b). Accordingly, end users do not file applications with the Commission for authority to use their mobile phones.

²⁹⁷ *Notice*, 18 FCC Rcd at 8391 ¶24.

end users could continue to rely on the operating authority granted by the Commission to their service provider.²⁹⁸

100. Part 22 also contains other rules that use the term “common carrier.” Section 22.7 states that, “except as otherwise provided in this part, existing and proposed common carriers are eligible to hold authorizations in the Public Mobile Services.”²⁹⁹ In the *Notice*, we proposed to delete this limitation.³⁰⁰ We also pointed out that several of the definitions contained in Section 22.99 include references to the term “common carrier” that, should we adopt our proposal to remove the common carrier eligibility restriction, should be replaced with the term “licensee.” We specifically sought comment regarding whether elimination of the common carrier eligibility requirement in Part 22 could have any detrimental effect for Part 22 licensees.³⁰¹ Finally, we observed that the distinctions previously drawn between a radio common carrier and a wireline common carrier under the Part 22 rules became obsolete in 1984.³⁰²

101. *Discussion.* We revise Sections 22.3(b), 22.7, and 22.99 as proposed in the *Notice*, by replacing the term “common carrier” with the term “licensee,” and thus deleting the requirement that licensees in Part 22 services be common carriers.³⁰³ We also revise Section 22.1(b) to delete the reference to “domestic common carrier,” and Section 22.401 to delete the words “Communications common carriers” and replace with the words “Eligible entities (see § 22.7).” These revisions help to implement the proposal we adopt to remove the common carrier restriction from the Part 22 eligibility rules. We agree with Blooston that Section 22.351, regarding channel assignments, should be similarly amended.³⁰⁴ Finally, we delete the definitions for Radio Common Carrier and Wireline Common Carrier, as these terms are no longer used in Part 22, and correct references to the term “Air-ground Radiotelephone Service” contained in several definitions in Section 22.99 to read “Air-Ground Radiotelephone Service.”

102. While the commenters are overwhelmingly supportive of our proposal to remove the common carrier restriction from the Part 22 eligibility rules,³⁰⁵ Arch Wireless and Able Communications have expressed concern that the proposed rule change might alter the ability of licensees to retain the protections and rights that common carrier status provides.³⁰⁶ In particular, Arch states that common carrier status has played an important part in achieving interconnection agreements with incumbent local exchange carriers and notes that common carriers are exempt from Health Insurance Portability and Accountability Act of 1996³⁰⁷ privacy rules.³⁰⁸ Able Communications expresses similar concerns

²⁹⁸ *Id.*

²⁹⁹ 47 C.F.R. § 22.7.

³⁰⁰ *Notice*, 18 FCC Rcd at 8392-93 ¶28.

³⁰¹ *Id.* at 8393 ¶29.

³⁰² *Id.* at 8393 ¶29 n.79.

³⁰³ *Id.* at 8391-94 ¶¶24-30.

³⁰⁴ Blooston Comments at 8.

³⁰⁵ *See, e.g.*, AMTA Comments at 6; Cingular Wireless Comments at 18; Joint Comments at 3-4; and NYSE&GC Reply Comments at 3-4.

³⁰⁶ *See* Able Communications Comments at 4; Arch Wireless Comments at 6.

³⁰⁷ Health Insurance Portability and Accountability Act of 1996, Pub. L. No. 104-191 (1996).

³⁰⁸ Arch Wireless Comments at 6-7.

regarding privacy, interconnection, and licensees' standing in state and federal courts.³⁰⁹

103. Our action today does not impact a licensee's ability to elect common carrier status under our Part 22 rules. We thus find that the commenters' concerns that these rule changes could mean that common carriers might lose certain legal and regulatory protections are unwarranted. As Blooston suggests, common carrier status should be viewed as an "option, rather than a requirement for Part 22 licensees," and the election of common carrier status should still entail protections to CMRS providers.³¹⁰ We agree. Consequently, we emphasize that our objective here is to remove the requirement that Part 22 licensees be common carriers (*i.e.*, remove the eligibility restriction), without impacting the ability of licensees to choose such status if so desired.

2. Licensing Requirements and Procedures

a. Construction Prior to Grant of Application

104. *Background.* Section 22.143(d)(4) of our rules provides that, for any pre-grant construction or alteration that would exceed the requirements of Section 17.7,³¹¹ the licensee must notify the FAA and file "a request for antenna height clearance and obstruction and marking specifications (FCC Form 854) with the FCC, PRB, Support Services Branch, Gettysburg, PA 17325."³¹² In the *Notice*, we proposed to make an editorial correction to the Form 854 filing location to "WTB, Database Management Division, Analysis and Development Branch, 1120 Fairfield Road, Gettysburg, PA 17325."³¹³ We also proposed to amend Section 22.143(d)(4) to specify that Form 854 may be filed electronically by accessing the Commission's Antenna Structure Registration home page at wireless.fcc.gov/antenna/.³¹⁴

105. *Discussion.* No comments were received regarding these proposed changes, which will provide the public with better information. We note that since the *Notice* was released, the Wireless Telecommunications Bureau, in late 2003, was reorganized.³¹⁵ As a result, the correct filing location for FCC Form 854 is "WTB, Spectrum Management Resources and Technologies Division, 1270 Fairfield Road, Gettysburg, PA 17325." We revise this form accordingly, and we amend Section 22.143(d)(4) of our rules to include this updated address.

b. Computation of Distance

106. *Background.* In the *Notice*, we proposed to recodify Section 22.157 in Part 1, Subpart F, as new Section 1.958, so that a single distance calculation method would apply to all Wireless Radio Services, providing regulatory certainty and consistency to service providers licensed under these rule parts.³¹⁶ Currently, Section 22.157 requires that distance calculations be rounded to the nearest whole kilometer, while Section 90.309(a)(1) requires that they be rounded to the nearest 0.1 kilometer.³¹⁷ We

³⁰⁹ Able Communications Comments at 4.

³¹⁰ Blooston Comments at 3, 7.

³¹¹ 47 C.F.R. § 17.7 (antenna structures requiring notification to the FAA).

³¹² 47 C.F.R. § 22.143(d)(4).

³¹³ *Notice*, 18 FCC Rcd at 8394 ¶31.

³¹⁴ *Id.*

³¹⁵ See FCC's Wireless Bureau Announces Reorganization, *Public Notice* (rel. Nov. 24, 2003).

³¹⁶ *Notice*, 18 FCC Rcd at 8394-95 ¶33.

³¹⁷ See *Notice*, 18 FCC Rcd at 8394 ¶32; 47 C.F.R. §§ 22.157, 90.309(a)(1).

also noted that the Section 90.309(a)(1) calculation method was based on the Section 73.611³¹⁸ calculation method, and we tentatively concluded that the reference to Section 73.611 in Section 90.309(a)(1) should be deleted and replaced by a reference to new Section 1.958.³¹⁹

107. *Discussion.* We recodify Section 22.157 as new Section 1.958 in Part 1, Subpart F. This will make the Section 22.157 distance calculation method applicable to all Wireless Radio Services described in Parts 1 (except Parts 21 and 101 as explained below), 20, 22, 24, 27, 80, 87, 90, 95, and 97,³²⁰ and supersede any conflicting regulations in these Parts.³²¹ We note that software used by the Commission to process applications under Parts 21 (Domestic Public Fixed Radio Services) and 101 (Fixed Microwave Services) is programmed to round the result of a distance calculation to the nearest tenth of a kilometer. Accordingly, we include language in new Section 1.958 to indicate that distance calculations for applications under these parts must be rounded to the nearest tenth of a kilometer.

108. We disagree with the suggestions of two commenters that we adopt the “Great Circle Route” method of computing distance.³²² This distance calculation method inputs the latitudes and longitudes of two points into formulas derived from spherical trigonometry to measure the great circle distance. A great circle is the intersection of a sphere with a plane passing through the center of the sphere. Arcs of great circles on the earth represent the shortest route between two points on its surface.³²³ First, while this method can be more accurate for longer distances (*i.e.*, distances of approximately 500 kilometers or more), the majority of distance calculations in the Public Mobile Services are for much shorter distances. Second, we do not believe that the improvements in accuracy resulting from this method are significant. Third, the mathematical calculations that are required are too complex to warrant its use. We believe that recodification of Section 22.157 in Part 1 is a more workable, practical approach for applicants.³²⁴

c. Computation of Terrain Elevation

109. *Background.* Section 22.159 sets forth the method for computing average terrain elevation for Part 22 services.³²⁵ Section 90.309(a)(4) sets forth the method for computing average terrain elevation for Part 90 services in the 470-512 MHz band.³²⁶ Calculations for the 470-512 MHz band are unique because they must take into consideration land mobile and co-channel and adjacent channel UHF TV station operations.³²⁷ Parts 20, 21, 24, 27, 80, 87, 95, 97, and 101 generally do not specify a terrain

³¹⁸ 47 C.F.R. § 73.611.

³¹⁹ *See Notice*, 18 FCC Rcd at 8394 ¶32.

³²⁰ *See* 47 C.F.R. § 1.901.

³²¹ *See* 47 C.F.R. § 1.902.

³²² Cingular Wireless Comments at 18; Verizon Airfone Reply Comments at 7.

³²³ The equator is a great circle as are all meridians of longitude. This distance calculation method can prove to be more accurate for longer distances as it relies on a spherical, not flat, earth. However, the Great Circle Route requires hi-precision transcendental functions in order to achieve accuracy at shorter distances.

³²⁴ If an applicant deems the distance calculation methodology set forth in new Section 1.958 to not be accurate, it can always seek a waiver to use an alternative methodology under the applicable Commission waiver standards.

³²⁵ 47 C.F.R. § 22.159.

³²⁶ 47 C.F.R. § 90.309(a)(4).

³²⁷ 47 C.F.R. § 90.309(a)(4).

elevation calculation method.³²⁸ In the *Notice*, we proposed to recodify Section 22.159 in Part 1, Subpart F, as new Section 1.959.³²⁹ We also proposed to retain the Section 90.309(a)(4) method for computing average terrain elevation for the 470-512 MHz band under Part 90, and cross-reference it in new Section 1.959.³³⁰

110. *Discussion.* We recodify Section 22.159 as new Section 1.959 in Part 1, Subpart F. Those commenters that discuss this issue support the adoption of a consistent terrain elevation calculation method applicable to all Wireless Radio Services.³³¹ Consequently, we make the change as proposed in the *Notice*.³³² Part 90 services in the 470-512 MHz band, due to their proximity to TV operations, will continue to be governed by Section 90.309(a)(4).³³³ Thus, all wireless services under Parts 1, 20, 22, 24, 27, 80, 87, 90 (except the 470-512 MHz band), 95, 97 and 101 will be subject to the same computation methodology.

d. ASSB

111. *Background.* Section 22.161 sets forth application requirements for base stations in the Paging and Radiotelephone Service, Rural Radiotelephone Service, and Offshore Radiotelephone Service where the applicant proposes to employ amplitude companded single sideband modulation (ASSB).³³⁴ In the *Notice*, we tentatively concluded that Section 22.161 should be eliminated.³³⁵

112. *Discussion.* We delete Section 22.161.³³⁶ No comments were received on this ASSB issue. As pointed out in the *Notice*,³³⁷ this rule section is obsolete in light of Section 22.357, which permits Part 22 licensees to use any emission type that complies with applicable emission limits.³³⁸

³²⁸ Parts 20, 21, 87, 95 and 97 have no height above average terrain (“HAAT”) rules. Section 24.53, 47 C.F.R. § 24.53, is generally the same as Section 22.159. Part 27 defines “average terrain elevation” in Section 27.4, 47 C.F.R. § 27.4, and uses HAAT in Section 27.50, 47 C.F.R. § 27.50, but does not specify how to calculate it. Section 80.757, 47 C.F.R. § 80.757, provides that average terrain elevation may be either computer-generated or derived from the use of topographical maps. Section 80.759, 47 C.F.R. § 80.759, provides details of the manual method, where height above average terrain is determined by calculations based on the drawing of radials away from the antenna site. Part 101 refers to “AAT” in Sections 101.105 and 101.1333, 47 C.F.R. §§ 101.105, 101.1333, but does not specify how it shall be calculated.

³²⁹ *Notice*, 18 FCC Rcd at 8395 ¶34.

³³⁰ *Id.*

³³¹ See Verizon Wireless Comments at 10; Cingular Wireless Comments at 18.

³³² *Notice*, 18 FCC Rcd at 8395 ¶34.

³³³ 47 C.F.R. § 90.309(a)(4).

³³⁴ 47 C.F.R. § 22.161.

³³⁵ *Notice*, 18 FCC Rcd at 8396 ¶35.

³³⁶ We also eliminate the reference to this section in the definition of “Channel” in Section 22.99. See 47 C.F.R. § 22.99.

³³⁷ *Notice*, 18 FCC Rcd at 8396 ¶35.

³³⁸ 47 C.F.R. § 22.357.

3. Operational and Technical Requirements

a. Channel Assignment Policy

113. *Background.* Section 22.351 sets forth the general policy for the assignment of PMS channels.³³⁹ The third sentence of this section uses the term “common carrier.”³⁴⁰ In the *Notice*, we proposed to replace the term “common carrier” with the term “licensee.”³⁴¹

114. *Discussion.* Consistent with our action above,³⁴² we amend Section 22.351 as proposed in the *Notice*.

b. Interference Protection

115. *Background.* Section 22.352 provides, in pertinent part, that PMS licensees shall be considered non-interfering if they operate in accordance “with FCC rules that provide technical channel assignment criteria for the radio service or channels involved, all other applicable FCC rules, and the terms and conditions of their authorizations.”³⁴³ This rule helps to alleviate the administrative burden on the Commission of resolving interference complaints by creating a presumption that operations consistent with our rules and the applicable authorization are non-interfering. In the *Notice*, we tentatively concluded that this provision in the rule section could be streamlined by essentially removing the language regarding technical channel assignment criteria.³⁴⁴

116. *Discussion.* We modify the relevant portion of Section 22.352 to read “Public Mobile Service stations operating in accordance with applicable FCC rules and the terms and conditions of their authorizations are normally considered to be non-interfering.”³⁴⁵ No comments were received on this topic. The streamlined wording we adopt more accurately reflects how the Commission currently addresses interference issues, as we make clear that operation consistent with Commission rules and the applicable authorization—whether on a site-by-site basis or on a geographic area basis—creates a presumption of non-interfering operation.

c. Emission Types and Emission Masks

117. *Background.* An emission mask is defined as “[t]he design limits imposed, as a condition or certification, on the mean power of emissions as a function of frequency both within the authorized bandwidth and in the adjacent spectrum.”³⁴⁶ Section 22.357 provides that any authorized PMS station may use any type of emission provided that it complies with the appropriate emission mask.³⁴⁷ Section

³³⁹ 47 C.F.R. § 22.351.

³⁴⁰ This sentence provides: “Except as otherwise provided in this part, each channel or channel block is assigned exclusively to one common carrier in each service area.” 47 C.F.R. § 22.351.

³⁴¹ *Notice*, 18 FCC Rcd at 8396 ¶36.

³⁴² *See supra* paras. 99-103.

³⁴³ 47 C.F.R. § 22.352.

³⁴⁴ *Notice*, 18 FCC Rcd at 8396 ¶37.

³⁴⁵ *See id.*

³⁴⁶ 47 C.F.R. § 22.99.

³⁴⁷ 47 C.F.R. § 22.357.

22.359 is the general emission mask rule.³⁴⁸ Section 22.861 is the emission limitations and mask rule for commercial aviation air-ground systems.³⁴⁹ At the time the Commission adopted the Part 22 rules, it generally used the emission mask approach to regulate in-band energy distribution. Recently, however, the Commission has been decreasing its reliance on the use of emission masks as a means to limit interference and, instead, increased its reliance on the use of out-of-band emission (OOBE) limits.³⁵⁰ The salient difference between emission masks and OOBE limits is that OOBE limits do not limit emission levels within a particular frequency band. Rather, they are intended to limit emissions outside of the authorized bandwidth. In the *Notice*, we sought comment on possible revision or elimination of Sections 22.357, 22.359, and 22.861 in light of the trend toward use of OOBE limits.³⁵¹ We also sought comment on whether we should adopt OOBE limits for the Part 22 services that are the subject of this proceeding.³⁵²

118. *Discussion.* Consistent with the recent increased use of OOBE limits, we replace the emission mask requirements found in Sections 22.357, 22.359, and 22.861 with an OOBE limitation. Of the commenters that discussed this issue, Cingular Wireless and Verizon Wireless favor OOBE limits over emission masks as the method of preventing harmful interference.³⁵³ We believe that OOBE limitations are preferable to emission masks for the PMS because OOBE limitations do not need to be revised every time a new technology is implemented (unlike emission masks). Moreover, OOBE limitations make more sense with channels that are often combined in blocks, since there is no need for a single licensee on adjacent channels to be required to use an emission mask on each channel to protect itself. OOBE limitations protect services operating beyond the outer edges of the channel block. Emission masks require protection of each individual channel within the block.

119. The National Telecommunications and Information Administration (NTIA), while not opposed to our approach regarding OOBE limitations, recommends that we clarify the unwanted emissions to be covered by the term OOBE consistent with International Telecommunication Union (ITU) definitions.³⁵⁴ That entity's main concern is that our use of an OOBE standard may not include spurious emissions, which it believes should be covered.³⁵⁵ We clarify that, for purposes of this proceeding, we interpret our OOBE limitations to include what would be termed "spurious" emissions under the ITU standards.

³⁴⁸ 47 C.F.R. § 22.359.

³⁴⁹ 47 C.F.R. § 22.861.

³⁵⁰ See, e.g., 47 C.F.R. §§ 27.53(a)(10) (Wireless Communications Services), 22.917 (Cellular), and 24.238 (Broadband PCS); *Cellular Year 2000 Biennial Report and Order*, 17 FCC Rcd at 18426 ¶6.

³⁵¹ *Notice*, 18 FCC Rcd at 8397 ¶38.

³⁵² *Id.*

³⁵³ Cingular Wireless Comments at 18; Verizon Wireless Comments at 10.

³⁵⁴ NTIA Comments at 3. Our definitions specifically define OOBE and spurious emissions separately. See 47 C.F.R. § 2.1. We recognize that our usage of this terminology in Part 22 and other wireless parts and in recent wireless proceedings does not precisely track the ITU definitions. We use the term "OOBE" to mean what the ITU calls "unwanted emissions." Although we agree with NTIA that it would be preferable to harmonize our terms with those of the ITU, doing so is beyond the scope of this proceeding. We look forward, however, to addressing this issue in the future.

³⁵⁵ NTIA Comments at 2-3.

d. Standby Facilities

120. *Background.* Section 22.361 permits PMS licensees to install standby transmitters, without separate authorization, to continue service in the event of transmitter failure or during transmitter maintenance.³⁵⁶ In the *Notice*, we tentatively concluded that this section should be eliminated, as it is now universally understood in the wireless industry that licensees are not required to obtain a separate authorization to install standby transmitters.³⁵⁷

121. *Discussion.* We agree with the one commenter that mentioned this issue that eliminating Section 22.361 is warranted.³⁵⁸ We also note that doing so is in line with our desire to streamline or eliminate rules that are no longer necessary.³⁵⁹ Thus, we eliminate Section 22.361.

e. Directional Antennas

122. *Background.* Section 22.363 and Table C-2 to Section 22.361 set forth directional antenna technical requirements.³⁶⁰ These requirements were adopted at a time when the Commission generally considered fixed wireless operations to be secondary to mobile operations. As noted in the *Notice*, these regulations appear to no longer be necessary because, when the Commission licenses spectrum today, it provides greater flexibility to licensees to use the spectrum for mobile or fixed operations.³⁶¹ Accordingly, we tentatively concluded that Section 22.363 and Table C-2 to Section 22.361 should be eliminated.³⁶²

123. *Discussion.* We eliminate the directional antenna requirements as proposed in the *Notice*. The lone commenter on this issue endorses our approach here,³⁶³ which we believe better reflects the current regulatory landscape.

f. Wave Polarization

124. *Background.* Section 22.367 sets forth polarization requirements for the electromagnetic waves radiated by PMS providers.³⁶⁴ In the *Notice*, we observed that, where fixed and mobile services operate on a co-channel basis, the polarization restrictions may no longer be necessary or effective in reducing interference.³⁶⁵ We therefore sought comment on whether we should eliminate Section

³⁵⁶ 47 C.F.R. § 22.361.

