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

In the Matter of	)	
	)	
Amendment of the Commission's	)	PR Docket No. 92-257
Rules Concerning Maritime	)	RM-7956, 8031, 8352
Communications	)	

SECOND REPORT AND ORDER AND SECOND FURTHER NOTICE OF PROPOSED RULE MAKING

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I. INTRODUCTION AND EXECUTIVE SUMMARY

1. In the *Further Notice of Proposed Rule Making*[1] in this proceeding we sought comment on proposals to promote innovative telecommunications services, improve communications capabilities, and reduce regulatory burdens in the Maritime Service. The record in this proceeding shows strong support from the maritime community for broad regulatory changes to increase flexibility in the service. In this *Second Report and Order and Second Further Notice of Proposed Rule Making*, we amend our rules to promote operational, technical, and regulatory flexibility in the Maritime Service. We conclude that the public interest would be served by giving licensees more flexibility in the use of maritime spectrum, while preserving the core purpose of this internationally allocated radio service, *i.e.*, to promote safety of life and property at sea. Moreover, these changes will allow maritime commercial mobile radio service (CMRS) providers to more quickly respond to market demand, increase competition in the provision of telecommunications services, promote more efficient use of marine spectrum, increase the types of telecommunications services available to vessel operators, and reduce regulatory and economic burdens on coast and ship station licensees. The major rule changes we adopt today are summarized below.

- We modify our rules to permit medium frequency (MF), high frequency (HF), and very high frequency (VHF) public coast stations to automatically connect marine radios with the public switched network (PSN).

- We allow VHF public coast stations to serve units on land, provided priority is given to communications originating on vessels.

- We eliminate the requirement for VHF public coast stations to provide a showing of channel loading prior to assignment of additional channels.

- We provide rules to ensure that affordable digital selective calling (DSC)[2] radio equipment is available to the maritime community by requiring that all new applications for type acceptance of MF, HF, and VHF marine radios received on or after June 17, 1999, comply with either the current international DSC standard or the new minimum requirements developed by the Radio Technical Commission for Maritime Services (RTCM) and endorsed by the U.S. Coast Guard (Coast Guard).

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[1] *Further Notice of Proposed Rule Making* (*Further Notice*), PR Docket No. 92-257, 10 FCC Rcd 5725 (1995).

[2] DSC is defined and discussed in paragraph 28 *infra*.

- We modify our rules to permit brief scanning transmissions in the 2-30 MHz band for the purposes of automatic link establishment (ALE), thereby eliminating the need for a trained operator to set up and maintain high seas maritime and aviation communications.

- We permit vessel and coast stations to utilize alternative data communications protocols on narrow-band direct-printing (NB-DP) frequencies, so long as equipment is capable of operation in accordance with the international standard protocol.

- We also adopt minor amendments to eliminate unnecessary requirements and simplify licensing procedures for ship and private coast station licensees.

2. Because we are eliminating the channel loading showing for VHF public coast stations, we believe that it serves the public interest to simplify our licensing process for VHF public coast stations as well as to reconsider our treatment of high seas and Automated Maritime Telecommunications System (AMTS) public coast stations. Therefore, in the *Second Further Notice of Proposed Rule Making*, we seek comment on the following:

- We propose to designate nine licensing regions, based on Coast Guard Districts, and authorize a single licensee for all currently unassigned VHF public correspondence channels on a geographic basis, in lieu of the site-based approach presently used. Under our proposal, incumbent public coast station licensees would be permitted to operate their stations indefinitely. Further, we propose to clarify the safety watch requirements of geographic public coast station licensees.

- We propose to use competitive bidding procedures to resolve mutually exclusive initial applications for geographic licenses in light of our previous determination that public coast stations provide a commercial mobile radio service (CMRS) and, thus, public coast station licenses are also auctionable, pursuant to 47 U.S.C. § 309(j).

- We propose to permit partitioning and disaggregation of the geographic licenses. We also propose buildout requirements for regional licenses.

- We propose to permit the continued operation of incumbent VHF public coast station licensees and private land mobile licensees sharing marine spectrum in inland regions. Additionally, we propose to require incumbents and geographic licensees to afford interference protection to one another.

- Similar to our treatment of VHF public coast stations, we propose to eliminate the required showing of channel loading for high seas public coast stations. Further, we propose to implement competitive bidding procedures for mutually exclusive

initial applications for these stations.

- We seek comment on allowing private coast stations to share public coast station frequencies in the MF/HF bands and ask how the channels would be shared and how to resolve mutually exclusive initial applications for such frequencies.

- Finally, we propose to introduce additional flexibility for AMTS coast stations by streamlining our licensing procedures, eliminating the current emission restrictions and channel plan, and increasing the permitted power levels for AMTS point-to-point communications.

3. While our proposals are designed to improve maritime telecommunications, the Commission makes no representations or warranties about the use of this spectrum for particular services. Applicants should be aware that an FCC auction represents an opportunity to become an FCC licensee in this service, subject to certain conditions and regulations. An FCC auction does not constitute an endorsement by the FCC of any particular services, technologies or products, nor does an FCC license constitute a guarantee of business success. Applicants should perform their individual due diligence before proceeding as they would with any new business venture.