³⁵⁷ *Notice*, 18 FCC Rcd at 8397 ¶39.

³⁵⁸ See Verizon Wireless Comments at 10.

³⁵⁹ See, e.g., Biennial Regulatory Review—Amendment of Parts 1, 22, 24, 27, and 90 to Streamline and Harmonize Various Rules Affecting Wireless Radio Services, *Notice of Proposed Rule Making*, 19 FCC Rcd 708 ¶3 (2004).

³⁶⁰ 47 C.F.R. §§ 22.363, 22.361, Table C-2.

³⁶¹ *Notice*, 18 FCC Rcd at 8397 ¶40.

³⁶² *Id.*

³⁶³ Verizon Wireless Comments at 10.

³⁶⁴ 47 C.F.R. § 22.367. This section specifies when vertical, horizontal, or circular polarization may be used for Part 22 Services.

³⁶⁵ *Notice*, 18 FCC Rcd at 8397-98 ¶41. We also noted that other CMRS providers, such as PCS and SMR providers, are not subject to a wave polarization requirement, and that the Commission recently eliminated the vertical wave polarization requirement for base, mobile, and auxiliary test transmitters in the Cellular Radiotelephone Service. *Cellular Year 2000 Biennial Report and Order*, 17 FCC Rcd at 18427 ¶48 (2002).

22.367.³⁶⁶

125. *Discussion.* The only commenter that mentions this issue supports the elimination of the rule,³⁶⁷ and we agree that this change is warranted. Thus, we delete Section 22.367.

g. Access to Transmitters

126. *Background.* Section 22.373 generally requires PMS transmitters to be accessible only to persons authorized by the licensee.³⁶⁸ In the *Notice*, we tentatively concluded that this rule is not necessary to insure that unauthorized persons are kept out of PMS transmitter sites, and consequently, that the section should be eliminated.³⁶⁹

127. *Discussion.* We remove Section 22.373 from our rules. Although no commenters mention this issue, we believe that the rule is unnecessary due to the fact that licensees have an economic self-interest to prevent unauthorized access to their transmitters.

h. Replacement of Equipment

128. *Background.* Section 22.379 permits PMS licensees to replace equipment without notifying the Commission, provided that such equipment meets certain technical requirements.³⁷⁰ In the *Notice*, we tentatively concluded that Section 22.379 is no longer necessary, and should therefore be eliminated, because licensees have known since the rule change in 1994 that applications are not required for replacement equipment.³⁷¹

129. *Discussion.* We eliminate Section 22.379. While no comments were received regarding this issue, we believe that Wireless Radio Service licensees understand that they are not required to file an application in order to deploy replacement equipment, provided that such equipment meets the technical requirements for the service involved. As a result, the rule is no longer necessary.

i. Auxiliary Test Transmitters

130. *Background.* Section 22.381 limits the use of auxiliary test transmitters to testing the performance of fixed receiving equipment located remotely from the control point.³⁷² Section 22.381 further provides that such transmitters may only transmit on channels designated for mobile transmitters.³⁷³ In the *Notice*, we tentatively concluded that this section should be eliminated, because limiting test transmissions to only the mobile frequencies appears overly prohibitive.³⁷⁴

131. *Discussion.* We believe that Section 22.381 unnecessarily restricts the use of test

³⁶⁶ *Notice*, 18 FCC Rcd at 8397 ¶41.

³⁶⁷ Verizon Wireless Comments at 10.

³⁶⁸ 47 C.F.R. § 22.373.

³⁶⁹ *Notice*, 18 FCC Rcd at 8397 ¶41.

³⁷⁰ 47 C.F.R. § 22.379.

³⁷¹ *Notice*, 18 FCC Rcd at 8398 ¶43.

³⁷² 47 C.F.R. § 22.381.

³⁷³ *Id.*

³⁷⁴ *Notice*, 18 FCC Rcd at 8398 ¶44.

equipment, and therefore we eliminate this section from our rules. We are aware of no harm that would arise from operating auxiliary test transmitters on any authorized channel, whether base or mobile, and no commenters have suggested otherwise.

j. In-building Radiation Systems

132. *Background.* Section 22.99 defines “in-building radiation systems” as “[s]upplementary systems comprising low power transmitters, receivers, indoor antennas and/or leaky coaxial cable radiators, designed to improve service reliability inside buildings or structures located within the service areas of stations in the Public Mobile Services.”³⁷⁵ Section 22.383 provides that PMS licensees may install in-building radiation systems, without prior Commission approval, within their “protected service area.”³⁷⁶ Section 22.352(c)(7), which contains a cross-reference to Section 22.383, provides that no interference protection is afforded to in-building radiation systems.³⁷⁷ In-building radiation systems are exempted from FAA notification under Section 17.14(a)³⁷⁸ and, under Section 22.377, transmitters used with in-building radiation systems must be certificated for use in the radio services regulated under Part 22.³⁷⁹ In the *Notice*, we tentatively concluded that Section 22.383 is no longer needed and should be eliminated.³⁸⁰

133. *Discussion.* The lone commenter that addresses this issue supports the approach set forth in the *Notice*, but expresses concern that readily available off-the-shelf boosters could cause harmful interference to cellular networks.³⁸¹ At this time, we take no action on the proposal set forth in the *Notice*. Commission staff currently is examining a set of issues related to the appropriate regulatory treatment of wireless boosters used to improve or facilitate service in a number of areas, including buildings. Accordingly, we will address Section 22.383 in the context of that examination. We do take this opportunity to clarify that, under our current policies, such devices may only be operated by a licensee or pursuant to the licensee’s permission and control, unless they fall under the power limits for unlicensed devices under our Part 15 rules.³⁸²

4. Developmental Authorizations

134. Part 22, Subpart D—which includes Sections 22.401, 22.403, 22.409, 22.411, 22.413, 22.415, and 22.417—governs grant of developmental authorizations in the PMS.³⁸³ As pointed out in the *Notice*, a review of Commission records indicates that these rules are seldom used and, instead, parties frequently file waiver requests that are tantamount to requests for developmental authorizations.³⁸⁴ We therefore sought comment regarding how any of our Part 22 rules governing developmental

³⁷⁵ 47 C.F.R. § 22.99.

³⁷⁶ 47 C.F.R. § 22.383.

³⁷⁷ 47 C.F.R. § 22.352(c)(7).

³⁷⁸ 47 C.F.R. § 17.14(a).

³⁷⁹ 47 C.F.R. § 22.377.

³⁸⁰ *Notice*, 18 FCC Rcd at 8399 ¶45. We also concluded that the cross-reference to this section in Section 22.352(c)(7) should be eliminated.

³⁸¹ Verizon Wireless Comments at 11-12.

³⁸² *See id.* at 11.

³⁸³ 47 C.F.R. Pt. 22, Subpt. D.

³⁸⁴ *Notice*, 18 FCC Rcd at 8399 ¶46.

authorizations could be improved and whether any of these rules should be eliminated.³⁸⁵

a. Developmental Authorization of 43 MHz Paging Transmitters

135. *Background.* Sections 22.411 and 22.531(a) provide that 43 MHz channels can be initially assigned only as developmental authorizations.³⁸⁶ The requirements of Sections 22.411 and 22.531(a) are intended to mitigate interference with the intermediate frequency stages of receivers in television sets and video recorders. Section 22.411 also requires licensees to conduct and file semi-annual surveys during the first two years of operation to determine the extent of any interference to broadcast television receivers.³⁸⁷ In the *Notice*, we observed that there have been significant technical improvements in television and video recorder receivers, and we sought comment on whether such technical improvements obviate the need for the requirements of Sections 22.411 and 22.531(a).³⁸⁸

136. *Discussion.* While no comments were received on this topic, we believe that Sections 22.411 and 22.531(a) are no longer required. Modern NTSC televisions are no longer particularly vulnerable to interference from the 43 MHz paging frequencies. Previously, television sets utilized an intermediate frequency amplifier that converted the received channel to a frequency between 40 and 46 MHz. New television sets, on the other hand, no longer employ this type of technology. In addition, the number of licensees and new applications for these paging channels is minimal. Consequently, it appears that there is no need for developmental authorizations for 43 MHz paging transmitters, and we will delete these sections of our rules.

b. Developmental Authorization of 928-960 MHz Fixed Transmitters

137. *Background.* Section 22.415 provides that channels in the 928-931 and 952-960 MHz ranges may be assigned to fixed transmitters in point-to-multipoint systems at short-spaced locations (*i.e.*, those that do not meet the 70-mile separation requirement of Section 22.625(a)).³⁸⁹ We stated in the *Notice* that the Commission cannot issue any developmental authorizations under Section 22.415 unless it waives the licensing prohibition of Section 22.621.³⁹⁰ We therefore tentatively concluded that Section 22.415 should be eliminated.³⁹¹ We also tentatively concluded that Section 22.625(a) should be revised by eliminating all text following the first sentence that pertains to short-spaced developmental authorizations under Section 22.415.³⁹² This language would no longer be necessary were we to adopt our proposal to eliminate Section 22.415.

138. *Discussion.* In light of the prohibition in Section 22.621 against licensing any new 900

³⁸⁵ *Id.*

³⁸⁶ 47 C.F.R. §§ 22.411, 22.531(a).

³⁸⁷ 47 C.F.R. § 22.411(b).

³⁸⁸ *Notice*, 18 FCC Rcd at 8399 ¶47.

³⁸⁹ 47 C.F.R. § 22.415.

³⁹⁰ *Notice*, 18 FCC Rcd at 8399-40 ¶48. In the *Multiple Address Systems Order*, the Commission amended Section 22.621 to prohibit the issuance of new licenses for any 900 MHz frequencies listed in that section. See In the Matter of Amendment of the Commission's Rules Regarding Multiple Address Systems, *Report and Order*, 15 FCC Rcd 11,956 (2000) ("*Multiple Address Systems Order*"), corrected by Amendment of Commission's Rules Regarding Multiple Address Systems, *Erratum*, 15 FCC Rcd 16415 (WTB, PSPWD 2000).

³⁹¹ *Notice*, 18 FCC Rcd at 8399-4000 ¶48.

³⁹² *Id.*

MHz frequencies, we eliminate Section 22.415 and modify Section 22.625(a) as proposed in the *Notice*. No comments were received on this issue.

c. Developmental Authorization of Meteor Burst Systems

139. *Background.* Section 22.417 provides that Rural Radiotelephone Service (RRS) central office and rural subscriber stations in Alaska may use “meteor burst” propagation modes.³⁹³ Meteor burst systems bounce radio signals off the ionized trails of evaporating space rocks to receivers up to 1,000 miles away. Meteor burst technology, however, only works in brief spurts because a typical meteor trail has an average duration of a few hundred milliseconds, while wait times between suitable trails can range from a few seconds to minutes. As such, the technology is well-suited for bursty data transmissions but is not suitable for a continuous voice call. Section 22.725(c) provides that channels 42.40, 44.10, 44.20 and 45.90 MHz may be used for such purposes in Alaska.³⁹⁴ Section 22.729 governs station operations using meteor burst propagation modes on these channels.³⁹⁵ In the *Notice*, we indicated that there are no Part 22 licensees on these channels in Alaska, although there are some licenses issued under Part 90.³⁹⁶ We sought comment as to whether Sections 22.417, 22.725(c), and 22.729 should be eliminated or whether this licensing option for RRS should be maintained.³⁹⁷

140. *Discussion.* We do not believe that RRS stations in Alaska would benefit from maintaining the licensing option under Sections 22.417, 22.725(c), and 22.729. Currently, there are no licensees taking advantage of these rules. In addition, as a practical matter, meteor burst propagation cannot be used to transmit voice calls, which is at the core of the RRS. Therefore, as suggested in the *Notice*, we delete these sections from our rules. We also delete the definition of “meteor burst propagation mode” in Section 22.99,³⁹⁸ the Section 22.313(a)(3) station identification requirements for Rural Radiotelephone Service subscriber stations using meteor burst propagation,³⁹⁹ and the Section 22.727(f) limits on transmitter output power for meteor burst stations.⁴⁰⁰

5. Paging and Radiotelephone Service Rules

a. Composite Interference Contour Over Water

141. *Background.* Under Section 1.929(c)(1), any increase in the composite interference contour (CIC)⁴⁰¹ of a site-based licensee in the Paging and Radiotelephone Service, Rural Radiotelephone Service, or 800 MHz Specialized Mobile Radio Service is a major modification of license that requires

³⁹³ 47 C.F.R. § 22.417.

³⁹⁴ 47 C.F.R. § 22.725(c).

³⁹⁵ 47 C.F.R. § 22.729.

³⁹⁶ *Notice*, 18 FCC Rcd at 8400 ¶49. Moreover, the 44.20 MHz channel is available under Part 22 only on a secondary basis to operations authorized under Part 90. See 47 C.F.R. § 22.729(a).

³⁹⁷ *Notice*, 18 FCC Rcd at 8400-8401 ¶50.

³⁹⁸ 47 C.F.R. § 22.99.

³⁹⁹ 47 C.F.R. § 22.313(a)(3).

⁴⁰⁰ 47 C.F.R. § 22.727(f).

⁴⁰¹ A CIC connects the outermost points of the intersecting interference contours for the base stations in a radio system.

prior Commission approval.⁴⁰² In March 2001, the Wireless Telecommunications Bureau conditionally waived Section 1.929(c)(1) to permit expansion of paging CICs over water on a secondary basis.⁴⁰³ In the *Notice* in the instant proceeding, we tentatively concluded that Section 1.929(c)(1) should be amended to specify that expansion of the CIC of a site-based licensee in these services over water, on a secondary, non-interference basis to any geographic area licensee in the same area, is not a major modification of license.⁴⁰⁴ We also tentatively concluded that the term “over water” should be defined as “over bodies of water that extend beyond county boundaries including, but not limited to, oceans, the Gulf of Mexico, and the Great Lakes.”⁴⁰⁵

142. In addition, we expressed concern that the incumbent licensee in the same geographic area have technical and engineering information regarding the site-based licensee’s operations over water in order to guard against unacceptable interference to its own operations.⁴⁰⁶ Accordingly, we proposed that the site-based licensee be required to provide to the geographic area licensee on the same frequency the technical and engineering information necessary for the latter entity to understand and evaluate the site-based licensee’s operations over water.⁴⁰⁷ We requested comment on the contents of such notification, the timing of making such a notification, whether such a requirement is necessary or excessively burdensome, and whether, instead, any filing with the Commission should be required.⁴⁰⁸

143. *Discussion.* We amend Section 1.929(c)(1) and treat expansions of the CIC of a site-based licensee in the Paging and Radiotelephone Service, Rural Radiotelephone Service, or 800 MHz Specialized Mobile Radio Service over water, on a secondary, non-interference basis to any geographic area licensee in the same area, as a minor, not major, modification of license. We also adopt the definition of “over water” as proposed in the *Notice*.⁴⁰⁹ As a result, such expansions of the CIC are permissive and no notification to the Commission is required. As expressed in the comments of Arch Wireless, the classification of these modifications as major can hamper a carrier’s ability to respond to unexpected disruptions or to meet changes in consumer demand.⁴¹⁰ Licensees providing service in coastal areas often need to relocate or adjust transmitting facilities in order to maintain and improve coverage. Moreover, CIC expansions that take place solely over water should pose no risk of interference to other systems on land, and Commission records indicate that we have not received any interference complaints

⁴⁰² 47 C.F.R. §§ 1.929(c)(1), 1.947. See Karl A. Rinker, d/b/a Rinker’s Communications, *Request for Declaratory Ruling*, 14 FCC Rcd 19546 (WTB, CWD 1999) (any CIC increase, including an extension over water, is a major filing under Section 1.929(c)(1)).

⁴⁰³ Wireless Telecommunications Bureau Seeks Comment On Request For Rule Change And Conditionally Waives Section 1.929(C)(1) To Permit Expansion Of Paging Contours Over Water On A Secondary Basis, *Public Notice*, 16 FCC Rcd 5563 (2001). The conditional waiver was granted pending a decision on a Request for Rule Change filed by the Personal Communications Industry Association (PCIA). PCIA’s Request sought to amend Section 1.929(c)(1) so that expansions of paging CICs that occur solely (1) beyond the land border of the United States, or (2) over large bodies of water (oceans, gulfs, sounds, bays, and the Great Lakes, but not rivers) would be treated as minor modifications.

⁴⁰⁴ *Notice*, 18 FCC Rcd at 8402 ¶52.

⁴⁰⁵ *Id.*

⁴⁰⁶ *Notice*, 18 FCC Rcd at 8402 ¶53.

⁴⁰⁷ *Id.*

⁴⁰⁸ *Id.*

⁴⁰⁹ *Notice*, 18 FCC Rcd at 8402 ¶52.

⁴¹⁰ Arch Wireless Comments at 4-5; see Blooston Comments at 9.

arising from our current temporary policy of conditionally waiving Section 1.929(c)(1). We also note the benefits to both licensees and the Bureau derived from the removal of these particular regulatory filing requirements. Finally, no commenters opposed this rule change. We believe that, under these circumstances, our action here will facilitate the provision of PMS services to the public.⁴¹¹

144. We will not require that site-based licensees automatically notify incumbent geographic area licensees of the technical parameters of a CIC expansion over water. In this connection, we agree with Arch Wireless that such a requirement reduces the flexibility and efficiencies created by not requiring pre-approval of such extensions.⁴¹² In contrast to the objection raised by Arch Wireless, no parties filed comments supporting automatic notification of this information to geographic licensees.

b. Nationwide Network Paging Channels

145. *Background.* Section 22.531(b) provides that frequencies 931.8875, 931.9125, and 931.9375 MHz may only be used for nationwide network paging service.⁴¹³ Section 22.551 specifies the application process for such channels in the event one should become available for licensing, and provides additional rules for nationwide network paging service.⁴¹⁴ In the *Notice*, we sought comment on whether we should amend our rules to allow licensees on these channels to provide services other than nationwide network paging.⁴¹⁵ In addition, we requested comment on whether the specific application processing rule for these channels remains necessary, or whether we should apply our general paging licensing rules to license these channels in the event that one of them (or a partitioned or disaggregated portion thereof) was to become available for re-licensing.

146. *Discussion.* Although no comments were received on this topic, we believe that allowing licensees on these channels to provide services other than nationwide network paging is in line with our policy to facilitate flexible service offerings,⁴¹⁶ our attempts to achieve regulatory parity among competing wireless services, and the highly competitive state of the paging industry. Similarly, we will apply our general paging licensing rules, including competitive bidding procedures, to license these channels in the event that one becomes available for licensing.⁴¹⁷ Therefore, we will delete Sections 22.313(a)(5), 22.531(b) and 22.551 from our rules.

c. Additional Channel Policies

147. *Background.* Sections 22.539 and 22.569 govern the processing of applications for

⁴¹¹ We emphasize that any site-based licensee in these three services that seeks a CIC expansion over land must continue to obtain prior Commission approval. We also note that if a CIC expansion over water requires frequency coordination pursuant to international treaty or agreement, then such an extension would be classified as major under Section 1.929(a)(5) and require prior Commission approval.

⁴¹² Arch Wireless Comments at 5.

⁴¹³ 47 C.F.R. § 22.531(b).

⁴¹⁴ 47 C.F.R. § 22.551.

⁴¹⁵ *Notice*, 18 FCC Rcd at 8403 ¶56.

⁴¹⁶ In 1996, the Commission expanded permitted offerings of fixed wireless service by Commercial Mobile Radio Service providers. *See* Amendment of the Commission's Rules to Permit Flexible Service Offerings in the Commercial Mobile Radio Services, *First Report and Order and Further Notice of Proposed Rule Making*, 11 FCC Rcd 8965 (1996), *Second Report and Order and Order on Reconsideration*, 15 FCC Rcd 14680 (2000).

⁴¹⁷ *See* 47 C.F.R. §§ 22.501-22.529, §§ 22.201-22.299.

additional paging and mobile channels, respectively.⁴¹⁸ In particular, these rules implement the Commission's general policy to assign only one paging or two mobile channels in an area to a carrier per application cycle.⁴¹⁹ Carriers that seek to add channels to their systems in the same geographic service area may thus do so one at a time (two for mobile channels).⁴²⁰ Before applying for another channel, carriers must certify that service has commenced on the previously-granted channel(s).⁴²¹ We pointed out in the *Notice* that Sections 22.539 and 22.569 were adopted at a time when the Commission assigned the subject paging channels on a site-by-site basis and gave close consideration to the amount of paging spectrum held by a single entity in a particular geographic area, and that our regulatory structure for the licensing of paging channels has changed.⁴²² We therefore tentatively concluded that Sections 22.539 and 22.569 should be eliminated.⁴²³

148. *Discussion.* We delete Sections 22.539 and 22.569 from our rules.⁴²⁴ Today, the Part 22 paging channels set forth in these rule sections are licensed on a geographic area basis rather than assigned on a site-by-site basis.⁴²⁵ We no longer place a blanket restriction on the amount of spectrum that a single entity may hold in one area (although we review competitive issues involving paging licensees on a case-by-case basis).⁴²⁶ Incumbents operating on a site-by-site basis may expand their systems by assignment or transfer of a license or by participating in a spectrum auction. In addition, under our current licensing scheme for paging channels, we place no blanket restrictions on the number of overlapping Part 22 paging channels that a particular entity may hold in one area. Consequently, we believe that maintaining these rules is unnecessary.

d. Provision of Rural Radiotelephone Service on Paging Channels

149. *Background.* Section 22.563 requires stations in the Paging and Radiotelephone Service that provide two-way public mobile service on certain channels to also provide Rural Radiotelephone Service (RRS) upon request from a subscriber.⁴²⁷ In the *Notice*, we pointed out that these channels are now predominantly assigned for use by one-way paging systems that are technically incapable of providing RRS.⁴²⁸ Consequently, we tentatively concluded that Section 22.563 is no longer necessary and

⁴¹⁸ 47 C.F.R. §§ 22.539, 22.569.

⁴¹⁹ 47 C.F.R. §§ 22.539, 22.569. Section 22.569 applies to applications proposing to use the channels listed in Section 22.561 (one-way or two-way mobile operations), except applications that propose to use these channels to provide paging service only, which are subject to Section 22.539.

⁴²⁰ 47 C.F.R. §§ 22.539, 22.569.

⁴²¹ 47 C.F.R. §§ 22.539, 22.569.

⁴²² *Notice*, 18 FCC Rcd at 8403 ¶57.

⁴²³ *Id.*

⁴²⁴ We note that no comments were filed regarding this issue.

⁴²⁵ Revision of Part 22 and Part 90 of the Commission's Rules to Facilitate Future Development of Paging Systems; Implementation of Section 309(j) of the Communications Act – Competitive Bidding, *Second Report and Order and Further Notice of Proposed Rule Making*, 12 FCC Rcd 2732 (1997).

⁴²⁶ See 2000 Biennial Regulatory Review Spectrum Aggregation Limits For Commercial Mobile Radio Services, *Report and Order*, 16 FCC Rcd 22668 (2001).

⁴²⁷ 47 C.F.R. § 22.563. The channels are in the frequency ranges 152.03-152.81, 157.77-158.67, 454.025-454.650, and 459.025-459.650 MHz.

⁴²⁸ *Notice*, 18 FCC Rcd at 8404 ¶60.

should be eliminated.⁴²⁹

150. *Discussion.* No comments were received on this issue, and we believe that Section 22.563 is no longer needed. Not only are most of these channels assigned for one-way paging use, there are now a number of wireless telephone service alternatives to RRS (e.g., cellular, PCS, and some SMR).⁴³⁰ Moreover, consumers in many areas—including rural areas—have begun to substitute cellular, PCS, and some SMR service for landline service. This nascent trend is driven in part by wireless service plans that include the price of long distance service that may reduce a consumer's aggregate charges for local and toll service. In light of these circumstances and the fact that rural subscribers may readily obtain fixed basic telephone services from a variety of sources, we delete Section 22.563 from our rules.

e. Transmission Power Limits

151. *Background.* Section 22.565(g) limits the effective radiated power (ERP) of dispatch and auxiliary test transmitters to 100 watts.⁴³¹ In the *Notice*, we sought comment on whether the 100-watt limit should be revised or eliminated, noting that were we to eliminate the rule, Section 22.565(a) would allow for a 150-watt limit.⁴³²

152. *Discussion.* We delete Section 22.565(g) so that test transmitters may operate, pursuant to Section 22.565(a), at a limit of 150 watts. Commenters that mention this issue are in favor of this revision.⁴³³ We note that because we have decided to permit auxiliary test transmitters to operate on both base and mobile frequencies,⁴³⁴ licensees can now choose to operate on either the base or the mobile side of the frequency subject to the 150-watt limit under Section 22.565(a).

f. Dispatch Service

153. *Background.* Section 22.577 governs the provision of dispatch service.⁴³⁵ In the *Notice*, we suggested that the limitations placed on the provision of dispatch service in Section 22.577 may be unduly restrictive, and we therefore sought comment on whether Section 22.577 should be revised or eliminated.⁴³⁶ This section requires, for example, that service providers notify the Commission every time a dispatch transmitter is installed as well as provide the name and address of subscribers.⁴³⁷

154. *Discussion.* We believe that the deletion of Section 22.577 of our rules is warranted.

⁴²⁹ *Id.*

⁴³⁰ Indeed, FCC rules provide that cellular and PCS licensees may provide fixed services on a co-primary basis. See 47 C.F.R. § 22.901(d) (cellular fixed services); 47 C.F.R. § 24.3 (PCS fixed services).

⁴³¹ 47 C.F.R. § 22.565(g).

⁴³² *Notice*, 18 FCC Rcd at 8405 ¶61. If Section 22.565(g) were eliminated, then the maximum ERP for dispatch and auxiliary test transmitters would be governed by Section 22.565(a). Under that section, fixed stations (such as dispatch and auxiliary test transmitters) operating on mobile frequencies may have a maximum ERP of 150 watts.

⁴³³ See AMTA Comments at 7; NYSE&GC Reply Comments at 12-13.

⁴³⁴ See *supra* paras. 130-131.

⁴³⁵ 47 C.F.R. § 22.577.

⁴³⁶ *Notice*, 18 FCC Rcd at 8405 ¶62. We note that, in 1995, restrictions on cellular dispatch services were eliminated. See Eligibility for the Specialized Mobile Radio Services and Radio Services in the 220-222 MHz Land Mobile Band and Use of Radio Dispatch Communications, *Report and Order*, 10 FCC Rcd 6280, 6297 ¶29 (1995).

⁴³⁷ 47 C.F.R. § 22.577.

Commenters were unanimous in their support for the removal of dispatch restrictions, stating generally that the rule is outdated and no longer necessary.⁴³⁸ More specifically, the Joint Commenters believe that “limits on output power and the functionality of the dispatch transmitter” are out of line with the Commission’s emphasis on “flexible spectrum use.”⁴³⁹ Moreover, the Joint Commenters point out that Part 90 dispatch operations are not subject to such restrictions, and that the removal of Section 22.577 will “expand the choices to wireless end users.”⁴⁴⁰ We agree, and therefore delete Section 22.577.⁴⁴¹

g. Hawaiian UHF Channels for Point-to-Point Operation

155. *Background.* Section 22.591 includes a table of channels allocated to fixed transmitters that support other transmitters that provide PMS.⁴⁴² This table includes six UHF channel pairs designated for fixed use in the State of Hawaii. In the *Notice*, we noted the very limited usage of these channels in Hawaii and sought comment on possible alternative uses of this spectrum.⁴⁴³

156. *Discussion.* No comments were received on this topic. Because we do not believe that the record supports a particular approach in connection with these channels, we will revisit the issue at a later time.

h. Channels for Point-to-Point Operation—Microwave Channels

157. *Background.* Section 22.591 also includes a table of 2110-2130 and 2160-2180 MHz microwave channels.⁴⁴⁴ In 1992, the Commission allocated these bands for use by emerging technologies (ET) services and no new systems may be authorized on these channels under Part 22.⁴⁴⁵ Recently, the Commission allocated, inter alia, the 2110-2130 MHz band for Advanced Wireless Services (AWS).⁴⁴⁶ At present, both the 2110-2130 and 2160-2180 MHz bands are widely used for common carrier fixed microwave service.⁴⁴⁷ In the *Notice*, we tentatively concluded that these microwave channels should be

⁴³⁸ See AMTA Comments at 6-7; Blooston Comments at 8-9; Joint Commenters Comments at 5; NYSE&GC Reply Comments at 12-13.

⁴³⁹ Joint Commenters Comments at 5.

⁴⁴⁰ *Id.*

⁴⁴¹ We note that, while we are eliminating Sections 22.577 and 22.565(g) of the rules, operations on the mobile designated frequencies are subject to the power limitations in Section 22.565(a) and the channel assignment criteria in Section 22.567(h) of the rules.

⁴⁴² 47 C.F.R. § 22.591.

⁴⁴³ *Notice*, 18 FCC Rcd at 8405 ¶63.

⁴⁴⁴ The Section 22.591 table incorrectly specifies eight microwave channel center frequencies. That table should reflect that there are 398 microwave channel center frequencies. See Revision of Part 22 of the Commission's Rules Governing the Public Mobile Services, *Report and Order*, 9 FCC Rcd 6513, 6632 (1994).

⁴⁴⁵ Redevelopment of Spectrum to Encourage Innovation in the Use of New Telecommunications Technologies, *First Report and Order and Third Notice of Proposed Rule Making*, 7 FCC Rcd 6886, 6890 ¶21 (1992).

⁴⁴⁶ Amendment of Part 2 of the Commission’s Rules to Allocate Spectrum Below 3 GHz for Mobile and Fixed Services to Support the Introduction of New Advanced Wireless Services, Including Third Generation Wireless Systems, *Second Report and Order*, 17 FCC Rcd 23193 (2002); see also Amendment of Part 2 of the Commission’s Rules to Allocate Spectrum Below 3 GHz for Mobile and Fixed Services to Support the Introduction of New Advanced Wireless Services, including Third Generation Wireless Systems, *Third Report and Order, Third Notice of Proposed Rulemaking, and Second Memorandum Opinion and Order*, 18 FCC Rcd 2223 (2003).

⁴⁴⁷ See 47 C.F.R. § 101.101; *Notice*, 18 FCC Rcd at 8405 ¶64.

deleted from the Section 22.591 table and that Section 22.591(b) regarding assignment of such channels should be deleted.⁴⁴⁸

158. In addition, Section 22.601 specifies rules for modification of previously authorized Part 22 stations on the 2110-2130 and 2160-2180 MHz channels.⁴⁴⁹ Section 22.602 sets forth rules governing a transition period for Paging and Radiotelephone Service licensees on the microwave channels listed in Section 22.591 to relocate to other frequencies.⁴⁵⁰ In the *Notice*, we sought comment on the use of the frequencies under these licenses and whether either of these sections should be revised.⁴⁵¹

159. *Discussion.* We will take the actions as proposed in the *Notice*. Specifically, we delete the microwave channels from the Section 22.591 table and delete Section 22.591(b) regarding the assignment of such channels. None of the entities licensed on the subject microwave frequencies submitted comments in this proceeding, and no other commenter mentions this issue. Thus, we will allow the licenses to expire at the end of their current authorizations, and we will not renew them for another license term. These microwave incumbents will, in the meantime, continue to be subject to Sections 22.601 and 22.602 (although once their license terms end, these sections will become superfluous). As discussed in the *Notice*, we will delete the cross-reference to Section 22.591 in Sections 22.601 and 22.602 and, instead, reference the 2110-2130 and 2160-2180 MHz channels.

i. Effective Radiated Power Limits

160. *Background.* Section 22.593 specifies power limits for the channels enumerated in Section 22.591.⁴⁵²

161. *Discussion.* Although we are deleting the microwave channels listed in Section 22.591, these microwave licensees are still subject to Section 22.593, which specifies the EIRP of the microwave channels listed in Section 22.591.⁴⁵³ Consequently, we will not amend this rule until after the subject licenses have expired.

j. Channel Usage Reports

162. *Background.* Section 22.655 requires a subcategory of paging licensees—470-512 MHz band licensees—to submit defined channel usage reports every three months.⁴⁵⁴ In the *Notice*, we pointed out that only two carriers must still file these reports, that they have maintained mobile usage of the channels for some time, and that loading reporting requirements for other paging operators have been

⁴⁴⁸ *Notice*, 18 FCC Rcd at 8406 ¶64.

⁴⁴⁹ 47 C.F.R. § 22.601.

⁴⁵⁰ 47 C.F.R. § 22.602.

⁴⁵¹ *Notice*, 18 FCC Rcd at 8406-07 ¶¶64-66.

⁴⁵² 47 C.F.R. § 22.593.

⁴⁵³ *Id.*

⁴⁵⁴ 47 C.F.R. § 22.655. As explained by the rule itself, the reporting requirement was adopted as part of the Commission's redesignation of the public mobile channels in the 470-512 MHz band from trunked mobile operation to point-to-multipoint operation as the demand for trunked mobile service decreased. Only licensees in this band providing trunked mobile service are required to submit reports, based on the premise that the reports would enable the Commission to have the information necessary to know when it may redesignate the channels to point-to-multipoint operation. Only this category of PMS licensees must file channel usage reports.

eliminated.⁴⁵⁵ We sought comment on the concerns of the Association of Public-Safety Communications Officials-International, Inc. (APCO), expressed in the 2002 Biennial Review Proceeding (WT Docket No. 02-310),⁴⁵⁶ regarding the loss of these reports, but we nonetheless tentatively concluded that we should eliminate Section 22.655.⁴⁵⁷

163. *Discussion.* We eliminate Section 22.655 so that we no longer requires licensees engaged in trunked mobile operations to measure and report channel usage. In this connection, we agree with the lone commenter on this topic that the continuation of this reporting requirement is burdensome and no longer necessary.⁴⁵⁸ Moreover, there are only two licensees that currently remain subject to this requirement, while the majority of CMRS licensees using the 470-512 MHz band do not have to submit these quarterly reports. Given these circumstances, we do not believe that the continued channel usage reporting requirements are warranted.

164. In the *Notice*, we specifically requested comment on APCO's concerns regarding the "continuing value" of the channel usage reports.⁴⁵⁹ No comments were received in the instant proceeding, however, that contradict our findings regarding the usefulness of these reports.

6. Rural Radiotelephone Service Rules—Channels for Basic Exchange Telephone Radio Systems

165. *Background.* Section 22.757 specifies channels (in addition to those listed in Section 22.725) in the frequency ranges 816.0125-820.2375 MHz and 861.0125-865.2375 MHz that are allocated for paired assignment to basic exchange telephone radio systems (BETRS).⁴⁶⁰ In the *Notice*, we pointed out that the Commission auctioned these channels on a geographic area basis in Auction 16, and that they are no longer available for assignment to BETRS.⁴⁶¹ We therefore tentatively concluded that Section 22.757 should be eliminated and that the first sentence of Section 22.725 should be amended to provide that the channels listed therein are available for paired assignment to BETRS.⁴⁶²

166. *Discussion.* We amend Sections 22.757 and 22.725 as proposed in the *Notice*. Because the channels listed in Section 22.757 are no longer available for assignment to BETRS, these rules are outdated. No comments were received regarding this topic.

7. Offshore Radiotelephone Service Rules

167. *Background.* Subpart I of Part 22—which includes Sections 22.1001, 22.1003, 22.1005, 22.1007, 22.1009, 22.1011, 22.1013, 22.1015, 22.1025, 22.1031, 22.1035, and 22.1037—governs the

⁴⁵⁵ *Notice*, 18 FCC Rcd at 8407 ¶¶68-70.

⁴⁵⁶ See Reply Comments of APCO, WT Dkt. No. 02-310, at 3 (filed Nov. 4, 2002). In that proceeding, APCO questioned Westel's proposal to eliminate the requirements that Part 22 licensees report channel usage in the 470-512 MHz band, stating that the reports are necessary to determine whether spectrum in the 470-512 MHz band is underutilized and could be made available for other uses.

⁴⁵⁷ *Notice*, 18 FCC Rcd at 8407 ¶70.

⁴⁵⁸ Westel Comments at 3-4.

⁴⁵⁹ *Notice*, 18 FCC Rcd at 8407 ¶70.

⁴⁶⁰ 47 C.F.R. § 22.757.

⁴⁶¹ *Notice*, 18 FCC Rcd at 8408 ¶71.

⁴⁶² *Id.*

licensing and operation of Offshore Radiotelephone Service (ORS) stations. These stations provide telephone service to subscribers located on oil exploration and production platforms in the Gulf of Mexico. In the *Notice*, we stated that, to date, we have received no requests for revising the rules governing ORS to provide increased flexibility.⁴⁶³ We nonetheless requested comment as to whether any of the Subpart I rules warrant review as a result of meaningful economic competition among providers of wireless services, or on any other basis.⁴⁶⁴ We also proposed to revise Section 22.1003,⁴⁶⁵ to revise the eligibility requirements to eliminate references to “common carriers” and instead to rely on language similar to that used in Parts 24 and 27 (“[a]ny entity, other than those precluded by section 310 of the Communications Act of 1934, as amended, 47 U.S.C. 310, . . . is eligible to hold a license under this part”).

168. *Discussion.* No comments were received in connection with this Subpart in response to the *Notice*. Therefore, at this time, we take no action on the majority of the rules in this Subpart, and we will revisit the ORS rules at another time. We do, however, remove the reference to “common carriers” in Section 22.1003 in order to maintain consistency among the Part 22 Public Mobile Services.⁴⁶⁶

III. NOTICE OF PROPOSED RULEMAKING – COMPETITIVE BIDDING

169. If mutually exclusive applications are filed for the commercial air-ground licenses that comprise the three band configurations defined in the Report and Order, the Commission will be required to resolve such applications by competitive bidding pursuant to the requirements of Section 309(j) of the Communications Act.⁴⁶⁷ Similarly, the Commission is required to resolve by competitive bidding mutually exclusive general aviation air-ground applications.⁴⁶⁸ To date, the Commission has accepted for filing nine groups of mutually exclusive general aviation applications, which are currently pending. Therefore, the Wireless Telecommunications Bureau (“WTB”) will, pursuant to its delegated authority, schedule an auction to resolve these applications.⁴⁶⁹ Accordingly, in this Notice of Proposed Rulemaking, we request comment on a number of issues relating to competitive bidding procedures for both commercial air-ground and general aviation licenses.

A. Incorporation by Reference of the Part 1 Standardized Auction Rules

170. We propose to conduct auctions of both commercial and general aviation air-ground

⁴⁶³ *Notice*, 18 FCC Rcd at 8409 ¶77.

⁴⁶⁴ *Id.*

⁴⁶⁵ 47 C.F.R. § 22.1003.

⁴⁶⁶ *See supra* paras. 99-103.

⁴⁶⁷ 47 U.S.C. § 309(j).

⁴⁶⁸ The Balanced Budget Act of 1997, Pub. L. No. 105-33, Title III, 111 Stat. 251 (1997), amended Section 309(j) to require the Commission to award mutually exclusive applications for initial licenses or permits using competitive bidding procedures, with very limited exceptions. These exceptions are licenses and construction permits for public safety radio services, digital television service licenses and permits given to existing terrestrial broadcast licensees to replace their analog television service licenses, and licenses and construction permits for noncommercial educational broadcast stations and public broadcast stations under 47 U.S.C. § 397(6). *See* 47 U.S.C. §§ 309(j)(1) & (2).