II. BACKGROUND

4. The Maritime Service provides for the unique distress, operational, and personal communications needs of vessels at sea and on inland waterways. This service provides a vital emergency radio link, similar to the terrestrial "911" system, to ensure safety of life and property in the marine environment. Maritime frequencies are allocated internationally to facilitate interoperable radio communications among vessels of all nations and stations on land world-wide. In this connection, the International Telecommunication Union (ITU) Radio Regulations set forth the particular frequencies to be used for maritime communications, the geographic regions where these frequencies may be used, and the types of communications (*e.g.*, voice, telegraph, data) which may be transmitted on each frequency.

5. The Maritime Service consists of stations on land called "coast stations," and stations aboard vessels called "ship stations." There are two types of coast stations: public coast stations and private coast stations. Both types of coast stations may use VHF band frequencies to serve a port area, or LF, MF, and HF band frequencies to serve vessels on the high seas, often hundreds or even thousands of miles from land. Public coast stations are CMRS[3] providers that allow ships at sea to send and receive messages and interconnect with the PSN. Each public

[3] *See* Implementation of Sections 3(n) and 332 of the Communications Act, Regulatory Treatment of Mobile Services, *Second Report and Order*, GN Docket No. 93-252, 9 FCC Rcd 1411, 1448 (1994) *(CMRS Second Report and Order)*.

coast station has exclusive use of one or more public correspondence channels within its service area or region of operation. In this connection, public coast stations serve foreign and domestic vessels along inland waterways, in coastal areas, and on the high seas. In contrast, private coast stations operate on shared frequencies to serve the business and operational needs of vessels and may not charge fees for the provision of communications services. For example, a private coast station may be used by a vessel towing company to communicate with potential customers in a port area, or by a fishing company to maintain radio contact with its fleet located in fishing grounds over a hundred miles offshore.

6. There are two types of ship stations: those required to carry radio equipment for safety purposes (compulsory stations), and those not required to carry radio equipment (exempt stations). Compulsory stations generally include: cargo vessels of more than 300 gross tons; vessels carrying more than 6 passengers for hire in the open sea; and power-driven vessels of more than 20 meters in length or carrying one or more passengers for hire in tidal waters of the United States. These vessels are required to carry certain types of radio and navigational equipment for safety purposes in accordance with one or more of the following statutes, rules, treaties, and agreements:

- Communications Act of 1934, as amended[4]
- International Convention for the Safety of Life at Sea[5]
- ITU Radio Regulations
- Agreement Between the United States of America and Canada for Promotion of Safety on the Great Lakes by Means of Radio, 1973[6]
- Bridge to Bridge Radiotelephone Act of 1971[7]
- Coast Guard rules[8]

In contrast, exempt stations are primarily recreational vessels which, although not required to carry a radio on board, often rely on marine radio and navigational equipment for communications with other vessels, coast stations, and the Coast Guard.

7. In November, 1992, the Commission released a *Notice of Proposed Rule Making and Notice of Inquiry* in this proceeding to examine the expanding communications needs of the

[4] 47 U.S.C. §§ 151-713.

[5] 32 U.S.T. 47, T.I.A.S. 9700.

[6] 25 U.S.T. 939, T.I.A.S. 7837.

[7] 33 U.S.C. § 1201 *et. seq.*

[8] United States Coast Guard, Department of Transportation, 33 C.F.R. I (Parts 1-199); 46 C.F.R. I (Parts 400-499); 49 C.F.R. IV (Parts 400-499).

maritime community.[9] This *Inquiry* was an initial step toward developing an overall strategy to bring state-of-the-art communications capabilities to the Maritime Service. We proposed to streamline certain regulatory procedures for public coast stations and permit sharing of maritime frequencies by private land mobile users in areas far from waterways.[10] Additionally, we sought specific comment on how the maritime service rules could be revised to increase safety, promote innovative means of communication, reduce congestion, and remove unnecessary impediments to the economic well-being of the maritime industry.[11] Based on the comments received in response to the *Inquiry,* we released a *First Report and Order*, in May 1995, adopting rules to reclassify international public coast stations as non-dominant common carriers[12] and allow the use of marine VHF (156-162 MHz) band public correspondence frequencies by eligibles in the Industrial and Land Transportation Radio Services[13] at least 116 kilometers (72 miles) from navigable waterways.[14]

8. Additionally, on May 25, 1995, we released a *Further Notice of Proposed Rule Making* in response to the commenters' requests for more flexible regulatory treatment of public coast stations, relief from congestion on maritime frequencies, enhancements in marine communications equipment, and a reduction in regulatory burdens for non-commercial marine radio users.[15] In the *Further Notice*, we proposed rules to: permit the automated operation of public coast stations; reduce congestion through intra-service frequency sharing and inter-service frequency sharing with the private land mobile radio service; mandate a minimum DSC capability for all marine radios; permit the use of innovative technologies such as ALE and the expanded use of NB-DP frequencies; and, eliminate various unnecessary licensing and technical

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[9] *Notice of Proposed Rule Making and Notice of Inquiry* (*Inquiry*), PR Docket No. 92-257, 7 FCC Rcd 7863 (1992).