⁴⁶⁹ This auction will be limited to the parties in each of the nine groups of applicants that have filed mutually exclusive applications, which constitute closed filing groups. *See* 47 C.F.R. § 22.131. These parties will be required to file short-form applications (FCC Form 175) and submit upfront payments to participate in the auction. *See* 47 C.F.R. §§ 1.2105(a) & (b), 1.2106.

licenses in conformity with the general competitive bidding rules set forth in Part 1, Subpart Q, of the Commission's Rules, and substantially consistent with the bidding procedures that have been employed in previous Commission auctions.⁴⁷⁰ Specifically, we propose to employ the Part 1 rules governing, among other things, designated entities, application and payment procedures, collusion issues, and unjust enrichment. Under this proposal, such rules would be subject to any modifications that the Commission may adopt in its Part 1 Competitive Bidding proceeding. In addition, consistent with current practice, matters such as the appropriate competitive bidding design, as well as minimum opening bids and reserve prices, would be determined by WTB pursuant to its delegated authority.⁴⁷¹ We seek comment on this proposal. In particular, we request comment on whether any of our Part 1 competitive bidding rules would be inappropriate, or should be modified, for auctions of either commercial or general aviation air-ground licenses.

171. With respect to the commercial air-ground licenses we are making available, we are providing applicants with the opportunity to bid on licenses constituting different band configurations. Accordingly, the determination of whether individual commercial air-ground license applications are mutually exclusive for purposes of Section 309(j) will be based on whether different applicants have applied for licenses in different band plan license configurations as well as on whether different applicants have applied for the same licenses. In other words, because only one band configuration will be implemented, applicants that apply for licenses in different configurations will be considered to have filed mutually exclusive applications. We tentatively conclude, however, that this and any other differences from our past auctions do not necessitate any changes to our Part 1 competitive bidding rules, and that WTB can address such differences through its standard practice of seeking comment on and adopting procedures for specific auctions. We seek comment on this tentative conclusion.

B. Provisions for Designated Entities

172. In authorizing the Commission to use competitive bidding, Congress mandated that the Commission "ensure that small businesses, rural telephone companies, and businesses owned by members of minority groups and women are given the opportunity to participate in the provision of spectrum-based services."⁴⁷² In addition, Section 309(j)(3)(B) of the Communications Act requires that in establishing eligibility criteria and bidding methodologies, the Commission promote "economic opportunity and competition . . . by avoiding excessive concentration of licenses and by disseminating licenses among a wide variety of applicants, including small businesses, rural telephone companies, and businesses owned by members of minority groups and women."⁴⁷³ One of the principal means by which the Commission furthers these statutory goals is the award of bidding credits to small businesses. The Commission

⁴⁷⁰ See 47 C.F.R. §§ 1.2101-1.2113.

⁴⁷¹ See Amendment of Part 1 of the Commission's Rules – Competitive Bidding Procedures, Allocation of Spectrum Below 5 GHz Transferred from Federal Government Use, 4660-4685 MHz, *Third Report and Order and Second Further Notice of Proposed Rule Making*, 13 FCC Rcd 374, 448 ¶¶124-125 (1997) ("Part 1 Third R&O") (directing WTB to seek comment on specific mechanisms related to day-to-day auction conduct such as the structure of bidding rounds and stages, establishment of minimum opening bids or reserve prices, minimum accepted bids, activity requirements for each stage of the auction, and stopping rules); Amendment of Part 1 of the Commission's Rules – Competitive Bidding Procedures, *Order, Memorandum Opinion and Order and Notice of Proposed Rule Making*, 12 FCC Rcd 5686, 5697 ¶16 (1997) (clarifying that, pursuant to Section 0.131 of the Commission's Rules, 47 C.F.R. § 0.131, the Chief, Wireless Telecommunications Bureau, has delegated authority to implement all of the Commission's rules pertaining to auctions procedures).

⁴⁷² See 47 U.S.C. § 309(j)(4)(D). Such entities are collectively described as "designated entities." See 47 C.F.R. § 1.2110(a).

⁴⁷³ 47 U.S.C. § 309(j)(3)(B).

defines eligibility requirements for small business bidding credits on a service-specific basis, taking into account the capital requirements and other characteristics of the particular service.⁴⁷⁴

173. In considering small business bidding credits for the commercial air-ground licenses we make available in today's Report and Order, we note that in the past the Commission has declined to adopt provisions for designated entities for certain services, such as the direct broadcast satellite service and the digital audio radio service, which have extremely high implementation costs.⁴⁷⁵ The Commission reached this conclusion in those instances in large part because it was unclear whether small businesses could attract the capital necessary to implement and provide a nationwide service.⁴⁷⁶ We also note that in previous auctions of nationwide licenses in which the Commission offered bidding credits to designated entities, none of the licenses was won by a designated entity.⁴⁷⁷ Moreover, the legislative history of the designated entity provisions of Section 309(j) demonstrates that Congress did not necessarily intend that the Commission adopt special measures for designated entities in nationwide services. The House Report to the Omnibus Budget Reconciliation Act of 1993 states that "[t]he characteristics of some services are inherently national in scope, and are therefore ill-suited for small businesses."⁴⁷⁸

174. Notwithstanding these facts, we tentatively conclude that small business bidding credits are appropriate for the commercial air-ground service. We base this conclusion on the fact that no commercial air-ground license will authorize the use of as much spectrum as other nationwide services for which the Commission has declined to adopt small business bidding credits. In addition, we believe that the operation of a commercial air-ground service may require lower capital expenditures than other nationwide services, such as satellite services, because the necessary infrastructure may be less costly.⁴⁷⁹ Thus, we tentatively conclude that small businesses may be able to attract the necessary capital to provide commercial air-ground service, particularly if they are assisted by bidding credits.⁴⁸⁰ We seek comment

⁴⁷⁴ 47 C.F.R. § 1.2110(c)(1); *see also Part 1 Third R&O*, 13 FCC Rcd at 388 ¶18; Implementation of Section 309(j) of the Communications Act – Competitive Bidding, *Second Memorandum Opinion and Order*, 9 FCC Rcd 7245, 7269 ¶145 (1994).

⁴⁷⁵ *See* Revision of Rules and Policies for the Direct Broadcast Satellite Service, *Report and Order*, 11 FCC Rcd 9712 (1995) (“*DBS Auction Order*”); Establishment of Rules and Policies for the Digital Audio Radio Satellite Service in the 2310-2360 MHz Band, *Report and Order, Memorandum Opinion and Order and Further Notice of Proposed Rulemaking*, 12 FCC Rcd 5754 (1997) (“*DARS Auction Order*”).

⁴⁷⁶ *See DBS Auction Order*, 11 FCC Rcd at 9799 ¶217; *DARS Auction Order*, 12 FCC Rcd at 5824-25 ¶¶174-76.

⁴⁷⁷ *See* Announcing the High Bidders in the Auction of Ten Nationwide Narrowband PCS Licenses, *Public Notice*, PNWL 94-4 (rel. Aug. 2, 1994). In the nationwide narrowband PCS auction (Auction No. 1), bidding credits on ten nationwide licenses were offered to women- and minority-owned businesses. *See also* 1670-1675 MHz Band Auction Closes, Winning Bidder Announced, *Public Notice*, 18 FCC Rcd 9089 (2003). In the 1670-1675 MHz Band auction (Auction No. 46), the Commission offered a bidding credit on a nationwide license in the 1670-1675 MHz band to small businesses with average annual revenues not exceeding \$40 million and very small businesses with average annual revenues not exceeding \$15 million.

⁴⁷⁸ H.R. Rep. No.103-111, at 254 (1993).

⁴⁷⁹ Air-ground service may also require fewer ground (base) stations than other terrestrial services that are provided on a nationwide basis, such as broadband PCS.

⁴⁸⁰ In *ex parte* comments, AirCell and Space Data urge the Commission to adopt small business bidding credits for commercial air-ground licenses, arguing that they are small businesses that have the resources and expertise to provide air-ground service but may not be able to compete for a license without bidding credits. Letter from Michele C. Farquhar, Counsel to AirCell, Inc., to Marlene H. Dortch, Secretary, Federal Communications Commission, dated Sept. 17, 2004 (AirCell Sept. 17 *Ex parte* letter); Letter from Jerry Knoblach, CEO, Space Data (continued....)

on these tentative conclusions.

175. Having tentatively concluded that small businesses may be able to provide commercial air-ground service, we nonetheless recognize that such operations may be very capital-intensive relative to other services provided to smaller geographic areas. We therefore propose to use the same small business definitions we have adopted for other capital-intensive services that serve large geographic areas. Specifically, we propose to define a small business as an entity with average annual gross revenues for the three preceding years not exceeding \$40 million, and to define a very small business as an entity with average annual gross revenues for the three preceding years not exceeding \$15 million.⁴⁸¹ We also propose a 15 percent bidding credit for small businesses and a 25 percent bidding credit for very small businesses, as set forth in our standardized schedule at 47 C.F.R. § 1.2110(f)(2). These are the same tiered small business definitions and bidding credits that we adopted, for example, for EAG-based licenses in the upper and lower 700 MHz bands.⁴⁸² We note also that AirCell and Space Data, in *ex parte* comments, support these small business definitions and bidding credits as appropriate for commercial air-ground service.⁴⁸³

176. We request comment on these proposals. In particular, we invite commenters to discuss the expected capital requirements and other characteristics of the commercial air-ground operations that may be provided using the licenses made available by today's Report and Order, and the relationship of such requirements and characteristics to small business definitions and bidding credits. We invite commenters to provide comparisons with other services for which the Commission has established bidding credits. To the extent commenters support a different bidding credit regime than the one proposed here, they should support their proposals with relevant information. Such comments should provide information on, for example, the technology that a commercial air-ground licensee is likely to employ, the cost of deployment, and other factors that may affect capital requirements for commercial air-ground operations.

177. We also seek comment on whether our proposed designated entity provisions, if applied to the commercial air-ground service, would promote participation by businesses owned by minorities and by women, as well as participation by rural telephone companies. To the extent that commenters propose additional provisions to enhance participation by minority-owned or women-owned businesses, commenters should address how we should craft such provisions to meet the relevant standards of judicial review.⁴⁸⁴

178. In contrast to the commercial air-ground licenses made available by today's Report and Order, general aviation air-ground licenses are specialized licenses that are generally valued by relatively small businesses. For this reason, we expect that small businesses interested in acquiring these

(Continued from previous page) _____

Corporation, to Marlene H. Dortch, Secretary, Federal Communications Commission, dated Oct. 28, 2004 (Space Data Oct. 28 *Ex parte* letter).

⁴⁸¹ We are coordinating these size standards with the U.S. Small Business Administration.

⁴⁸² See Reallocation and Service Rules for the 698-746 MHz Spectrum Band (Television Channels 52-59), *Report and Order*, 17 FCC Rcd 2153 (2002); Service Rules for the 746-764 and 776-794 MHz Bands, and Revisions of Part 27 of the Commission's Rules, *First Report and Order*, 15 FCC Rcd 25495 (2000). The country is divided into six Economic Area Groupings (EAGs); thus, EAGs are very large geographic areas.

⁴⁸³ AirCell Sept. 17 *Ex parte* letter, at 2; Space Data Oct. 28 *Ex parte* letter, at 2-3. AirCell and Space Data also suggest that the Commission consider higher bidding credits. However, neither company makes a specific proposal or supplies specific facts to support such a proposal.

⁴⁸⁴ See *United States v. Virginia*, 518 U.S. 515 (1996); *Adarand Constructors v. Pena*, 515 U.S. 200 (1995).

licenses are unlikely to have difficulty obtaining the capital needed to participate in an auction.⁴⁸⁵ We seek comment on whether small business bidding credits would be appropriate for the general aviation air-ground service.

IV. PROCEDURAL MATTERS

A. Comment Filing Procedures

179. Pursuant to Sections 1.415 and 1.419 of the Commission's rules, 47 C.F.R. §§ 1.415, 1.419, interested parties may file comments and reply comments on the *Notice of Proposed Rulemaking*, WT Docket No. 05-42, on or before 20 and 30 days after publication in the Federal Register, respectively. Comments may be filed using: (1) the Commission's Electronic Comment Filing System (ECFS), (2) the Federal Government's eRulemaking Portal, or (3) by filing paper copies. See *Electronic Filing of Documents in Rulemaking Proceedings*, 63 FR 24121 (1998).

- *Electronic Filers*: Comments may be filed electronically using the Internet by accessing the ECFS: <http://www.fcc.gov/cgb/ecfs/> or the Federal eRulemaking Portal: <http://www.regulations.gov>. Filers should follow the instructions provided on the website for submitting comments.
 - For ECFS filers, if multiple docket or rulemaking numbers appear in the caption of this proceeding, filers must transmit one electronic copy of the comments for each docket or rulemaking number referenced in the caption. In completing the transmittal screen, filers should include their full name, U.S. Postal Service mailing address, and the applicable docket or rulemaking number. Parties may also submit an electronic comment by Internet e-mail. To get filing instructions, filers should send an e-mail to ecfs@fcc.gov, and include the following words in the body of the message, "get form." A sample form and directions will be sent in response.
- *Paper Filers*: Parties who choose to file by paper must file an original and four copies of each filing. If more than one docket or rulemaking number appears in the caption of this proceeding, filers must submit two additional copies for each additional docket or rulemaking number.

Filings can be sent by hand or messenger delivery, by commercial overnight courier, or by first-class or overnight U.S. Postal Service mail (although we continue to experience delays in receiving U.S. Postal Service mail). All filings must be addressed to the Commission's Secretary, Office of the Secretary, Federal Communications Commission.

- The Commission's contractor will receive hand-delivered or messenger-delivered paper filings for the Commission's Secretary at 236 Massachusetts Avenue, NE., Suite 110, Washington, DC 20002. The filing hours at this location are 8:00 a.m. to 7:00 p.m. All hand deliveries must be held together with rubber bands or fasteners. Any envelopes must be disposed of before entering the building.

⁴⁸⁵ We note that the Commission did not adopt small business bidding credits for cellular unserved area authorizations, which it found were valued primarily by a discrete group of small businesses. See *Implementation of Section 309(j) of the Communications Act – Competitive Bidding, Ninth Report and Order*, 11 FCC Rcd 14769, 14791 ¶45 (1996).

- Commercial overnight mail (other than U.S. Postal Service Express Mail and Priority Mail) must be sent to 9300 East Hampton Drive, Capitol Heights, MD 20743.
- U.S. Postal Service first-class, Express, and Priority mail should be addressed to 445 12th Street, SW, Washington DC 20554.

People with Disabilities: Contact the FCC to request materials in accessible formats (braille, large print, electronic files, audio format, etc.) by e-mail at FCC504@fcc.gov or call the Consumer & Governmental Affairs Bureau at 202-418-0531 (voice), 202-418-7365 (TTY).

B. Ex parte Rules —Permit-But-Disclose

180. This is a permit-but-disclose notice and comment rulemaking proceeding. *Ex parte* presentations are permitted, except during the Sunshine Agenda period, provided they are disclosed pursuant to the Commission's rules.⁴⁸⁶

C. Congressional Review Act

181. The Commission will send a copy of this Report and Order in a report to be sent to Congress and the Government Accountability Office pursuant to the Congressional Review Act, see 5 U.S.C. 801(a)(1)(A).

D. Final Regulatory Flexibility Analysis

182. Pursuant to the Regulatory Flexibility Act,⁴⁸⁷ the Final Regulatory Flexibility Analysis (FRFA) for the Report and Order is set forth in Appendix C. The Commission's Consumer and Governmental Affairs Bureau, Reference Information Center, will send a copy of the Report and Order, including the Final Regulatory Flexibility Analysis, to the Chief Counsel for Advocacy of the Small Business Administration, in accordance with the Regulatory Flexibility Act.

E. Initial Regulatory Flexibility Analysis

183. As required by the Regulatory Flexibility Act,⁴⁸⁸ the Commission has prepared an Initial Regulatory Flexibility Analysis (IRFA) of the possible significant economic impact on a substantial number of small entities of the proposals addressed in the *Notice* of Proposed Rulemaking. The IRFA is set forth in Appendix D. Written public comments are requested on the IRFA. These comments must be filed in accordance with the same filing deadlines for comments on the *Notice* of Proposed Rulemaking, and they should have a separate and distinct heading designating them as responses to the IRFA. The Commission's Consumer and Governmental Affairs Bureau, Reference Information Center, will send a copy of the *Notice* of Proposed Rulemaking, including the IRFA, to the Chief Counsel for Advocacy of the Small Business Administration, in accordance with the Regulatory Flexibility Act.⁴⁸⁹

⁴⁸⁶ See generally 47 C.F.R. §§ 1.1202, 1.1203, 1.1206.

⁴⁸⁷ See 5 U.S.C. § 604.

⁴⁸⁸ See 5 U.S.C. § 603.

⁴⁸⁹ See 5 U.S.C. § 603(a).

F. Paperwork Reduction Act of 1995

184. This document does not contain any proposed, new, or modified information collection subject to the Paperwork Reduction Act of 1995 (PRA), Public Law 104-13. In addition, therefore, it does not contain any new or modified “information collection burden for small business concerns with fewer than 25 employees,” pursuant to the Small Business Paperwork Relief Act of 2002, Public Law 107-198. *See* 44 U.S.C. 3506(c)(4).

G. Contact Information

185. The primary Wireless Telecommunications Bureau contact for this proceeding is Richard Arsenault, Chief Counsel of the Wireless Telecommunications Bureau Mobility Division (202-418-0920, Richard.Arsenault@fcc.gov). For auctions-related issues, contact Lynne Milne (202-418-7055, Lynne.Milne@fcc.gov). Press inquiries should be directed to Lauren Patrich, Wireless Telecommunications Bureau, at (202) 418-7944, TTY at (202) 418-7233, or e-mail at Lauren.Patrich@fcc.gov.

V. ORDERING CLAUSES

186. Accordingly, IT IS ORDERED THAT, pursuant to the authority contained in Sections 1, 4(i), 11, 303(r) and (y), 308, 309, and 332 of the Communications Act of 1934, as amended, 47 U.S.C. §§ 151, 154(i), 161, 303(r), 303(y), 308, 309, and 332, this REPORT AND ORDER AND NOTICE OF PROPOSED RULEMAKING is hereby ADOPTED, and Parts 1, 22, and 90 of the Commission’s rules are amended accordingly.

187. IT IS FURTHER ORDERED that, pursuant to Sections 4(i), 301, and 307 of the Communications Act, as amended, 47 U.S.C. §§ 154(i), 301, and 307, a new license for Station KNKG804, BE GRANTED to Verizon Airfone Inc. for a five-year non-renewable term in accordance with the terms and conditions set forth above (file no. 0001716212).⁴⁹⁰

188. IT IS FURTHER ORDERED THAT the Commission’s Consumer Information Bureau, Reference Information Center, SHALL SEND a copy of this REPORT AND ORDER AND NOTICE OF PROPOSED RULEMAKING, including the Final Regulatory Flexibility Analysis and the Initial Regulatory Flexibility Analysis, to the Chief Counsel for Advocacy of the Small Business Administration.

FEDERAL COMMUNICATIONS COMMISSION

Marlene H. Dortch
Secretary

⁴⁹⁰ *See supra* paras. 79-82.

APPENDIX A**COMMENTING PARTIES****(WT Docket No. 03-103)****A. Comments**

AirCell, Inc. (AirCell)
Able Communications Ltd. (Able Communications)
American Mobile Telecommunications Association, Inc. (AMTA)
Arch Wireless Operating Company, Inc., the Allied National Paging Association, the American Association of Paging Carriers, Metrocall Holdings Inc., and Weblink Wireless I, L.P.
(collectively, Arch Wireless)
Blooston, Mordkofsky, Dickens, Duffy & Prendergast (Blooston)
Cingular Wireless LLC (Cingular Wireless)
Joint Comments of Emergency Radio Service, Inc., Saia Communications, Inc., and Texas License Consultants (collectively, Joint Commenters)
Matt Edwards (Edwards)
Motorola, Inc. (Motorola)
QUALCOMM Incorporated (QUALCOMM)
SkyTel Corp. (SkyTel)
Societe Internationale de Telecommunications Aeronautiques (SITA)
Tony Drake (Drake)
Verizon Airfone
Verizon Wireless
Westel Communications, Inc. (Westel)

B. Reply Comments

Able Communications Ltd.
AirCell, Inc.
Blooston, Mordkofsky, Dickens, Duffy & Prendergast
The Boeing Company (Boeing)
New York State Electric & Gas Corporation (NYSE&GC)
QUALCOMM Incorporated
SkyTel Corp.
Societe Internationale de Telecommunications Aeronautiques
Space Data Corporation (Space Data)
Stratophone LLC (Stratophone)
Texas License Consultants (TLC)
Verizon Airfone
Verizon Wireless

C. *Ex partes*

Air Carrier Association of America
AirCell, Inc.
AirTran Airways
American Airlines
American Association of Paging Carriers (AAPC)

Association of American Railroads
Association of Public Safety Communications Officials–International, Inc. (APCO)
Blooston, Mordkofsky, Dickens, Duffy & Prendergast
The Boeing Company
Cellular Telecommunications & Internet Association–The Wireless Association (CTIA)
The Honorable Conrad Burns, Deputy Whip, United States Senate
Continental Airlines, Inc.
Federal Bureau of Investigation and U.S. Drug Enforcement Administration (FBI/DEA)
Flarion Technologies Inc. (Flarion)
The Honorable Fred Upton, Chairman, House Energy and Commerce Subcommittee on
Telecommunications and the Internet
Frontier Airlines, Inc.
JetBlue Airways
Metrocall Holdings, Inc. (Metrocall)
Motorola, Inc.
National Telecommunications and Information Administration (NTIA)
Nextel Communications, Inc. (Nextel)
Northwest Airlines, Inc.
QUALCOMM Incorporated
Skyway Aircraft, Inc. (Skyway)
Space Data Corporation
Sprint Corporation
T-Mobile USA
United Airlines
U.S. Department of Homeland Security, Immigrations and Customs Enforcement, Federal Air Marshal
Service
Verizon Airfone

APPENDIX B

FINAL RULES

Title 47, Part 1 of the Code of Federal Regulations, 47 CFR Part 1, is amended as follows:

1. The authority citation for Part 1 continues to read as follows:

Authority: 47 U.S.C. 151, 154(i), 154(j), 155, 225, 303(r), 309 and 325(e).

2. In Section 1.903, revise paragraph (c) to read as follows:

§ 1.903 Authorization required.

* * * * *

(c) *Subscribers.* Authority for subscribers to operate mobile or fixed stations in the Wireless Radio Services, except for certain stations in the Rural Radiotelephone Service, is included in the authorization held by the licensee providing service to them. Subscribers are not required to apply for, and the Commission does not accept, applications from subscribers for individual mobile or fixed station authorizations in the Wireless Radio Services. Individual authorizations are required to operate rural subscriber stations in the Rural Radiotelephone Service, except as provided in § 22.703 of this chapter. Individual authorizations are required for end users of certain Specialized Mobile Radio Systems as provided in § 90.655 of this chapter. In addition, certain ships and aircraft are required to be individually licensed under Parts 80 and 87 of this chapter. See §§ 80.13, 87.18 of this chapter.

3. In Section 1.929, revise paragraph (c)(1) to read as follows:

§ 1.929 Classification of filings as major or minor.

* * * * *

(c) * * *

(1) In the Paging and Radiotelephone Service, Rural Radiotelephone Service and 800 MHz Specialized Mobile Radio Service (SMR), any change that would increase or expand the applicant's existing composite interference contour, except extensions of a composite interference contour over bodies of water that extend beyond county boundaries (*i.e.*, including but not limited to oceans, the Gulf of Mexico, and the Great Lakes) on a secondary basis.

* * * * *

4. Add a new Section 1.958 to read as follows:

§ 1.958 Distance computation.

The method given in this section must be used to compute the distance between any two locations, except that, for computation of distance involving stations in Canada and Mexico, methods for distance computation specified in the applicable international agreement, if any, must be used instead. The result of a distance calculation under Parts 21 and 101 of this chapter must be rounded to the nearest tenth of a kilometer. The method set forth in this paragraph is considered to be sufficiently accurate for distances not exceeding 475 km (295 miles).

(a) Convert the latitudes and longitudes of each reference point from degree-minute-second format to degree-decimal format by dividing minutes by 60 and seconds by 3600, then adding the results to degrees.

$$LATX_{dd} = DD + \frac{MM}{60} + \frac{SS}{3600}$$

$$LONX_{dd} = DDD + \frac{MM}{60} + \frac{SS}{3600}$$

(b) Calculate the mean geodetic latitude between the two reference points by averaging the two latitudes:

$$ML = \frac{LAT1_{dd} + LAT2_{dd}}{2}$$

(c) Calculate the number of kilometers per degree latitude difference for the mean geodetic latitude calculated in paragraph (b) of this section as follows:

$$KPD_{lat} = 111.13209 - 0.56605 \cos 2ML + 0.00120 \cos 4ML$$

(d) Calculate the number of kilometers per degree of longitude difference for the mean geodetic latitude calculated in paragraph (b) of this section as follows:

$$KPD_{lon} = 111.41513 \cos 5ML - 0.09455 \cos 3ML + 0.00012 \cos 5ML$$

(e) Calculate the North-South distance in kilometers as follows:

$$NS = KPD_{lat} \times (LAT1_{dd} - LAT2_{dd})$$

(f) Calculate the East-West distance in kilometers as follows:

$$EW = KPD_{lon} \times (LON1_{dd} - LON2_{dd})$$

(g) Calculate the distance between the locations by taking the square root of the sum of the squares of the East-West and North-South distances:

$$DIST = \sqrt{NS^2 + EW^2}$$

(h) Terms used in this section are defined as follows:

(1) $LAT1_{dd}$ and $LON1_{dd}$ are the coordinates of the first location in degree-decimal format.

(2) $LAT2_{dd}$ and $LON2_{dd}$ are the coordinates of the second location in degree-decimal format.

(3) ML is the mean geodetic latitude in degree-decimal format.

(4) KPD_{lat} is the number of kilometers per degree of latitude at a given mean geodetic latitude.

(5) KPD_{lon} is the number of kilometers per degree of longitude at a given mean geodetic latitude.

(6) NS is the North-South distance in kilometers.

(7) EW is the East-West distance in kilometers.

(8) $DIST$ is the distance between the two locations, in kilometers.

5. Add new Section 1.959 to read as follows:

§ 1.959 Computation of average terrain elevation.

Except as otherwise specified in § 90.309(a)(4) of this chapter, average terrain elevation must be calculated by computer using elevations from a 30 second point or better topographic data file. The file must be identified. If a 30 second point data file is used, the elevation data must be processed for intermediate points using interpolation techniques; otherwise, the nearest point may be used. In cases of dispute, average terrain elevation determinations can also be done manually, if the results differ significantly from the computer derived averages.

(a) Radial average terrain elevation is calculated as the average of the elevation along a straight line path from 3 to 16 kilometers (2 and 10 miles) extending radially from the antenna site. If a portion of the radial path extends over foreign territory or water, such portion must not be included in the computation of average elevation unless the radial path again passes over United States land between 16 and 134 kilometers (10 and 83 miles) away from the station. At least 50 evenly spaced data points for each radial should be used in the computation.

(b) Average terrain elevation is the average of the eight radial average terrain elevations (for the eight cardinal radials).

(c) For locations in Dade and Broward Counties, Florida, the method prescribed above may be used or average terrain elevation may be assumed to be 3 meters (10 feet).

6. In the table in Section 1.1102, remove row entry 16.h. "Air Ground Individual".

7. In Section 1.2003, remove the phrase "FCC 409 Airborne Mobile Radio Telephone License Application;"

Title 47, Part 22 of the Code of Federal Regulations, 47 CFR Part 22, is amended as follows:

8. The authority citation for Part 22 continues to read as follows:

Authority: 47 U.S.C. 154, 222, 303, 309 and 332.

9. Revise paragraph (b) of Section 22.1, to read as follows:

§ 22.1 Basis and purpose.

* * * * *

(b) *Purpose.* The purpose of these rules is to establish the requirements and conditions under which radio stations may be licensed and used in the Public Mobile Services.

10. In Section 22.3, revise the text of paragraph (b) and remove paragraphs (b)(1) and (b)(2), to read as follows:

§ 22.3 Authorization required.

* * * * *

(b) Authority for subscribers to operate mobile or fixed stations in the Public Mobile Services, except for certain stations in the Rural Radiotelephone Service, is included in the authorization held by the licensee providing service to them. Subscribers are not required to apply for, and the FCC does not accept applications from subscribers for, individual mobile or fixed station authorizations in the Public Mobile Services, except that individual authorizations are required to operate rural subscriber stations in the Rural Radiotelephone Service under certain circumstances. See § 22.703.

11. Revise Section 22.7 in its entirety to read as follows:

§ 22.7 General eligibility.

Any entity, other than those precluded by section 310 of the Communications Act of 1934, as amended, 47 U.S.C. 310, is eligible to hold a license under this part. Applications are granted only if the applicant is legally, financially, technically and otherwise qualified to render the proposed service.

12. In Section 22.99, remove the terms “Meteor burst propagation mode”, “Radio Common Carrier”, and “Wireline Common Carrier” and their definitions.

13. In Section 22.99, in the definition of the term “Channel”, remove the words “See, for example, § 22.161.”

14. In Section 22.99, in the definitions of the terms “Air-Ground Radiotelephone Service”, “Cellular Radiotelephone Service”, “Offshore Radiotelephone Service”, “Public Mobile Services”, and “Rural Radiotelephone Service”, remove the words “common carrier” and add, in their place, the word “licensee”.
15. In Section 22.99, correct “Air-ground Radiotelephone Service” to read “Air-Ground Radiotelephone Service” in the definitions of “Communications channel”, “Control channel”, and “Ground station”.
16. Revise paragraph (d)(4) of Section 22.143 to read as follows:

§ 22.143 Construction prior to grant of application.

* * * * *

(d) * * *

(4) For any construction or alteration that would exceed the requirements of § 17.7 of this chapter, the licensee has notified the appropriate Regional Office of the Federal Aviation Administration (FAA Form 7460-1), filed a request for antenna height clearance and obstruction marking and lighting specifications (FCC Form 854) with the FCC at WTB, Spectrum Management Resources and Technologies Division, 1270 Fairfield Road, Gettysburg, PA 17325, or electronically via the FCC Antenna Structure Registration home page, wireless.fcc.gov/antenna/.

* * * * *

17. Remove Section 22.157.
18. Remove Section 22.159.
19. Remove Section 22.161.
20. Remove and reserve paragraphs (a)(3) and (a)(5) of Section 22.313.
21. Revise Section 22.351 in its entirety to read as follows:

§ 22.351 Channel assignment policy.

The channels allocated for use in the Public Mobile Services are listed in the applicable subparts of this part. Channels and channel blocks are assigned in such a manner as to facilitate the rendition of service on an interference-free basis in each service area. Except as otherwise provided in this part, each channel or channel block is assigned exclusively to one licensee in each service area. All applicants for, and licensees of, stations in the Public Mobile Services shall cooperate in the selection and use of channels in order to minimize interference and obtain the most efficient use of the allocated spectrum.

22. In Section 22.352, revise the first sentence of the introductory text, as follows:

§ 22.352 Protection from interference.

Public Mobile Service stations operating in accordance with applicable FCC rules and the terms and conditions of their authorizations are normally considered to be non-interfering. * * *

* * * * *

23. Revise Section 22.357 in its entirety to read as follows:

§ 22.357 Emission types.

Any authorized station in the Public Mobile Services may transmit emissions of any type(s) that comply with the applicable emission rule, *i.e.* § 22.359, § 22.861 or § 22.917.

24. Revise Section 22.359 in its entirety to read as follows:

§ 22.359 Emission limitations.

The rules in this section govern the spectral characteristics of emissions in the Public Mobile Services, except for the Air-Ground Radiotelephone Service (see § 22.861, instead) and the Cellular Radiotelephone Service (see § 22.917, instead).

(a) *Out of band emissions.* The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log (P)$ dB.

(b) *Measurement procedure.* Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 30 kHz or more. In the 60 kHz bands immediately outside and adjacent to the authorized frequency range or channel, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (*i.e.*, 30 kHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

(c) *Alternative out of band emission limit.* Licensees in the Public Mobile Services may establish an alternative out of band emission limit to be used at specified frequencies (band edges) in specified geographical areas, in lieu of that set forth in this section, pursuant to a private contractual arrangement of all affected licensees and applicants. In this event, each party to such contract shall maintain a copy of the contract in their station files and disclose it to prospective assignees or transferees and, upon request, to the FCC.

(d) *Interference caused by out of band emissions.* If any emission from a transmitter operating in any of the Public Mobile Services results in interference to users of another radio service, the FCC may require a greater attenuation of that emission than specified in this section.

25. Remove Section 22.361 and Table C-2 thereto.
26. Remove Section 22.363.
27. Remove Section 22.367.
28. Remove Section 22.373.
29. Remove Section 22.379.
30. Remove Section 22.381.
31. In Section 22.401, remove the words “Communications common carriers” in the first sentence of the introductory text, and add, in their place, the words “Eligible entities (see § 22.7)”.
32. Remove Section 22.411.
33. Remove Section 22.415.
34. Remove Section 22.417.
35. Remove and reserve paragraphs (a) and (b) of Section 22.531.
36. Remove Section 22.539.
37. Remove Section 22.551.
38. Remove Section 22.563.
39. Remove paragraph (g) of Section 22.565.
40. Remove Section 22.569.
41. Remove Section 22.577.
42. In Section 22.591, remove from the table in the introductory text, the portion of that table which is entitled “Microwave channels”, and remove and reserve paragraph (b).
43. Revise Section 22.593 in its entirety, to read as follows:

§ 22.593 Effective radiated power limits.

The effective radiated power of fixed stations operating on the channels listed in § 22.591 must not exceed 150 Watts. The equivalent isotropically radiated power of existing fixed microwave stations (2110-2130 and 2160-2180 MHz) licensed under this part (pursuant to former rules) must not exceed the applicable limits set forth in § 101.113 of this chapter.

44. Revise the heading and introductory text of Section 22.601 to read as follows:

§ 22.601 Existing microwave stations licensed under this part.

Existing microwave stations (2110-2130 and 2160-2180 MHz) licensed under this part (pursuant to former rules) are subject to the transition rules in § 22.602. No new microwave systems will be authorized under this part.

* * * * *

45. Revise the introductory paragraph of Section 22.602 to read as follows:

§ 22.602 Transition of the 2110-2130 and 2160-2180 MHz channels to emerging technologies.

The 2110-2130 and 2160-2180 MHz microwave channels formerly listed in § 22.591 have been re-allocated for use by emerging technologies (ET) services. No new systems will be authorized under this part. The rules in this section provide for a transition period during which existing Paging and Radiotelephone Service (PARS) licensees using these channels may relocate operations to other media or to other fixed channels, including those in other microwave bands. For PARS licensees relocating operations to other microwave bands, authorization must be obtained under Part 101 of this chapter.

* * * * *

46. Revise paragraph (a) of Section 22.625 to read as follows:

§ 22.625 Transmitter locations.

* * * * *

(a) *928-960 MHz*. In this frequency range, the required minimum distance separation between co-channel fixed transmitters is 113 kilometers (70 miles).

* * * * *

47. Remove Section 22.655.

48. In Section 22.725, revise the heading and the first sentence of the introductory text and remove paragraph (c), to read as follows:

§ 22.725 Channels for conventional rural radiotelephone stations and basic exchange telephone radio systems.

The following channels are allocated for paired assignment to transmitters that provide conventional rural radiotelephone service and to transmitters in basic exchange telephone radio systems. * * *

* * * * *

(c) [deleted]

49. Remove paragraph (f) of Section 22.727.

50. Remove Section 22.729.

51. Revise Section 22.757 in its entirety to read as follows:

§ 22.757 Channels for basic exchange telephone radio systems.

The channels listed in § 22.725 are also allocated for paired assignment to transmitters in basic exchange telephone radio systems.

52. Revise Section 22.801 in its entirety to read as follows:

§ 22.801 Scope.

The rules in this subpart govern the licensing and operation of air-ground stations and systems. The licensing and operation of these stations and systems is also subject to rules elsewhere in this part and in part 1 of this chapter that generally apply to the Public Mobile Services. In case of conflict, however, the rules in this subpart govern.

53. Redesignate Section 22.803 as Section 22.807, revise the heading, introductory text, and paragraph (b), and remove paragraph (c), to read as follows:

§ 22.807 General aviation air-ground station application requirements.

In addition to the information required by Subparts B and D of this part, FCC Form 601 applications for authorization to operate a general aviation air-ground station must contain the applicable supplementary information described in this section.

(a) * * *

(b) *Technical information.* The following information is required by FCC Form 601.

(1) Location description, city, county, state, geographic coordinates (NAD83) correct to ± 1 second, site elevation above mean sea level, proximity to adjacent market boundaries and international borders;

(2) Antenna height to tip above ground level, antenna gain in the maximum lobe, the electric field polarization of the wave emitted by the antenna when installed as proposed;

(3) * * *

54. Remove Section 22.811.

55. Revise Section 22.815 in its entirety to read as follows:

§ 22.815 Construction period for general aviation ground stations.

The construction period (see § 1.946) for general aviation ground stations is 12 months.

56. Remove Section 22.819.

57. Add a new Section 22.853 to read as follows:

§ 22.853 Eligibility to hold interest in licenses limited to 3 MHz of spectrum.

No individual or entity may hold, directly or indirectly, a controlling interest in licenses authorizing the use of more than three megahertz of spectrum (either shared or exclusive) in the 800 MHz commercial aviation Air-Ground Radiotelephone Service frequency bands (see § 22.857). Individuals and entities with either *de jure* or *de facto* control of a licensee in these bands will be considered to have a controlling interest in its license(s). For purposes of this rule, the definitions of “controlling interests” and “affiliate” set forth set forth in paragraphs (c)(2) and (c)(5) of § 1.2110 of this chapter shall apply.

58. Revise Section 22.857 in its entirety to read as follows:

§ 22.857 Frequency bands.

The 849-851 MHz and 894-896 MHz frequency bands are designated for paired nationwide exclusive assignment to the licensee or licensees of systems providing radio telecommunications service, including voice and/or data service, to persons on board aircraft. Air-ground systems operating in these frequency bands are referred to in this chapter as “commercial aviation” systems.

59. Revise Section 22.859 in its entirety to read as follows:

§ 22.859 Incumbent commercial aviation air-ground systems.

This section contains rules concerning continued operation of commercial aviation air-ground systems that were originally authorized prior to January 1, 2004 to provide radiotelephone service using narrowband (6 kHz) channels, and that have been providing service continuously since the original commencement of service (hereinafter “incumbent systems”).

(a) An incumbent system may continue to operate under its authorization, for the remaining term of such authorization, subject to the terms and conditions attached thereto. Wherever such technical and operational conditions differ from technical and operational rules in this subpart, those conditions shall govern its operations.

(b) Notwithstanding any other provision in this chapter, the licensee of an incumbent system shall not be entitled to an expectation of renewal of said authorization.

(c) During the period that an incumbent system continues to operate and provide service pursuant to paragraph (a) of this section, air-ground systems of licensees holding a new authorization for the spectrum within which the incumbent system operates must not cause interference to the incumbent system. Protection from interference requires that the signals of the new systems must not exceed a ground station received power of -130 dBm within a 6 kHz receive bandwidth, calculated assuming a 0 dBi vertically polarized receive antenna.

60. Revise Section 22.861 in its entirety as follows:

§ 22.861 Emission limitations.

The rules in this section govern the spectral characteristics of emissions for commercial aviation systems in the Air-Ground Radiotelephone Service. Commercial aviation air-ground systems may use any type of emission or technology that complies with the technical rules in this subpart.

(a) *Out of band emissions.* The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log (P)$ dB.

(b) *Measurement procedure.* Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (*i.e.*, 100 kHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

(c) *Alternative out of band emission limit.* The licensee(s) of commercial aviation air-ground systems, together with affected licensees of Cellular Radiotelephone Service systems operating in the spectrum immediately below and adjacent to the commercial aviation air-ground bands, may establish an alternative out of band emission limit to be used at the 849 MHz and 894 MHz band edge(s) in specified geographical areas, in lieu of that set forth in this section, pursuant to a private contractual arrangement of all affected licensees and applicants. In this event, each party to such contract shall maintain a copy of the contract in their station files and disclose it to prospective assignees or transferees and, upon request, to the FCC.