[10] *Id.*

[11] *Id.*

[12] Non-dominant common carriers are subject to relaxed tariff filing and station closure requirements under Part 63 of the Commission's rules, 47 C.F.R. Part 63.

[13] Part 90 of the Comission's Rules was recently amended in order to consolidate the private land mobile radio services into two service pools. Entities formerly eligible in any of the Industrial or Land Transportation Radio Services are now included in the Industrial/Business Pool. 47 C.F.R. § 90.283 was amended, however, in order to retain the eligibility requirements originally adopted to govern the sharing of maritime frequencies by private land mobile licensees. *See* Replacement of Part 90 by Part 88 to Revise the Private Land Mobile Radio Services and Modify the Policies Governing Them and Examination of Exclusivity and Frequency Assignments Policies of the Private Land Mobile Service, PR Docket No. 92-235, *Second Report and Order*, FCC 97-61 (released March 12, 1997) (*Refarming Second Report and Order*).

[14] *First Report and Order*, PR Docket No. 92-257, 10 FCC Rcd 8419 (1995).

[15] *Further Notice*, 10 FCC Rcd at 5725.

requirements for non-commercial marine radio users.[16] We also asked for comment on ways to increase the efficient use of maritime radio spectrum and remove economic disincentives for coast and mobile station operators, while ensuring that the safety of life and property at sea is not adversely affected.[17] We received twenty-two comments and seven reply comments to our proposals.[18]

9. Our goal in this proceeding continues to be to formulate rules and regulations aimed at improving maritime radio. In developing these new rules we are guided by several broad policy initiatives. First, we seek to establish a flexible regulatory framework that will (1) provide opportunities for continued development of competitive new service offerings by allowing flexible use of maritime spectrum, (2) expedite market entry through streamlined licensing procedures, (3) promote technological innovations, and (4) eliminate unnecessary regulatory burdens. Second, we seek to enhance regulatory symmetry between maritime CMRS operations and other CMRS operations to ensure that economic forces, not regulatory forces, shape the development of the CMRS marketplace. Finally, we believe it is necessary to take into account the unique nature of the Maritime Service: (1) the frequencies are allocated internationally to facilitate interoperability, (2) use is subject to various statutes, treaties, and agreements, and (3) the primary purpose of this service is to provide for safety of life and property at sea.

III. SECOND REPORT AND ORDER

A. Operational Flexibility -- Public coast station spectrum

(1) Automatic interconnection

10. *Proposal.* Public coast stations providing interconnected radiotelephone service between vessels on water and the PSN[19] are classified by the Commission as presumptively CMRS.[20] These stations, which provide the only means by which marine radios can connect with the PSN, are required to provide service to any vessel, upon request, and to relay distress communications.[21] Currently, interconnection is done manually and a person holding a

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[16] *Id.*

[17] *Id.*

[18] A list of commenters is provided in Appendix A.

[19] VHF band (156-162 MHz) public coast stations generally serve a single port area, while MF/HF band (2-27.5 MHz) stations provide long distance, high seas communications.

[20] *See CMRS Second Report and Order*, 9 FCC Rcd at 1411.

[21] 47 U.S.C. § 322; 47 C.F.R. § 80.106.

commercial operator license must be on duty at the control point of the station.[22] In the *Further Notice*, we proposed to allow public coast stations to automatically interconnect marine radios with the PSN using any "open" communications protocol[23] on MF, HF, and VHF maritime control and public correspondence channels.[24] Further, we proposed to leave the decision regarding the need for operator assistance in making calls to each public coast station licensee.[25]

11. *Comments.* All commenters addressing the interconnection issue -- including public coast station licensees and marine radio manufacturers -- support our proposal to allow public coast stations to automatically interconnect calls to the PSN.[26] For example, WJG MariTEL Corporation (MariTEL), a public coast station licensee, contends that permitting automated interconnection will benefit vessel operators by increasing calling capabilities, increasing privacy, and reducing communications costs.[27] Further, MariTEL argues that this action is consistent with the statutory mandate to provide regulatory symmetry for all CMRS operators.[28] Likewise, Mobile Marine Radio, Inc. (MMR), also a public coast station licensee, supports our proposal to leave coast station operator staffing decisions to the discretion of each station licensee.[29]

12. Commenters, however, are divided concerning our proposal to permit automatic interconnection using any open protocol. Public coast station licensees Globe Wireless and MariTEL, as well as the Radio Technical Commission for Maritime Services (RTCM), a non-profit organization which studies maritime telecommunications, support our proposal.[30] Globe Wireless and MariTEL, for instance, note that permitting any open protocol or technology for interconnection would promote the development of alternative calling methods which could decrease costs for vessel operators and provide innovative features unique to maritime

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[22] 47 C.F.R. § 80.153.

[23] In this context, an "open" protocol is a means of radio signalling whose documentation is available to the general public and is non-proprietary in nature.

[24] *Further Notice*, 10 FCC Rcd at 5727.

[25] *Id.*

[26] *See* Globe Wireless Comments at 2; MMR Comments at 6; ROSS Engineering (ROSS) Comments at 2; RTCM Comments at 5; MariTEL Comments at 5.

[27] MariTEL Comments at 5.

[28] *Id.*

[29] MMR Comments at 7.

[30] Globe Wireless Comments at 2; RTCM Comments at 4; MariTEL Comments at 3.

operations.[31] They also argue that a standard calling protocol would be anticompetitive because some public coast station operators are already developing protocols for interconnection and do not intend to employ an internationally standardized protocol for domestic public correspondence, such as the DSC protocol suggested by the opposing commenters.[32] Further, MariTEL contends that the marketplace is the appropriate arbiter for commercial marine radio standards and notes that flexible regulations in this regard will allow the development of marine radios that provide a standard, DSC distress capability, in concert with advanced public correspondence capabilities.[33]

13. MMR, OWA, Inc. (OWA), and Ross Engineering (ROSS), a manufacturer of marine radio equipment, oppose the proposed use of open protocols and advocate the use of DSC as the standard communications protocol for automatic interconnection.[34] They argue that the Commission must promote intercommunication between exempt vessels and Global Maritime Distress and Safety System[35] (GMDSS)-equipped vessels by mandating DSC as the single selective calling protocol for all maritime communications -- including distress, safety, and public correspondence.[36] According to the commenters, allowing non-DSC protocols for interconnection will reduce the incentive for exempt vessels to install DSC radios, which may be used to contact GMDSS vessels and the Coast Guard's coastwise DSC network during an emergency. Further, MMR suggests that Section 322 of the Communications Act[37] requires public coast stations to provide service to all ships using an internationally standardized distress protocol, such as DSC.[38] Additionally, MMR argues that there is no evidence in the record suggesting that DSC is inadequate for handling public correspondence or supporting an economic rationale for

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[31] Globe Wireless Reply Comments at 2; MariTEL Reply Comments at 4.

[32] Globe Wireless Comments at 2; MariTEL Comments at 3. We nonetheless recognize that certain compulsory vessels must carry DSC radio equipment. *See infra* note 82 for a description of DSC.

[33] MariTEL Reply Comments at 5-6.

[34] MMR Comments at 6; OWA Comments at 2; ROSS Comments at 2. DSC is a selective calling protocol that automates ship to shore and ship to ship radio connections via MF, HF, and VHF band frequencies. The DSC protocol also sets forth a method for automatically interconnecting marine radios with the PSN.

[35] The GMDSS is an international vessel safety system based on advanced terrestrial and satellite communications which will replace the outdated vessel radiotelegraph system by 1999. The Commission's GMDSS rules mandate the carriage of special radio equipment on board large cargo vessels and passenger vessels for safety purposes. *See* 47 C.F.R. Part 80 subpart W. There are no GMDSS equipment carriage requirements, however, for cargo vessels of less than 300 gross tons or passenger vessels certified by the Coast Guard to carry fewer than 13 passengers. Such vessels may voluntarily equip with certain GMDSS radio equipment in order to facilitate communications with GMDSS vessels.

[36] MMR Reply Comments at 3; OWA Comments at 2; ROSS Comments at 2.

[37] 47 U.S.C. § 322.

[38] MMR Comments at 6.

implementing selective calling protocols other than DSC.[39]

14. *Decision.* Allowing public coast stations the option to provide automatic interconnection between marine radios and the PSN will enhance their ability to compete effectively in coastal regions with other CMRS licensees such as cellular, personal communications services (PCS), and specialized mobile radio (SMR) providers. Further, this action will promote regulatory symmetry among CMRS licensees and permit public coast stations to offer expanded state-of-the-art service to maritime customers. Therefore, we are amending our rules to permit public coast stations to provide automatic interconnection with the PSN in the MF, HF, and VHF marine bands. Because automatic interconnection eliminates the need for an operator to connect calls, we are also eliminating the requirement to have an FCC-licensed radio operator at the control point of each radiotelephone public coast station.[40] Instead, the decision regarding whether to have a radio operator on duty will be left up to the public coast station licensee.

15. Allowing automatic interconnection raises the issue of whether we should mandate a standard selective calling protocol for establishing interconnection. We conclude that a federally-mandated standard is not required by the Communications Act and is unnecessary in this case. Section 322 of the Communications Act, in the context of public coast stations, requires stations to make communications services available to any vessel at sea, upon request, without regard to the origin of the vessel or the manufacturer of the vessel's radio equipment.[41] Contrary to MMR's assertion, however, Section 322 does not require us to mandate a single standard protocol. We fulfill our responsibilities under the Communications Act by requiring public coast stations to use non-proprietary, open protocols for interconnection so that any interested radio manufacturer will be able to supply equipment to vessels. Thus, vessels with appropriate radio equipment will be able to access public coast stations. We do not believe that a federally mandated standard interconnection protocol is necessary to ensure the capability for distress communications between vessels nor to ensure the competitive supply of appropriate equipment.[42]

16. We believe that the marketplace is best suited to decide which signalling protocol addresses the general purpose calling needs of mariners based on market demand. This approach

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[39] MMR Reply Comments at 3.