(d) *Interference caused by out of band emissions.* If any emission from a transmitter operating in this service results in interference to users of another radio service, the FCC may require a greater attenuation of that emission than specified in this section.

61. Revise Section 22.863 in its entirety to read as follows:

§ 22.863 Frequency stability.

The frequency stability of equipment used under this subpart shall be sufficient to ensure that, after accounting for Doppler frequency shifts, the occupied bandwidth of the fundamental emissions remains within the authorized frequency bands of operation.

62. Remove Section 22.865.

63. Revise Section 22.867 in its entirety to read as follows:

§ 22.867 Effective radiated power limits.

The effective radiated power (ERP) of ground and airborne stations operating on the frequency ranges listed in § 22.857 must not exceed the limits in this section.

(a) The peak ERP of airborne mobile station transmitters must not exceed 12 Watts.

(b) The peak ERP of ground station transmitters must not exceed 500 Watts.

64. Remove Section 22.869.

65. Remove Section 22.871.

66. Revise Section 22.873 to read as follows:

§ 22.873 Construction requirements for commercial aviation air-ground systems.

Licensees authorized to use more than one megahertz (1 MHz) of the 800 MHz commercial aviation air-ground spectrum allocation (see § 22.857) must make a showing of “substantial service” as set forth in this section. Failure by any such licensee to meet this requirement will result in forfeiture of the license and the licensee will be ineligible to regain it. Licensees authorized to use one megahertz or less of the 800 MHz commercial aviation air-ground spectrum allocation are not subject to the requirements in this section.

(a) “Substantial service” is defined as service that is sound, favorable, and substantially above a level of mediocre service that just might minimally warrant renewal.

(b) Each commercial aviation air-ground system subject to the requirements of this section must demonstrate substantial service within 5 years after grant of the authorization. Substantial service may be demonstrated by, but is not limited to, either of the following “safe harbor” provisions:

(1) construction and operation of 20 ground stations, with at least one ground station located in each of the 10 Federal Aviation Administration regions; or,

(2) provision of service to the airspace of 25 of the 50 busiest airports (as measured by annual passenger boardings).

67. Remove Section 22.875.

68. Add a new Section 22.877 to read as follows:

§ 22.877 Unacceptable interference to Part 90 non-cellular 800 MHz licensees from commercial aviation air-ground systems.

The definition of unacceptable interference to non-cellular Part 90 licensees in the 800 MHz band from commercial aviation air-ground systems is the same as the definition set forth in § 22.970 of this part, which is applicable to Cellular Radiotelephone Service systems.

69. Add a new Section 22.878 to read as follows:

§ 22.878 Obligation to abate unacceptable interference.

This section applies only to commercial aviation ground stations transmitting in the 849-851 MHz band, other than commercial aviation ground stations operating under the authority of a license originally granted prior to January 1, 2004.

(a) *Strict Responsibility.* Any licensee who, knowingly or unknowingly, directly or indirectly, causes or contributes to causing unacceptable interference to a non-cellular Part 90 licensee in the 800 MHz band, as defined in § 22.877, shall be strictly accountable to abate the interference, with full cooperation and utmost diligence, in the shortest time practicable. Interfering licensees shall consider all feasible interference abatement measures, including, but not limited to, the remedies specified in the interference resolution procedures set forth in § 22.879. This strict responsibility obligation applies to all forms of interference, including out-of-band emissions and intermodulation.

(b) *Joint and Several Responsibility.* If two or more licensees, whether in the commercial aviation air-ground radiotelephone service or in the Cellular Radiotelephone Service (see § 22.971), knowingly or unknowingly, directly or indirectly, cause or contribute to causing unacceptable interference to a non-cellular Part 90 licensee in the 800 MHz band, as defined in § 22.877, such licensees shall be jointly and severally responsible for abating interference, with full cooperation and utmost diligence, in the shortest practicable time.

(1) This joint and several responsibility rule requires interfering licensees to consider all feasible interference abatement measures, including, but not limited to, the remedies specified in the interference resolution procedures set forth in § 22.879(c). This joint and several responsibility rule applies to all forms of interference, including out-of-band emissions and intermodulation.

(2) Any licensee that can show that its signal does not directly or indirectly cause or contribute to causing unacceptable interference to a non-cellular Part 90 licensee in the 800 MHz band, as defined in § 22.877, shall not be held responsible for resolving unacceptable interference. Notwithstanding, any licensee that receives an interference complaint from a public safety/CII licensee shall respond to such complaint consistent with the interference resolution procedures set forth in § 22.879.

70. Add a new Section 22.879 to read as follows:

§ 22.879 Interference resolution procedures.

This section applies only to commercial aviation ground stations transmitting in the 849-851 MHz band, other than commercial aviation ground stations operating under the authority of a license originally granted prior to January 1, 2004.

(a) *Initial Notification.* Commercial aviation air-ground system licensees may receive initial notification of interference from non-cellular Part 90 licensees in the 800 MHz band pursuant to § 90.674(a) of this chapter.

(1) Commercial aviation air-ground system licensees shall join with Part 90 ESMR licensees and Cellular Radiotelephone Service licensees in utilizing an electronic means of receiving the initial notification described in § 90.674(a) of this chapter. See § 22.972.

(2) Commercial aviation air-ground system licensees must respond to the initial notification described in § 90.674(a) of this chapter as soon as possible and no later than 24 hours after receipt of notification from a Part 90 public safety/CII licensee. This response time may be extended to 48 hours after receipt from other Part 90 non-cellular licensees provided affected communications on these systems are not safety related.

(b) *Interference Analysis.* Commercial aviation air-ground system licensees – who receive an initial notification described in § 90.674(a) of this chapter – shall perform a timely analysis of the interference to identify the possible source. Immediate on-site visits may be conducted when necessary to complete timely analysis. Interference analysis must be completed and corrective action initiated within 48 hours of the initial complaint from a Part 90 public safety/CII licensee. This response time may be extended to 96 hours after the initial complaint from other Part 90 non-cellular licensees provided affected communications on these systems are not safety related. Corrective action may be delayed if the affected licensee agrees in writing (which may be, but is not required to be, recorded via e-mail or other electronic means) to a longer period.

(c) *Mitigation Steps.* Any commercial aviation air-ground system that is responsible for causing unacceptable interference to non-cellular Part 90 licensees in the 800 MHz band shall take affirmative measures to resolve such interference.

(1) Commercial aviation air-ground system licensees found to contribute to unacceptable interference, as defined in § 22.877, shall resolve such interference in the shortest time practicable. Commercial aviation air-ground system licensees must provide all necessary test apparatus and technical personnel skilled in the operation of such equipment as may be necessary to determine the most appropriate means of timely eliminating the interference. However, the means whereby interference is abated or the technical parameters that may need to be adjusted is left to the discretion of the commercial aviation air-ground system licensee, whose affirmative measures may include, but not be limited to, the following techniques:

(i) increasing the desired power of the public safety/CII signal;

- (ii) decreasing the power of the commercial aviation air-ground system signal;
- (iii) modifying the commercial aviation air-ground system antenna height;
- (iv) modifying the commercial aviation air-ground system antenna characteristics;
- (v) incorporating filters into the commercial aviation air-ground system transmission equipment;
- (vi) changing commercial aviation air-ground system frequencies; and
- (vii) supplying interference-resistant receivers to the affected public safety/CII licensee(s). If this technique is used, in all circumstances, commercial aviation air-ground system licensees shall be responsible for all costs thereof.

(2) Whenever short-term interference abatement measures prove inadequate, the affected Part 90 non-cellular licensee shall, consistent with but not compromising safety, make all necessary concessions to accepting interference until a longer-term remedy can be implemented.

(3) When a Part 90 public safety licensee determines that a continuing presence of interference constitutes a clear and imminent danger to life or property, the licensee causing the interference must discontinue the associated operation immediately, until a remedy can be identified and applied. The determination that a continuing presence exists that constitutes a clear and imminent danger to life or property, must be made by written statement that:

- (i) is in the form of a declaration, notarized affidavit, or statement under penalty or perjury, from an officer or executive of the affected public safety licensee;
- (ii) thoroughly describes the basis of the claim of clear and imminent danger;
- (iii) was formulated on the basis of either personal knowledge or belief after due diligence;
- (iv) is not proffered by a contractor or other third party; and,
- (v) has been approved by the Chief of the Wireless Telecommunication Bureau or other designated Commission official. Prior to the authorized official making a determination that a clear and imminent danger exists, the associated written statement must be served by hand-delivery or receipted fax on the applicable offending licensee, with a copy transmitted by the fastest available means to the Washington, D.C. office of the Commission's Wireless Telecommunications Bureau.

71. Add a new Section 22.880 to read as follows:

§ 22.880 Information exchange.

(a) *Prior Notification.* Public safety/CII licensees may notify a commercial aviation air-ground system licensee that they wish to receive prior notification of the activation or

modification of a commercial aviation air-ground system ground station site in their area. Thereafter, the commercial aviation air-ground system licensee must provide the following information to the public safety/CII licensee at least 10 business days before a new ground station is activated or an existing ground station is modified:

(1) location;

(2) effective radiated power;

(3) antenna manufacturer, model number, height above ground level and up tilt angle, as installed;

(4) channels available for use.

(b) *Purpose of Prior Notification.* The prior notification of ground station activation or modification is for informational purposes only: public safety/CII licensees are not afforded the right to accept or reject the activation of a proposed ground station or to unilaterally require changes in its operating parameters. The principal purposes of prior notification are to:

(1) allow a public safety licensee to advise the commercial aviation air-ground system licensee whether it believes a proposed ground station will generate unacceptable interference;

(2) permit commercial aviation air-ground system licensee(s) to make voluntary changes in ground station parameters when a public safety licensee alerts them to possible interference; and

(3) rapidly identify the source if interference is encountered when the ground station is activated.

72. Revise Section 22.1003 in its entirety to read as follows:

§ 22.1003 Eligibility.

Any eligible entity (see § 22.7) may apply for central station license(s) and/or offshore subscriber licenses under this subpart.

Title 47, Part 90 of the Code of Federal Regulations, 47 CFR Part 90, is amended as follows:

73. The authority citation for Part 90 continues to read as follows:

Authority: Sections 4(i), 11, 303(g), 303(r), and 332(c)(7) of the Communications Act of 1934, as amended, 47 U.S.C. 154(i), 161, 303(g), 303(r), 332(c)(7).

74. Revise Section 90.309(a)(1) to read as follows:

§ 90.309 Tables and figures.

(a) Directions for using the tables. (1) Using the method specified in § 1.958 of this chapter, determine the distances (i) between the proposed land mobile base station and the protected

cochannel television station and (ii) between the proposed land mobile base station and the protected adjacent channel television station. If the exact mileage does not appear in table A for protected cochannel television stations (or table B for channel 15 in New York and Cleveland and channel 16 in Detroit) or table E for protected adjacent channel television stations, the next lower mileage separation figure is to be used.

APPENDIX C
FINAL REGULATORY FLEXIBILITY ANALYSIS

1. As required by the Regulatory Flexibility Act of 1980, as amended (RFA),¹ an Initial Regulatory Flexibility Analysis (IRFA) was incorporated in the Notice of Proposed Rulemaking (*Notice*) in this proceeding, WT Docket No. 03-103.² The Commission sought written public comment on the proposals in the *Notice*, including comment on the IRFA. This present Final Regulatory Flexibility Analysis (FRFA) conforms to the RFA.³

A. Need for, and Objectives of, the Report and Order

2. The Report and Order addresses revision of the rules and spectrum band plan for the 800 MHz commercial Air-Ground Radiotelephone Service spectrum. A total of four megahertz of spectrum is currently allocated for this service. Although the Commission originally licensed six operators to provide service in this band on a shared basis using narrowband channels, only one licensee (Verizon Airfone) continues to operate in the band. Its operations are subject to a number of specific technical requirements designed to facilitate sharing among licensees. Given the constraints on current operations in this band and the changing demands of the public with respect to wireless telecommunications services, the *Notice* requested comment on how best to reconfigure this band and revise the related service rules in order to meet consumer needs and promote flexible, competitive use of this spectrum.

3. The Report and Order makes available new nationwide air-ground licenses in three band configurations: (1) band plan 1, comprised of two overlapping, shared, cross-polarized 3 MHz licenses (licenses A and B, respectively),⁴ (2) band plan 2, comprised of an exclusive 3 MHz license and an exclusive 1 MHz license (licenses C and D, respectively),⁵ and (3) band plan 3, comprised of an exclusive 1 MHz license and an exclusive 3 MHz license (licenses E and F, respectively), with the blocks at opposite ends of the band from the second configuration.⁶ Licenses will be awarded to winning bidders for the licenses comprising the configuration that receives the highest aggregate gross bid, subject to long-form license application review. Licenses will have a ten-year term.

4. The Report and Order also takes action on a range of proposals for updating the Commission's Part 1, 22, and 90 rules. Some of these steps are taken pursuant to the Commission's

¹ See 5 U.S.C. § 603. The RFA, see 5 U.S.C. §§ 601–612, has been amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA), Pub. L. No. 104-121, Title II, 110 Stat. 857 (1996).

² Amendment of Part 22 of the Commission's Rules to Benefit the Consumers of Air-Ground Telecommunications Services, Biennial Regulatory Review—Amendment of Parts 1, 22, and 90 of the Commission's Rules, *Notice of Proposed Rule Making*, 18 FCC Rcd 8380, 8412 App. A (2003).

³ See 5 U.S.C. § 604.

⁴ Licenses A and B would authorize transmission of radio waves that are vertically and horizontally polarized, respectively, and would initially share 1.5 MHz at 849.000-850.500 MHz paired with 1.5 MHz at 894.000-895.500 MHz. Once Verizon Airfone's incumbent system ceases operations in the upper 0.5 MHz of each band, licensee B would shift its operations to 1.5 MHz at 849.500-851.000 MHz paired with 1.5 MHz at 894.500-896.000 MHz. If band plan 1 is implemented, the parties may agree to a different implementation scheme.

⁵ License C would be located in the lower 1.5 MHz portion of each 2 MHz band (1.5 MHz at 849.000-850.500 MHz paired with 1.5 MHz at 894.000-895.500 MHz). License D would be located in the upper 0.5 MHz portion of each 2 MHz band (0.5 MHz at 850.500-851.000 MHz paired with 0.5 MHz at 895.500-896.000 MHz).

⁶ License E would be located in the lower 0.5 MHz portion of each 2 MHz band (0.5 MHz at 849.000-849.500 MHz paired with 0.5 MHz at 894.000-894.500 MHz). License F would be located in the upper 1.5 MHz portion of each 2 MHz band (1.5 MHz at 849.500-851.000 MHz paired with 1.5 MHz at 894.500-896.000 MHz).

biennial review obligations as well as to implement the results of staff review of the Part 22 non-cellular rules. The Report and Order revises and eliminates many rule sections in light of technological change, increased competition in Commercial Mobile Radio Services, supervening changes to the Commission's rules, or a combination of factors. These rule changes also include actions to harmonize the treatment of various wireless services.

B. Summary of Significant Issues Raised by Public Comments in Response to the IRFA

5. We received no comments in response to the IRFA. As described in section E below, we have nonetheless considered potential significant economic impacts of our actions on small entities.

C. Description and Estimate of the Number of Small Entities to Which Rules Will Apply

6. The RFA directs agencies to provide a description of, and, where feasible, an estimate of, the number of small entities that may be affected by the rules adopted herein.⁷ The RFA generally defines the term "small entity" as having the same meaning as the terms "small business," "small organization," and "small governmental jurisdiction."⁸ In addition, the term "small business" has the same meaning as the term "small business concern" under the Small Business Act.⁹ A "small business concern" is one which: (1) is independently owned and operated; (2) is not dominant in its field of operation; and (3) satisfies any additional criteria established by the Small Business Administration (SBA).¹⁰

7. *Wireless Service Providers.* The SBA has developed a small business size standard for wireless firms within the two broad economic census categories of "Paging"¹¹ and "Cellular and Other Wireless Telecommunications."¹² Under both SBA categories, a wireless business is small if it has 1,500 or fewer employees. For the census category of Paging, Census Bureau data for 1997 show that there were 1,320 firms in this category, total, that operated for the entire year.¹³ Of this total, 1,303 firms had employment of 999 or fewer employees, and an additional 17 firms had employment of 1,000 employees or more.¹⁴ Thus, under this category and associated small business size standard, the great majority of firms can be considered small. For the census category Cellular and Other Wireless Telecommunications, Census Bureau data for 1997 show that there were 977 firms in this category, total, that operated for the

⁷ 5 U.S.C. § 604(a)(3).

⁸ 5 U.S.C. § 601(6).

⁹ 5 U.S.C. § 601(3) (incorporating by reference the definition of "small-business concern" in the Small Business Act, 15 U.S.C. § 632). Pursuant to 5 U.S.C. § 601(3), the statutory definition of a small business applies "unless an agency, after consultation with the Office of Advocacy of the Small Business Administration and after opportunity for public comment, establishes one or more definitions of such term which are appropriate to the activities of the agency and publishes such definition(s) in the Federal Register."

¹⁰ 15 U.S.C. § 632.

¹¹ 13 C.F.R. § 121.201, NAICS code 513321 (changed to 517211 in October 2002).

¹² *Id.*

¹³ U.S. Census Bureau, 1997 Economic Census, Subject Series: "Information," Table 5, Employment Size of Firms Subject to Federal Income Tax: 1997, NAICS code 513321 (issued Oct. 2000).

¹⁴ *Id.* The census data do not provide a more precise estimate of the number of firms that have employment of 1,500 or fewer employees; the largest category provided is "Firms with 1000 employees or more."

entire year.¹⁵ Of this total, 965 firms had employment of 999 or fewer employees, and an additional 12 firms had employment of 1,000 employees or more.¹⁶ Thus, under this second category and size standard, the great majority of firms can, again, be considered small.

8. *Cellular Licensees.* The SBA has developed a small business size standard for wireless firms within the broad economic census category “Cellular and Other Wireless Telecommunications.”¹⁷ Under this SBA category, a wireless business is small if it has 1,500 or fewer employees. For the census category Cellular and Other Wireless Telecommunications firms, Census Bureau data for 1997 show that there were 977 firms in this category, total, that operated for the entire year.¹⁸ Of this total, 965 firms had employment of 999 or fewer employees, and an additional 12 firms had employment of 1,000 employees or more.¹⁹ Thus, under this category and size standard, the great majority of firms can be considered small. According to the most recent Trends in Telephone Service data, 719 carriers reported that they were engaged in the provision of cellular service, personal communications service, or specialized mobile radio telephony services, which are placed together in the data.²⁰ We have estimated that 294 of these are small, under the SBA small business size standard.²¹

9. *Common Carrier Paging.* The SBA has developed a small business size standard for wireless firms within the broad economic census categories of “Cellular and Other Wireless Telecommunications.”²² Under this SBA category, a wireless business is small if it has 1,500 or fewer employees. For the census category of Paging, Census Bureau data for 1997 show that there were 1,320 firms in this category, total, that operated for the entire year.²³ Of this total, 1,303 firms had employment of 999 or fewer employees, and an additional 17 firms had employment of 1,000 employees or more.²⁴ Thus, under this category and associated small business size standard, the great majority of firms can be considered small.

10. In the *Paging Second Report and Order*, the Commission adopted a size standard for “small businesses” for purposes of determining their eligibility for special provisions such as bidding

¹⁵ U.S. Census Bureau, 1997 Economic Census, Subject Series: “Information,” Table 5, Employment Size of Firms Subject to Federal Income Tax: 1997, NAICS code 513322 (issued Oct. 2000).

¹⁶ *Id.* The census data do not provide a more precise estimate of the number of firms that have employment of 1,500 or fewer employees; the largest category provided is “Firms with 1000 employees or more.”