[40] *See* 47 C.F.R. § 80.153. The ITU Radio Regulations, however, do not require a licensed operator to be on duty at radiotelephone public coast stations.

[41] Presently, vessel operators may choose from different bands of operation (MF, HF, VHF) and different means of sending communications through or to a public coast station (*e.g.*, voice, facsimile, telegraph, or NB-DP). In each case, vessels must have the requisite equipment, operating on a coast station's frequency in order to obtain service.

[42] We address the issue of interoperable communications between vessels in paragraph 33 *infra*.

permits each public coast station licensee to analyze marine communications needs in its service area and implement signalling protocols that best meet the needs of its customers. For example, a public coast station serving mostly DSC-equipped compulsory vessels may decide to use DSC for interconnection, while a station that serves mostly exempt vessels may decide that an alternative means of signalling best meets the needs of a specific coastal market. Further, as the record reflects, this flexible approach promotes the development and use of innovative signalling techniques as well as increased functionality in marine radios.[43] Not mandating an interconnection standard is consistent with our treatment of other CMRS providers, our general disinclination to mandate standards,[44] and the flexible system presently used for distress calling.[45] Regardless of the protocol chosen by each public coast station licensee, safety of life and property at sea is maintained because vessel owners will have access to the PSN through their marine radios.

(2) Channel loading

17. *Proposal.* Presently, marine VHF band public coast stations are initially authorized for a single channel and must provide a showing of significant channel usage prior to obtaining an additional channel. An additional channel may be authorized when: (1) a foreign station causes harmful interference on the initially granted channel, or (2) the assigned channel(s) is occupied more than 40 percent of the time during the busiest hours of operation. The licensee must provide a factual showing that "for any 4 days within a 10-consecutive-day period of station operation in each of two months immediately prior to the filing of the application, the assigned frequency or frequencies was in average daily use for exchanging communications at least 40 percent of the three busiest hours of each day, of which not more [than] half of the use time was waiting or setup time."[46] This rule is intended to prevent channel warehousing. We noted in the *Further Notice*, however, that this loading requirement is based on the antiquated notion that public coast stations need only one or two channels to competitively serve their markets. Therefore, we proposed in the *Further Notice* to remove the showing required for a public coast station licensee to obtain additional marine VHF channels.[47] Additionally, we asked for specific comment on whether the present loading requirement should be replaced with a more appropriate

[43] *See* Globe Wireless Reply Comments at 2; MariTEL Reply Comments at 4.

[44] *See, e.g.*, Technical Compatibility Protocol Standards for Equipment Operating in the 800 MHz Public Safety Bands, *Memorandum Opinion and Order*, Gen Docket No. 88-441, FCC 89-69 (released May 1, 1989).

[45] Exempt vessel operators may choose to install a marine VHF radio, cellular phone, citizens band (CB) radio, amateur radio or no radio at all based on their areas of operation and communications needs. Once the Coast Guard fully implements its coastal DSC system, vessel operators will have an additional choice -- a DSC radio.

[46] *See* 47 C.F.R. § 80.371(c).

[47] *Further Notice*, 10 FCC Rcd at 5730.

measure designed to discourage and prevent warehousing.[48]

18. *Comments.* Globe Wireless supports our proposal, noting that the showing presently required under 47 C.F.R. § 80.371(c) inhibits coast stations from operating with maximum efficiency because increased business can only be measured after the coast station is able to offer adequate channel capacity.[49] Similarly, MariTEL points out that no other two-way CMRS service -- including cellular, PCS, and SMR -- is initially limited to a single channel.[50] MariTEL argues that public coast stations should be authorized to obtain as many channels as possible in order to implement advanced technologies such as automated operations and trunking.[51] Further, MariTEL contends that the present loading requirements are not in the public interest because a majority of the public correspondence channels are not authorized for use.[52] Instead of measuring channel usage, MariTEL suggests that warehousing of frequencies may be effectively controlled through the present eight-month construction requirement.[53]

19. MMR, however, disagrees with the premise that the channel loading requirements are out-of-date, and contends that foregoing channel justification will give rise to frequency-grabbing and reselling of coast communications based on spectrum value, rather than the quality of maritime service rendered.[54] MMR suggests, alternatively, that public coast stations initially be granted two channels, subject to the present requirements for obtaining additional channels.[55] Additionally, MMR and American Commercial Barge Line Company and Waterway Communications Systems, Inc. (ACBL/WATERCOM) note that additional channels may eventually be available through narrowband operations.[56] Further, MMR argues that the present treatment of public coast station licensees is consistent with the Commission's requirements for

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[48] *Id.*

[49] Globe Wireless Comments at 3.

[50] MariTEL Reply Comments at 10.

[51] MariTEL Comments at 7. A trunked radio system employs a number of radio frequency channel pairs assigned to mobile and base stations in the system for use as switched communications channels. *See* 47 C.F.R. § 90.7.

[52] MariTEL Reply Comments at 9.

[53] MariTEL Reply Comments at 9. Channels assigned to public coast stations must be placed in operation within eight months of the initial authorization. *See* 47 C.F.R. § 80.49.

[54] MMR Comments at 15.

[55] MMR Comments at 16.

[56] ACBL/WATERCOM Comments at 4; MMR Comments at 16.

SMR and paging licensees.[57] MariTEL, however, points out that SMR and paging licensees must meet build-out requirements, rather than showing channel usage, prior to obtaining additional channels.[58]

20. *Decision.* We conclude that the record supports eliminating loading requirements as a prerequisite for public coast station licensees to obtain additional channels. We believe that continuing to impose this type of channel loading requirements on public coast station licensees could unfairly impair the ability of public coast stations to compete.[59] Further, eliminating this requirement enhances the ability of public coast station licensees to implement innovative technologies, which in turn can lead to an increased subscriber base and more competition with other CMRS providers in the coastal marketplace. Finally, our conclusion to eliminate loading requirements for public coast stations is consistent with our course of action in other CMRS proceedings.[60] In sum, we believe that the competitive maritime marketplace will ensure the efficient use of VHF public coast station spectrum.[61]

(3) Serving stations on land

21. *Proposal.* In 1986, the Commission declined to adopt rules that would permit VHF public coast stations to serve vehicles on land on a subsidiary basis.[62] Since that time, however, the Commission has granted several waivers allowing individual public coast stations to serve a limited number of land vehicles on a secondary basis and, to date, has received no

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[57] MMR Comments at 15.

[58] MariTEL Reply Comments at 9.

[59] The Commission has already eliminated channel loading requirements for all other types of CMRS providers except for public coast stations and 900 MHz SMR incumbents who are not licensed geographically. Unlike public coast stations, however, the 900 MHz SMR incumbents are not required to show loading on a per channel basis. *See, e.g.*, Implementation of Sections 3(n) and 332 of the Communications Act, Regulatory Treatment of Mobile Services, GN Docket No. 93-252, Amendment of Part 90 of the Commission's Rules to Facilitate Future Development of SMR Systems in the 800 MHz Frequency Band, PR Docket No. 93-144, and Amendment of Parts 2 and 90 of the Commission's Rules to Provide for the Use of 200 Channels outside the Designated Filing Areas in the 896-901 MHz and 935-940 MHz Band Allotted to the Specialized Mobile Radio Pool, PR Docket No. 89-553, *Third Report and Order*, 9 FCC Rcd 7988, 8077-84 (1994) (*SMR Third Report and Order*); Revision of Part 22 of the Commission's Rules Governing the Public Mobile Service, *Report and Order*, CC Docket No. 92-115, 9 FCC Rcd 6513, 6523-24 (1994).

[60] *Id.*

[61] *See* discussion of licensee construction requirements found in the attached *Second Further Notice of Proposed Rule Making.*

[62] The Commission found that conditions in the VHF public coast station market, at that time, were not sufficiently homogenous to permit such service nationwide. *See* Amendment of Part 81 of the Rules to Permit Public Coast Stations to Serve Vehicles on Land, PR Docket No. 86-2, *Report and Order*, 1 FCC Rcd 1312 (1986).

complaints of harmful interference to marine communications from these operations.[63] In the *Further Notice*, we proposed to permit VHF public coast stations nationwide, including Automated Maritime Telecommunications Systems (AMTS) coast stations, to provide service to land vehicles, on a secondary basis, under their current coast station licenses.[64] Under our proposal, land vehicles would be required to use radio equipment type accepted under Parts 80, 90, or 22 of our rules, and operate only on the channels authorized to the associated public coast station.[65] Further, under the proposal, maritime use would have priority over land use, regardless of the public coast station's means of interconnection to the PSN.[66]

22. *Comments*. All commenters addressing the proposal, including the Coast Guard, support authorizing VHF public coast stations to serve vehicles on land on a secondary basis to maritime communications.[67] MariTEL points out that this action would permit public coast stations to expand marine telecommunications services while reducing communications costs for vessel operators.[68] Both the Coast Guard and MariTEL agree, however, that the Commission should take steps to ensure that marine-originating traffic is given priority over land-based traffic.[69] MMR urges the Commission to clarify that public coast stations may serve any transmitter type accepted for VHF operation under Parts 80, 90, or 22 of the Commission's rules to include hand-held and mobile units not necessarily located in vehicles. MMR points out that this increased flexibility is consistent with the Commission's treatment of other mobile services licensed under Parts 22 and 90 of our rules.[70] Similarly, MariTEL asks the Commission to permit service to mobile units on land without limiting the number of mobiles to be served by a particular public coast station.[71]

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[63] *See, e.g.*, Request for Waiver of Section 80.453 of the Rules to Permit Public Coast Station WHU247 to Serve Mobile Vehicles on Land, DA 91-977, *Memorandum Opinion and Order*, 6 FCC Rcd 4846 (1991); Global Communications, Inc., Request for Waiver of Section 80.453 of the Rules to Permit Public Coast Station WAH to Serve Mobile Vehicles on Land, DA 92-392, *Memorandum Opinion and Order*, 7 FCC Rcd 2238 (1992); Custard, Inc., Request for Waiver of Section 80.453 of the Rules to Permit Public Coast Station KFN to Serve Mobile Vehicles on Land, DA 92-919, *Memorandum Opinion and Order*, 7 FCC Rcd 4515 (1992).