¹⁷ 13 C.F.R. § 121.201, NAICS code 513322 (changed to 517212 in October 2002).

¹⁸ U.S. Census Bureau, 1997 Economic Census, Subject Series: “Information,” Table 5, Employment Size of Firms Subject to Federal Income Tax: 1997, NAICS code 513322 (issued Oct. 2000).

¹⁹ *Id.* The census data do not provide a more precise estimate of the number of firms that have employment of 1,500 or fewer employees; the largest category provided is “Firms with 1000 employees or more.”

²⁰ FCC, Wireline Competition Bureau, Industry Analysis and Technology Division, “Trends in Telephone Service” at Table 5.3, page 5-5 (August 2003). This source uses data that are current as of December 31, 2001.

²¹ *Id.*

²² 13 C.F.R. § 121.201, NAICS code 513322 (changed to 517212 in October 2002).

²³ U.S. Census Bureau, 1997 Economic Census, Subject Series: “Information,” Table 5, Employment Size of Firms Subject to Federal Income Tax: 1997, NAICS code 513321 (issued Oct. 2000).

²⁴ *Id.* The census data do not provide a more precise estimate of the number of firms that have employment of 1,500 or fewer employees; the largest category provided is “Firms with 1000 employees or more.”

credits and installment payments.²⁵ A small business is an entity that, together with its affiliates and controlling principals, has average gross revenues not exceeding \$15 million for the preceding three years.²⁶ The SBA has approved this definition.²⁷ An auction of Metropolitan Economic Area (MEA) licenses commenced on February 24, 2000, and closed on March 2, 2000. Of the 2,499 licenses auctioned, 985 were sold.²⁸ Fifty-seven companies claiming small business status won 440 licenses.²⁹ An auction of MEA and Economic Area (EA) licenses commenced on October 30, 2001, and closed on December 5, 2001. Of the 15,514 licenses auctioned, 5,323 were sold.³⁰ One hundred thirty-two companies claiming small business status purchased 3,724 licenses. A third auction, consisting of 8,874 licenses in each of 175 EAs and 1,328 licenses in all but three of the 51 MEAs commenced on May 13, 2003, and closed on May 28, 2003. Seventy-seven bidders claiming small or very small business status won 2,093 licenses.³¹ Currently, there are approximately 74,000 Common Carrier Paging licenses. According to the most recent Trends in Telephone Service, 608 private and common carriers reported that they were engaged in the provision of either paging or “other mobile” services.³² Of these, we estimate that 589 are small, under the SBA-approved small business size standard.³³ We estimate that the majority of common carrier paging providers would qualify as small entities under the SBA definition.

11. *Offshore Radiotelephone Service.* This service operates on several ultra high frequency (UHF) television broadcast channels that are not used for television broadcasting in the coastal areas of states bordering the Gulf of Mexico.³⁴ There are currently approximately 55 licensees in this service. We are unable to estimate at this time the number of licensees that would qualify as small under the SBA’s small business size standard for “Cellular and Other Wireless Telecommunications” services.³⁵ Under that SBA small business size standard, a business is small if it has 1,500 or fewer employees.³⁶

12. *Rural Radiotelephone Service.* The Commission has not adopted a size standard for small businesses specific to the Rural Radiotelephone Service.³⁷ A significant subset of the Rural Radiotelephone Service is the Basic Exchange Telephone Radio System (BETRS).³⁸ The Commission

²⁵ Revision of Part 22 and Part 90 of the Commission’s Rules to Facilitate Future Development of Paging Systems, *Second Report and Order*, 12 FCC Rcd 2732, 2811-2812 ¶¶178-181 (“*Paging Second Report and Order*”); *see also* Revision of Part 22 and Part 90 of the Commission’s Rules to Facilitate Future Development of Paging Systems, *Memorandum Opinion and Order on Reconsideration*, 14 FCC Rcd 10030, 10085-10088 ¶¶98-107 (1999).

²⁶ *Paging Second Report and Order*, 12 FCC Rcd at 2811, ¶179.

²⁷ *See Letter* to Amy Zoslov, Chief, Auctions and Industry Analysis Division, Wireless Telecommunications Bureau, from Aida Alvarez, Administrator, Small Business Administration, dated Dec. 2, 1998.

²⁸ *See* “929 and 931 MHz Paging Auction Closes,” *Public Notice*, 15 FCC Rcd 4858 (WTB 2000).

²⁹ *See id.*

³⁰ *See* “Lower and Upper Paging Band Auction Closes,” *Public Notice*, 16 FCC Rcd 21821 (WTB 2002).

³¹ *See* “Lower and Upper Paging Bands Auction Closes,” *Public Notice*, 18 FCC Rcd 11154 (WTB 2003).

³² *See* Trends in Telephone Service, Industry Analysis Division, Wireline Competition Bureau, Table 5.3 (Number of Telecommunications Service Providers that are Small Businesses) (May 2002).

³³ 13 C.F.R. § 121.201, NAICS code 517211.

³⁴ This service is governed by Subpart I of Part 22 of the Commission’s Rules. *See* 47 C.F.R. §§ 22.1001-22.1037.

³⁵ 13 C.F.R. § 121.201, NAICS code 513322 (changed to 517212 in October 2002).

³⁶ *Id.*

³⁷ The service is defined in Section 22.99 of the Commission’s Rules, 47 C.F.R. § 22.99.

³⁸ BETRS is defined in Sections 22.757 and 22.759 of the Commission’s Rules, 47 C.F.R. §§ 22.757, 22.759.

uses the SBA's small business size standard applicable to "Cellular and Other Wireless Telecommunications," *i.e.*, an entity employing no more than 1,500 persons.³⁹ There are approximately 1,000 licensees in the Rural Radiotelephone Service, and the Commission estimates that there are 1,000 or fewer small entity licensees in the Rural Radiotelephone Service that may be affected by the rules and policies adopted herein.

13. *Air-Ground Radiotelephone Service.* The Commission has not adopted a small business size standard specific to the Air-Ground Radiotelephone Service.⁴⁰ We will use SBA's small business size standard applicable to "Cellular and Other Wireless Telecommunications," *i.e.*, an entity employing no more than 1,500 persons.⁴¹ There are approximately 100 licensees in the Air-Ground Radiotelephone Service, and we estimate that almost all of them qualify as small under the SBA small business size standard.

14. *Wireless Communications Equipment Manufacturers.* Some of the actions in the Report and Order could also benefit equipment manufacturers. The SBA has established a small business size standard for Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing. Examples of products in this category include "transmitting and receiving antennas, cable television equipment, GPS equipment, pagers, cellular phones, mobile communications equipment, and radio and television studio and broadcasting equipment"⁴² and may include other devices that transmit and receive IP-enabled services, such as personal digital assistants (PDAs). Under the SBA size standard, firms are considered small if they have 750 or fewer employees.⁴³ According to Census Bureau data for 1997, there were 1,215 establishments⁴⁴ in this category that operated for the entire year.⁴⁵ Of those, there were 1,150 that had employment of under 500, and an additional 37 that had employment of 500 to 999. The percentage of wireless equipment manufacturers in this category was approximately 61.35 percent⁴⁶ so we estimate that the number of wireless equipment manufacturers with employment of under 500 was actually closer to 706, with an additional 23 establishments having employment of between 500 and 999. Consequently, we estimate that the majority of wireless communications equipment manufacturers are small entities that may be affected by our action.

³⁹ 13 C.F.R. § 121.201, NAICS code 513322 (changed to 517212 in October 2002).

⁴⁰ The service is defined in Section 22.99 of the Commission's Rules, 47 C.F.R. § 22.99.

⁴¹ 13 CFR § 121.201, NAICS codes 513322 (changed to 517212 in October 2002).

⁴² Office of Management and Budget, North American Industry Classification System, pages 308-09 (1997) (NAICS code 334220).

⁴³ 13 C.F.R. § 121.201, NAICS code 334220.

⁴⁴ The number of "establishments" is a less helpful indicator of small business prevalence in this context than would be the number of "firms" or "companies," because the latter take into account the concept of common ownership or control. Any single physical location for an entity is an establishment, even though that location may be owned by a different establishment. Thus, the numbers given may reflect inflated numbers of businesses in this category, including the numbers of small businesses. In this category, the Census breaks out data for firms or companies only to give the total number of such entities for 1997, which was 1,089.

⁴⁵ U.S. Census Bureau, 1997 Economic Census, Industry Series: Manufacturing, "Industry Statistics by Employment Size," Table 4, NAICS code 334220 (issued Aug. 1999).

⁴⁶ *Id.* Table 5.

D. Description of Projected Reporting, Recordkeeping and Other Compliance Requirements

15. In this Report and Order, we are not adopting any new rules that would add reporting, recordkeeping, or other compliance requirements.⁴⁷ We only modify or eliminate certain rules, thereby eliminating economic burdens for small and other sized entities. For example, we amend Section 1.929(c)(1) of our rules to specify that expansion of a composite interference contour (CIC) of a site-based licensee in the Paging and Radiotelephone Service—as well as the Rural Radiotelephone Service and 800 MHz Specialized Mobile Radio Service—over water on a secondary, non-interference basis should be classified as a minor (rather than major) modification of license. See para. 143, *supra*. Such reclassification should substantially reduce the filing requirements associated with these license modifications.

E. Steps Taken To Minimize Significant Economic Impact On Small Entities, And Significant Alternatives Considered

16. The RFA requires an agency to describe any significant alternatives that it has considered in developing its approach, which may include the following four alternatives (among others): “(1) the establishment of differing compliance or reporting requirements or timetables that take into account the resources available to small entities; (2) the clarification, consolidation, or simplification of compliance and reporting requirements under the rule for such small entities; (3) the use of performance rather than design standards; and (4) an exemption from coverage of the rule, or any part thereof, for such small entities.”⁴⁸

17. We do not anticipate any adverse impact on small entities resulting from either reconfiguration of the 800 MHz Air-Ground Radiotelephone Service band plan or revision of the related service rules, see paras. 1-85, *supra*. Currently, there is only one licensee in this band and demand for its service has markedly declined, see para. 23, *supra*. The flexible approach to reconfiguration of the 800 MHz air-ground band adopted in the Report and Order will promote our goal of facilitating the highest valued use of this spectrum, resulting in the provision of wireless communications services that better meet the needs of the traveling public onboard aircraft.

18. In order to promote competition in the 800 MHz air-ground band, the Report and Order prohibits any party from obtaining a controlling interest, either at auction or by a post-auction transaction, in more than three megahertz of spectrum (either shared or exclusive) in the band, see paras. 39-44, *supra*. No single entity, therefore, may hold more than one license in any of the available band configurations. The Report and Order adopts limited technical constraints in order to provide the eventual licensees with significant operational flexibility to provide broadband telecommunications services to commercial airline passengers and others while onboard aircraft, see paras. 54-72, *supra*. We note that the technical rules will, among other things, ensure that operations in this band do not cause harmful interference to adjacent bands, including cellular, SMR, and public safety. The Report and Order provides that future licensees in the 800 MHz air-ground band, as well as other interested parties, will have the opportunity to engage in spectrum leasing under the Commission’s rules, see para. 32, *supra*. Future licensees will also be permitted to engage in partitioning and/or disaggregation of their licenses, *id*. These regulatory

⁴⁷ If band plan 1 is implemented as a result of the Commission’s auction of new 800 MHz commercial Air-Ground Radiotelephone Service licenses (*see supra* FRFA n.4), the new licensees will be required to jointly file a spectrum sharing and site selection plan with the Wireless Telecommunications Bureau. *See supra Report and Order* at para. 34.

⁴⁸ 5 U.S.C. §§ 603(c)(1)–(c)(4).

opportunities are intended to provide the air-ground marketplace greater flexibility to respond to consumer demand. The regulatory approach adopted in the Report and Order will benefit both small and large entities.

19. Regarding the modification or elimination of rules stemming from our Biennial Regulatory Review responsibilities, see paras. 86-168, *supra*, we do not anticipate any adverse impact on small entities. To the contrary, to the extent that there is any direct impact at all, streamlining and harmonizing technical and operational rules should result in decreasing regulatory burdens that benefit both small and large entities.

20. *Report to Congress*: The Commission will send a copy of the Report and Order and Notice of Proposed Rulemaking, including this FRFA, in a report to be sent to Congress pursuant to the Congressional Review Act.⁴⁹ In addition, the Commission will send a copy of the Report and Order and Notice of Proposed Rulemaking, including this FRFA, to the Chief Counsel for Advocacy of the SBA. A summary of the Report and Order and Notice of Proposed Rulemaking and this FRFA will also be published in the Federal Register.⁵⁰

⁴⁹ See 5 U.S.C. § 801(a)(1)(A).

⁵⁰ See 5 U.S.C. § 604(b).

APPENDIX D

INITIAL REGULATORY FLEXIBILITY ANALYSIS

1. As required by the Regulatory Flexibility Act of 1980, as amended (RFA),¹ the Commission has prepared this present Initial Regulatory Flexibility Analysis (IRFA) of the possible significant economic impact on a substantial number of small entities by the policies and rules proposed in the Notice of Proposed Rulemaking (*Notice*), WT Docket No. 05-42.² Written public comments are requested on this IRFA. Comments must be identified as responses to the IRFA and must be filed by the deadlines for comments on the *Notice* provided in paragraph 179 of the item. The Commission will send a copy of the *Notice*, including this IRFA, to the Chief Counsel for Advocacy of the Small Business Administration (SBA).³ In addition, summaries of the *Notice* and IRFA will be published in the Federal Register.⁴

A. Need for, and Objectives of, the Proposed Rules

2. The Report and Order addresses revisions to the rules and spectrum band plan for the 800 MHz commercial Air-Ground Radiotelephone Service spectrum. The Report and Order makes available new nationwide air-ground licenses in three band configurations: (1) band plan 1, comprised of two overlapping, shared, cross-polarized 3 MHz licenses (licenses A and B, respectively),⁵ (2) band plan 2, comprised of an exclusive 3 MHz license and an exclusive 1 MHz license (licenses C and D, respectively),⁶ and (3) band plan 3, comprised of an exclusive 1 MHz license and an exclusive 3 MHz license (licenses E and F, respectively), with the blocks at opposite ends of the band from the second configuration.⁷ Licenses will be awarded to winning bidders for the licenses comprising the configuration that receives the highest aggregate gross bid, subject to long-form license application review. Licenses will have a ten-year term.

3. If mutually exclusive applications are filed for the commercial air-ground licenses that comprise the three band configurations defined in the Report and Order, the Commission will be required to resolve such applications by competitive bidding pursuant to the requirements of Section 309(j) of the

¹ See 5 U.S.C. § 603. The RFA, *see* 5 U.S.C. §§ 601-612, has been amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA), Pub. L. No. 104-121, Title II, 110 Stat. 857 (1996).

² See *Notice*, Section III, *supra*.

³ See 5 U.S.C. § 603(a).

⁴ See *id.*

⁵ Licenses A and B would authorize transmission of radio waves that are vertically and horizontally polarized, respectively, and would initially share 1.5 MHz at 849.000-850.500 MHz paired with 1.5 MHz at 894.000-895.500 MHz. Once Verizon Airfone's incumbent system ceases operations in the upper 0.5 MHz of each band, licensee B would shift its operations to 1.5 MHz at 849.500-851.000 MHz paired with 1.5 MHz at 894.500-896.000 MHz. If band plan 1 is implemented, the parties may agree to a different implementation scheme.

⁶ License C would be located in the lower 1.5 MHz portion of each 2 MHz band (1.5 MHz at 849.000-850.500 MHz paired with 1.5 MHz at 894.000-895.500 MHz). License D would be located in the upper 0.5 MHz portion of each 2 MHz band (0.5 MHz at 850.500-851.000 MHz paired with 0.5 MHz at 895.500-896.000 MHz).

⁷ License E would be located in the lower 0.5 MHz portion of each 2 MHz band (0.5 MHz at 849.000-849.500 MHz paired with 0.5 MHz at 894.000-894.500 MHz). License F would be located in the upper 1.5 MHz portion of each 2 MHz band (1.5 MHz at 849.500-851.000 MHz paired with 1.5 MHz at 894.500-896.000 MHz).

Communications Act.⁸ Similarly, the Commission is required to resolve by competitive bidding mutually exclusive general aviation air-ground applications.⁹ To date, the Commission has accepted for filing nine groups of mutually exclusive general aviation applications, which are currently pending. Therefore, the Wireless Telecommunications Bureau (“WTB”) will, pursuant to its delegated authority, schedule an auction to resolve these applications.¹⁰

4. In the *Notice*, we request comment on a number of issues relating to competitive bidding procedures for both commercial air-ground and general aviation licenses. We propose to conduct auctions of both commercial and general aviation air-ground licenses in conformity with the general competitive bidding rules set forth in Part 1, Subpart Q, of the Commission's Rules, and substantially consistent with the bidding procedures that have been employed in previous Commission auctions.¹¹ Specifically, we propose to employ the Part 1 rules governing, among other things, designated entities, application and payment procedures, collusion issues, and unjust enrichment. Under this proposal, such rules would be subject to any modifications that the Commission may adopt in its Part 1 Competitive Bidding proceeding. In addition, consistent with current practice, matters such as the appropriate competitive bidding design, as well as minimum opening bids and reserve prices, would be determined by WTB pursuant to its delegated authority.¹² We seek comment on this proposal as well as on whether any of our Part 1 competitive bidding rules would be inappropriate, or should be modified, for auctions of either commercial or general aviation air-ground licenses.

5. With respect to the commercial air-ground licenses we are making available, we are providing applicants with the opportunity to bid on licenses constituting different band configurations. Accordingly, the determination of whether individual commercial air-ground license applications are mutually exclusive for purposes of Section 309(j) will be based on whether different applicants have applied for licenses in different band plan license configurations as well as on whether different applicants have applied for the same licenses. In other words, because only one band configuration will be implemented, applicants that apply for licenses in different configurations will be considered to have

⁸ 47 U.S.C. § 309(j).

⁹ The Balanced Budget Act of 1997, Pub. L. No. 105-33, Title III, 111 Stat. 251 (1997), amended Section 309(j) to require the Commission to award mutually exclusive applications for initial licenses or permits using competitive bidding procedures, with very limited exceptions. These exceptions are licenses and construction permits for public safety radio services, digital television service licenses and permits given to existing terrestrial broadcast licensees to replace their analog television service licenses, and licenses and construction permits for noncommercial educational broadcast stations and public broadcast stations under 47 U.S.C. § 397(6). See 47 U.S.C. § 309(j)(1), (2).

¹⁰ This auction will be limited to the parties in each of the nine groups of applicants that have filed mutually exclusive applications, which constitute closed filing groups. See 47 C.F.R. § 22.131. These parties will be required to file short-form applications (FCC Form 175) and submit upfront payments to participate in the auction. See 47 C.F.R. §§ 1.2105(a) & (b), 1.2106.

¹¹ See 47 C.F.R. §§ 1.2101-1.2113.

¹² See Amendment of Part 1 of the Commission's Rules – Competitive Bidding Procedures, Allocation of Spectrum Below 5 GHz Transferred from Federal Government Use, 4660-4685 MHz, *Third Report and Order and Second Further Notice of Proposed Rule Making*, 13 FCC Rcd 374, 448 ¶¶124-125 (1997) (“*Part 1 Third R&O*”) (directing WTB to seek comment on specific mechanisms related to day-to-day auction conduct such as the structure of bidding rounds and stages, establishment of minimum opening bids or reserve prices, minimum accepted bids, activity requirements for each stage of the auction, and stopping rules); Amendment of Part 1 of the Commission's Rules – Competitive Bidding Procedures, *Order, Memorandum Opinion and Order and Notice of Proposed Rule Making*, 12 FCC Rcd 5686, 5697 ¶16 (1997) (clarifying that, pursuant to Section 0.131 of the Commission's Rules, 47 C.F.R. § 0.131, the Chief, Wireless Telecommunications Bureau, has delegated authority to implement all of the Commission's rules pertaining to auctions procedures).

filed mutually exclusive applications. We tentatively conclude, however, that this and any other differences from our past auctions do not necessitate any changes to our Part 1 competitive bidding rules, and that WTB can address such differences through its standard practice of seeking comment on and adopting procedures for specific auctions. We seek comment on this tentative conclusion.