[64] *Further Notice*, 10 FCC Rcd at 5730.

[65] *Id.*

[66] *Id.*

[67] ACBL/WATERCOM Comments at 4; Coast Guard Comments at 3; Globe Wireless Comments at 3; MMR Comments at 14; PSI Comments at 3; RTCM Comments at 5; MariTEL Comments at 6.

[68] MariTEL Comments at 6.

[69] Coast Guard Comments at 3; MariTEL Comments at 6.

[70] MMR Comments at 14.

[71] MariTEL Comments at 6.

23. *Decision.* In 1986, we decided not to adopt rules that would permit public coast stations to serve vehicles on land based on three substantive objections from commenters: (1) the potential for harmful interference caused by vehicles operating on frequencies not assigned to the associated public coast station; (2) the potential for harmful interference from inter-vehicular communications on maritime frequencies; and (3) the inability of public coast stations to determine the origin of radio calls (*e.g.*, from vessels at sea or from vehicles on land). Some ten years later, however, commenters within the maritime community vigorously support allowing public coast stations to serve units on land.[72] Additionally, the objections stated previously are no longer a concern because of the advanced capabilities of today's contemporary radio equipment. For example, land units may be programmed to transmit only on the channels assigned to an associated public coast station, eliminating the potential for interference to other public coast stations and preventing direct communications between units on land. Further, electrical or mechanical means can be used to determine the origin of radio signals, permitting a public coast station to afford priority to maritime communications. For example, a network of directional antennas, satellite or terrestrial positioning data, or codes embedded in the radio signal could be used to determine whether the signal originated from a vessel or a land unit.

24. We conclude that it serves the public interest to permit VHF public coast stations, including AMTS stations, to serve units on land, both fixed and mobile (including hand-held units). Increasing operational flexibility in this manner expands the range of communications services public coast station licensees may offer and fosters a regulatory environment in which public coast stations may more effectively compete against other CMRS providers, such as cellular, PCS, and SMR, operating in coastal areas which presently have no restrictions on serving vessels located in each CMRS licensees' service area.[73] Further, as the commenters point out, allowing public coast stations to serve land units will not decrease vessel safety so long as priority is given to calls originating from vessels.

25. Based on the comments, we also conclude that there is no reason to limit the number or types of land units to be served. Our initial goal in this proceeding was to permit public coast stations to make use of excess channel capacity. This goal may be achieved by requiring public coast stations to give priority to maritime traffic, without regard to the number of land units being served. Further, as MMR points out, there is no reason to restrict service only to units installed in vehicles.[74] For example, persons may wish to use hand-held units or fixed

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[72] *See e.g.*, Coast Guard Comments at 3; MariTEL Comments at 6; MMR Comments at 14.

[73] In a previous decision, the Commission addressed flexible service offerings on CMRS spectrum for cellular, PCS, and SMR licensees, but did not introduce additional flexibility for public coast stations. *See* Amendment of the Commission's Rules To Permit Flexible Service Offerings in the Commercial Mobile Radio Service, WT Docket No. 96-6, *First Report and Order and Further Notice of Proposed Rule Making*, 11 FCC Rcd 8965 (1996) ("*CMRS Flexibility First Report and Order*").

[74] MMR Comments at 14.

units connected to an external antenna. So long as such units are used under the same power limitations as marine radios and their antennas are not mounted higher than those on vessels, there is no increased potential for interference to maritime communications. Therefore, we will permit public coast stations to serve units on land, including fixed, mobile, and hand-held units, subject to certain minimum operational requirements.

26. In order to preserve the core purpose of the internationally allocated marine radio spectrum, we are setting forth operational requirements for public coast stations serving units on land. These requirements will allow operational flexibility while ensuring that distress and safety communications from vessels at sea are given priority. Land units must be type accepted under Part 80, 90, or 22 of our rules and must be limited to 25 watts transmitter output power. Mobile units on land will be authorized under a public coast station's existing license and may operate only on the channels assigned to the associated public coast station.[75] Operation from land on other marine VHF frequencies used for inter-ship communications or port operations, however, is expressly prohibited. Additionally, unless automated or selective calling is used, mobile unit identification must consist of the associated public coast station's call sign and a unique numeric identifier. Finally, each public coast station serving mobile units on land must afford priority to marine communications through any appropriate electrical or mechanical means. For example, if a vessel attempts to place a call through a public coast station and there are no channels available, the operator or automated system must be capable of terminating calls placed from land in order to serve the vessel. Public coast stations, however, are not required to terminate marine-originating calls under any circumstances.