6. We tentatively conclude that small business bidding credits are appropriate for the commercial air-ground service.¹³ We base this conclusion on the fact that no commercial air-ground license will authorize the use of as much spectrum as other nationwide services for which the Commission has declined to adopt small business bidding credits. In addition, we believe that the operation of a commercial air-ground service may require lower capital expenditures than other nationwide services, such as satellite services, because the necessary infrastructure may be less costly.¹⁴ Thus, we tentatively conclude that small businesses may be able to attract the necessary capital to provide commercial air-ground service, particularly if they are assisted by bidding credits.¹⁵ We seek comment on these tentative conclusions.

7. Having tentatively concluded that small businesses may be able to provide commercial air-ground service, we nonetheless recognize that such operations may be very capital-intensive relative to other services provided to smaller geographic areas. We therefore propose to use the same small business definitions we have adopted for other capital-intensive services that serve large geographic areas. Specifically, we propose to define a small business as an entity with average annual gross revenues for the three preceding years not exceeding \$40 million, and to define a very small business as an entity with average annual gross revenues for the three preceding years not exceeding \$15 million. We also propose a 15 percent bidding credit for small businesses and a 25 percent bidding credit for very small businesses, as set forth in our standardized schedule at 47 C.F.R. § 1.2110(f)(2). These are the same tiered small business definitions and bidding credits that we adopted, for example, for EAG-based licenses in the upper and lower 700 MHz bands.¹⁶ We note also that AirCell and Space Data, in *ex parte* comments, support these small business definitions and bidding credits as appropriate for commercial air-ground service.¹⁷

8. We request comment on these proposals. In particular, we invite commenters to discuss the expected capital requirements and other characteristics of the commercial air-ground operations that

¹³ We are coordinating these size standards with the U.S. Small Business Administration.

¹⁴ Air-ground service may also require fewer ground (base) stations than other terrestrial services that are provided on a nationwide basis, such as broadband PCS.

¹⁵ In *ex parte* comments, AirCell and Space Data urge the Commission to adopt small business bidding credits for commercial air-ground licenses, arguing that they are small businesses that have the resources and expertise to provide air-ground service but may not be able to compete for a license without bidding credits. Letter from Michele C. Farquhar, Counsel to AirCell, Inc., to Marlene H. Dortch, Secretary, Federal Communications Commission, dated Sept. 17, 2004 (AirCell Sept. 17 *Ex parte* letter); Letter from Jerry Knoblach, CEO, Space Data Corporation, to Marlene H. Dortch, Secretary, Federal Communications Commission, dated Oct. 28, 2004 (Space Data Oct. 28 *Ex parte* letter).

¹⁶ See Reallocation and Service Rules for the 698-746 MHz Spectrum Band (Television Channels 52-59), *Report and Order*, 17 FCC Rcd 2153 (2002); Service Rules for the 746-764 and 776-794 MHz Bands, and Revisions of Part 27 of the Commission's Rules, *First Report and Order*, 15 FCC Rcd 25495 (2000). The country is divided into six Economic Area Groupings (EAGs); thus, EAGs are very large geographic areas.

¹⁷ AirCell Sept. 17 *Ex parte* letter, at 2; Space Data Oct. 28 *Ex parte* letter, at 2-3. AirCell and Space Data also suggest that the Commission consider higher bidding credits. However, neither company makes a specific proposal or supplies specific facts to support such a proposal.

may be provided using the licenses made available by today's Report and Order, and the relationship of such requirements and characteristics to small business definitions and bidding credits. We invite commenters to provide comparisons with other services for which the Commission has established bidding credits. To the extent commenters support a different bidding credit regime than the one proposed here, they should support their proposals with relevant information. Such comments should provide information on, for example, the technology that a commercial air-ground licensee is likely to employ, the cost of deployment, and other factors that may affect capital requirements for commercial air-ground operations.

9. We also seek comment on whether our proposed designated entity provisions, if applied to the commercial air-ground service, would promote participation by businesses owned by minorities and by women, as well as participation by rural telephone companies. To the extent that commenters propose additional provisions to enhance participation by minority-owned or women-owned businesses, commenters should address how we should craft such provisions to meet the relevant standards of judicial review.¹⁸

10. In contrast to the commercial air-ground licenses made available by today's Report and Order, general aviation air-ground licenses are specialized licenses that are generally valued by relatively small businesses. For this reason, we expect that small businesses interested in acquiring these licenses are unlikely to have difficulty obtaining the capital needed to participate in an auction.¹⁹ We seek comment on whether small business bidding credits would be appropriate for the general aviation air-ground service.

B. Legal Basis

11. The proposed action is authorized under Sections 1, 4(i), 11, 303(r) and (y), 308, 309, and 332 of the Communications Act of 1934, as amended, 47 U.S.C. §§ 151, 154(i), 161, 303(r), 303(y), 308, 309, and 332.

C. Description and Estimate of the Number of Small Entities to Which the Rules Will Apply

12. The RFA directs agencies to provide a description of, and, where feasible, an estimate of, the number of small entities that may be affected by the rules adopted herein.²⁰ The RFA generally defines the term "small entity" as having the same meaning as the terms "small business," "small organization," and "small governmental jurisdiction."²¹ In addition, the term "small business" has the same meaning as the term "small business concern" under the Small Business Act.²² A "small business

¹⁸ See *United States v. Virginia*, 518 U.S. 515 (1996); *Adarand Constructors v. Peña*, 515 U.S. 200 (1995).

¹⁹ We note that the Commission did not adopt small business bidding credits for cellular unserved area authorizations, which it found were valued primarily by a discrete group of small businesses. See Implementation of Section 309(j) of the Communications Act – Competitive Bidding, *Ninth Report and Order*, 11 FCC Rcd 14769, 14791 ¶45 (1996).

²⁰ 5 U.S.C. § 603.

²¹ 5 U.S.C. § 601(6).

²² 5 U.S.C. § 601(3) (incorporating by reference the definition of "small-business concern" in the Small Business Act, 15 U.S.C. § 632). Pursuant to 5 U.S.C. § 601(3), the statutory definition of a small business applies "unless an agency, after consultation with the Office of Advocacy of the Small Business Administration and after opportunity for public comment, establishes one or more definitions of such term which are appropriate to the activities of the agency and publishes such definition(s) in the Federal Register."

concern” is one which: (1) is independently owned and operated; (2) is not dominant in its field of operation; and (3) satisfies any additional criteria established by the Small Business Administration (SBA).²³

13. *Wireless Service Providers.* The SBA has developed a small business size standard for wireless firms within the two broad economic census categories of “Paging”²⁴ and “Cellular and Other Wireless Telecommunications.”²⁵ Under both SBA categories, a wireless business is small if it has 1,500 or fewer employees. For the census category of Paging, Census Bureau data for 1997 show that there were 1,320 firms in this category, total, that operated for the entire year.²⁶ Of this total, 1,303 firms had employment of 999 or fewer employees, and an additional 17 firms had employment of 1,000 employees or more.²⁷ Thus, under this category and associated small business size standard, the great majority of firms can be considered small. For the census category Cellular and Other Wireless Telecommunications, Census Bureau data for 1997 show that there were 977 firms in this category, total, that operated for the entire year.²⁸ Of this total, 965 firms had employment of 999 or fewer employees, and an additional 12 firms had employment of 1,000 employees or more.²⁹ Thus, under this second category and size standard, the great majority of firms can, again, be considered small.

14. *Cellular Licensees.* The SBA has developed a small business size standard for wireless firms within the broad economic census category “Cellular and Other Wireless Telecommunications.”³⁰ Under this SBA category, a wireless business is small if it has 1,500 or fewer employees. For the census category Cellular and Other Wireless Telecommunications firms, Census Bureau data for 1997 show that there were 977 firms in this category, total, that operated for the entire year.³¹ Of this total, 965 firms had employment of 999 or fewer employees, and an additional 12 firms had employment of 1,000 employees or more.³² Thus, under this category and size standard, the great majority of firms can be considered small. According to the most recent Trends in Telephone Service data, 719 carriers reported that they were engaged in the provision of cellular service, personal communications service, or specialized mobile radio telephony services, which are placed together in the data.³³ We have estimated that 294 of these are

²³ 15 U.S.C. § 632.

²⁴ 13 C.F.R. § 121.201, NAICS code 513321 (changed to 517211 in October 2002).

²⁵ *Id.*

²⁶ U.S. Census Bureau, 1997 Economic Census, Subject Series: “Information,” Table 5, Employment Size of Firms Subject to Federal Income Tax: 1997, NAICS code 513321 (issued Oct. 2000).

²⁷ *Id.* The census data do not provide a more precise estimate of the number of firms that have employment of 1,500 or fewer employees; the largest category provided is “Firms with 1000 employees or more.”

²⁸ U.S. Census Bureau, 1997 Economic Census, Subject Series: “Information,” Table 5, Employment Size of Firms Subject to Federal Income Tax: 1997, NAICS code 513322 (issued Oct. 2000).

²⁹ *Id.* The census data do not provide a more precise estimate of the number of firms that have employment of 1,500 or fewer employees; the largest category provided is “Firms with 1000 employees or more.”

³⁰ 13 C.F.R. § 121.201, NAICS code 513322 (changed to 517212 in October 2002).

³¹ U.S. Census Bureau, 1997 Economic Census, Subject Series: “Information,” Table 5, Employment Size of Firms Subject to Federal Income Tax: 1997, NAICS code 513322 (issued Oct. 2000).

³² *Id.* The census data do not provide a more precise estimate of the number of firms that have employment of 1,500 or fewer employees; the largest category provided is “Firms with 1000 employees or more.”

³³ FCC, Wireline Competition Bureau, Industry Analysis and Technology Division, “Trends in Telephone Service” at Table 5.3, page 5-5 (August 2003). This source uses data that are current as of December 31, 2001.

small, under the SBA small business size standard.³⁴

15. *Air-Ground Radiotelephone Service*. The Commission has not adopted a small business size standard specific to the Air-Ground Radiotelephone Service.³⁵ We will use SBA's small business size standard applicable to "Cellular and Other Wireless Telecommunications," *i.e.*, an entity employing no more than 1,500 persons.³⁶ There are approximately 100 licensees in the Air-Ground Radiotelephone Service, and we estimate that almost all of them qualify as small under the SBA small business size standard.

D. Description of Projected Reporting, Recordkeeping, and Other Compliance Requirements for Small Entities

16. The *Notice* does not propose any new reporting, recordkeeping, or other compliance requirements but merely proposes to extend the Commission's existing Part 1 competitive bidding and application requirements to the commercial and general aviation Air-Ground Radiotelephone Service.

E. Steps Taken to Minimize Significant Economic Impact on Small Entities, and Significant Alternatives Considered

17. The RFA requires an agency to describe any significant alternatives that it has considered in reaching its proposed approach, which may include the following four alternatives: "(1) the establishment of differing compliance or reporting requirements or timetables that take into account the resources available to small entities; (2) the clarification, consolidation, or simplification of compliance or reporting requirements under the rule for small entities; (3) the use of performance, rather than design, standards; and (4) an exemption from coverage of the rule, or any part thereof, for small entities."³⁷

18. Specifically to assist small businesses, the *Notice* proposes to establish the same small business size standards and associated small business bidding credits for the commercial Air-Ground Radiotelephone Service as the Commission has adopted for a number of other wireless services, and also asks whether those small business size standards and associated small business bidding credits would be appropriate for the general aviation Air-Ground Radiotelephone Service.³⁸ The Commission will continue to examine alternatives in the future with the objectives of eliminating unnecessary regulations and minimizing any significant economic impact on small entities. We invite comment on any additional significant alternatives parties believe should be considered and on how the approach outlined in the *Notice* will impact small entities, including small non-profits and small governmental entities.

F. Federal Rules that May Duplicate, Overlap, or Conflict with the Proposed Rules

19. None.

³⁴ *Id.*

³⁵ The service is defined in Section 22.99 of the Commission's Rules, 47 C.F.R. § 22.99.

³⁶ 13 CFR § 121.201, NAICS codes 513322 (changed to 517212 in October 2002).

³⁷ 5 U.S.C. §§ 603(c)(1)-(c)(4).

³⁸ See *Notice* at ¶¶ 175 & 178, *supra*.

**STATEMENT OF
CHAIRMAN MICHAEL K. POWELL**

In the Matter of Amendment of Part 22 of the Commission's Rules To Benefit the Consumers of Air-Ground Telecommunications Services; Biennial Regulatory Review—Amendment of Parts 1, 22, and 90 of the Commission's Rules, WT Docket No. 03-103

Amendment of Parts 1 and 22 of the Commission's Rules To Adopt Competitive Bidding Rules for Commercial and General Aviation Air-Ground Radiotelephone Service, WT Docket No. 05-42

Application of Verizon Airfone Inc. for Renewal of 800 MHz Air-Ground Radiotelephone License, Call Sign KNKG804, File No. 0001716212

Report and Order and Notice of Proposed Rulemaking, adopted December 15, 2004.

The world of wireless telecommunications has seen immense technological and marketplace developments in the last decade. During that time, however, the 800 MHz commercial air-ground service has been locked in a narrowly defined technological and regulatory box. With this action today, we take important steps to bring this service up-to-date as both a technical and marketplace matter. We adopt an innovative new licensing approach that will allow the marketplace to help direct the most highly valued use of the commercial air-ground spectrum. We grant future licensees significant flexibility to meet consumer demand for broadband and other wireless services onboard aircraft while providing a reasonable transition period for the single remaining incumbent system. We lift the archaic technical constraints currently imposed on the 800 MHz service, while implementing the requirements and procedures necessary to ensure that public safety and other operations in adjacent bands are protected from harmful interference. We thus bring the 800 MHz commercial air-ground service into the 21st century and lay the groundwork for its continued growth and expansion as well as its participation in the marketplace of air-ground services provided to airplane passengers via multiple modes.

**STATEMENT OF
COMMISSIONER MICHAEL J. COPPS
APPROVING IN PART, DISSENTING IN PART**

In the Matter of Amendment of Part 22 of the Commission's Rules To Benefit the Consumers of Air-Ground Telecommunications Services; Biennial Regulatory Review—Amendment of Parts 1, 22, and 90 of the Commission's Rules, WT Docket No. 03-103

Amendment of Parts 1 and 22 of the Commission's Rules To Adopt Competitive Bidding Rules for Commercial and General Aviation Air-Ground Radiotelephone Service, WT Docket No. 05-42

Application of Verizon Airfone Inc. for Renewal of 800 MHz Air-Ground Radiotelephone License, Call Sign KNKG804, File No. 0001716212

Report and Order and Notice of Proposed Rulemaking, adopted December 15, 2004.

There is good and bad in today's *Air-to-Ground Order*. On the one hand, our actions have the potential to give airlines and passengers new communications technologies. The current air-to-ground narrowband service surely has not fulfilled expectations. There are few calls made each day and the service is high-priced and limited to voice. A new broadband air-to-ground service could allow a far greater diversity of services, including the ability to check email, access the Web, enhance avionic support, and improve homeland security communications.

On the other hand, the way the FCC has decided to launch this new service risks creating a monopoly for broadband air-to-ground services. The Order creates an auction where one company can lock up the only license that can support a true broadband air-to-ground service. That means that if a company bids enough, it can exclude all other competitors, leaving airlines with only one possible supplier and passengers with no choice. Experience shows that if a company has the chance to buy a monopoly license, it will pay a premium for it. That is because it allows them, with one fell swoop, to ensure that competitors will not be able to keep prices down or force them to innovate.

That result might be a feast for the monopolist, but it's famine for consumers. Airlines will have to do business with the monopolist at any price. That is why so many airlines stated on the record that we should ensure competition. It also means that when passengers want to access the Internet using a broadband service they will have to pay what the monopolist charges or have no broadband service at all on the airplane. It also means that when the Department of Homeland Security wants broadband service for Air Marshals, there will be no chance for a competitive bidding process, because only one company can offer the service. This could lead to taxpayers paying far more for this DHS no-competition contract than necessary. Historically, the risks of creating a monopoly led the Commission to create multiple licenses when it started the cellular service, PCS, satellite TV, satellite radio and in every other auction initiating a new service that I can think of. But we don't do so here.

While I am pleased that we include the chance for competing companies to use the auction to win two overlapping three MHz licenses in the Order, history doesn't indicate this will provide the competition consumers want. Some of my colleagues argue this provides the potential for competition. But I fear that this possibility is unlikely to be realized. There is substantial record evidence that two companies bidding for overlapping three MHz licenses will find it exceedingly difficult to defeat a company bidding on a monopoly license, whether that license is for 4 MHz or for 3 MHz. The potential monopolist has far more to gain and will pay a significant premium to eliminate competition. My colleagues also point to the fact that if a company buys the exclusive 3 MHz license, a second company will be able to compete with them using the remaining 1 MHz license. But this remainder license seems

unlikely to provide real competition. The 1 MHz licensee will have 1/3 the spectrum resources and the service it offers will likely have only 1/4 of the throughput. The 1 MHz licensee may be able to offer voice, but it will not be a real broadband competitor. Likewise, even the Order itself concludes that satellite services, while useful and important, are not similar enough to terrestrial air-to-ground services to provide adequate competition. So the unwieldy combinatorial auction, the orphaned 1 MHz narrowband licensee, and the dissimilar satellite service are all unlikely to protect consumers. I therefore must dissent to the decision not to ensure two competitive licenses in this Order.

Thanks to WTB and OET for their hard and good work.

**STATEMENT OF
COMMISSIONER JONATHAN ADELSTEIN
APPROVING IN PART, DISSENTING IN PART**

In the Matter of Amendment of Part 22 of the Commission's Rules To Benefit the Consumers of Air-Ground Telecommunications Services; Biennial Regulatory Review—Amendment of Parts 1, 22, and 90 of the Commission's Rules, WT Docket No. 03-103

Amendment of Parts 1 and 22 of the Commission's Rules To Adopt Competitive Bidding Rules for Commercial and General Aviation Air-Ground Radiotelephone Service, WT Docket No. 05-42

Application of Verizon Airfone Inc. for Renewal of 800 MHz Air-Ground Radiotelephone License, Call Sign KNKG804, File No. 0001716212

Report and Order and Notice of Proposed Rulemaking, adopted December 15, 2004.

The prospect of high speed Internet services in the airplane cabin should be met with great support. As we jet off to our latest destination, we all have an interest in downloading or uploading a presentation on the way to a conference, catching up on personal and corporate e-mail accounts for a couple of hours, or maybe even doing some on-line shopping for a child's upcoming birthday.

It seems the stuff of Buck Rogers, but we already are seeing the deployment of satellite-based high-speed Internet services on international long-distance routes. And with today's decision, we take an important step towards promoting terrestrial-based broadband services for domestic air travel. We configure our rules to allow for next-generation broadband air-ground services. Equally as significant, we rightly conclude that these broadband services can be provided with three megahertz of spectrum, and that it is technically feasible for two licensees to provide broadband air-ground service with overlapping three megahertz licenses.

I am pleased that these technical decisions have allowed us to move away from only making available a single four megahertz license and to put in place restrictions that ensure that one licensee does not control all of the 800 MHz air-ground spectrum. Such an outcome would not have matched up with technical realities, and would in no way have served the public interest.

But we lost a golden opportunity here to guarantee true broadband competition. While a future auction likely will result in two unique licensees, it is agreed that a licensee with one megahertz of spectrum will be unable to compete against a licensee with three megahertz for a true broadband service. We could have easily made a change to the item to ensure that the broadband air-ground market would have been served by two competitors. The item already concludes that a licensing approach with two overlapping broadband licenses is technically feasible. For me, the benefits of competition in the broadband air-ground market far outweigh any minor restrictions that possibly would arise out of the overlapping license option. A competitive market ensures price discipline and technical innovation that simply may not flow from a single provider market.

The Commission has historically tried to ensure a minimum of two similarly situated licensees given the obvious problems with sole provider situations. I disagree with the decision to allow a single air-ground broadband license and dissent from that portion of the item.