B. Technical Flexibility

(1) DSC capability requirement

27. Marine radios may be used by vessels navigating at sea or on inland waterways as a safety link to Coast Guard stations, public coast stations, private coast stations, and other vessels. Vessels operating near shore use VHF band (156-162 MHz) marine radios while vessels at sea use MF band (2-3 MHz) and HF band (4-27.5 MHz) marine radios for long distance communications. Our rules require VHF marine radios to be capable of transmitting and receiving distress communications on the international VHF distress frequency (156.8 MHz), while MF marine radios must be capable of similar operation on the international MF distress frequency (2,182 kHz).[76] Further, in certain instances vessels must monitor the international

[75] For example, the units may be crystal controlled with only the appropriate crystals installed, or include frequency synthesized equipment with switch or front panel "blocks" to prevent operation on other channels.

[76] 47 C.F.R. § 80.143.

distress frequencies while navigating.[77] These rules ensure that compulsory vessels[78] as well as exempt vessels[79] are able to exchange distress communications with Coast Guard stations as well as coast and vessel stations world-wide.

28. In 1992, we adopted rules to implement the GMDSS for large cargo vessels and passenger vessels.[80] Under the GMDSS, coast and vessel stations will be equipped with DSC[81] radio equipment which utilizes different distress frequencies than the present system (conventional marine radios) and automates monitoring and distress calling functions. Upon full implementation of the GMDSS on February 2, 1999, compulsory vessels world-wide will be using DSC radio equipment; moreover, many coast stations will also be using DSC radio equipment. In order to monitor and respond to GMDSS distress alerts, the Coast Guard intends to implement a system of MF and HF DSC coast stations by 1998 and a system of VHF DSC coast stations by 2001. Unlike compulsory vessels, exempt vessels are not required to carry conventional radio equipment or GMDSS equipment, such as a DSC radio. Under the new safety system, only those exempt vessel owners who choose to purchase DSC radio equipment will be able to communicate with DSC-equipped compulsory vessels, coast station, and the Coast Guard. This point is significant because GMDSS vessels and DSC-equipped coast stations would not hear a distress call from an exempt vessel unless the call is made from a DSC radio or unless the GMDSS stations are monitoring the non-DSC distress channels voluntarily.

29. *Proposal.* On June 23, 1992, the Coast Guard filed a Petition for Rule Making (Petition), RM-8031, requesting that the Commission mandate a minimum DSC signalling

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[77] Vessels required by statute, treaty, or rule to carry marine radio equipment must monitor the distress frequencies while navigating. Exempt vessels equipped with marine radio equipment must monitor the distress frequencies when their radios are turned on and not being used for communications. 47 C.F.R. Part 80, Subpart G.

[78] Compulsory vessels are required by statute, treaty, or rule to carry radio equipment for safety purposes. A majority of these vessels are used for commercial purposes such as hauling cargo and carrying passengers for hire.

[79] Exempt vessels are not required by statute, treaty, or rule to carry radio equipment for safety purposes. The vast majority of these vessels are small pleasure craft.

[80] Amendment of Parts 13 and 80 of the Commission's Rules to Implement the Global Maritime Distress and Safety System (GMDSS) to Improve the Safety of Life at Sea, PR Docket No. 90-480, *Report and Order*, 7 FCC Rcd 951 (1992).

[81] DSC radios are fundamentally different from conventional marine radios. For example, conventional marine radios rely on an operating protocol by which vessel operators monitor a calling channel and respond to calls from other stations. Marine radios using DSC technology, however, place and receive radio calls automatically using vessel and group identities similar to telephone numbers. Further, DSC technology automates the transmission of distress messages and is capable of sending the vessel's location along with the distress signal. Thus, use of DSC technology improves the distress and general purpose calling capabilities of conventional marine radios while eliminating the need to maintain an aural watch while navigating a vessel.

capability for all marine MF, HF, and VHF transmitters.[82] The Coast Guard noted in its Petition that by 1999, all GMDSS vessels will be equipped with DSC radio equipment and that exempt vessels will no longer be able to contact these vessels using conventional marine radios.[83] Further, the Coast Guard noted that intercommunication among compulsory vessels and exempt vessels is essential to safety at sea.[84] In response to the Petition, we proposed in the *Further Notice* to require all marine radiotelephone transmitters manufactured or imported into the United States after February 1, 1997, or radios installed on or after February 1, 1999, to have a minimum DSC capability.[85] Units removed for adjustment or seasonal storage and then reinstalled in the same vessel were categorically excluded from this proposal. We did not, however, propose to require exempt vessel owners to carry DSC radio equipment or discard their conventional marine radios.

30. *Comments.* All commenters addressing this issue favor a minimum DSC requirement for marine radios.[86] SEA, Inc. (SEA), a manufacturer of marine radios, notes that a minimum DSC requirement is needed in order to promote interoperability among GMDSS vessels and exempt vessels and maintain safety at sea upon full implementation of the GMDSS in 1999.[87] Additionally, SEA claims that manufacturers can produce marine radios with a minimum DSC capability without a substantial cost increase to consumers.[88] The Coast Guard, RTCM, and SEA request, however, that the Commission revise the proposed deadlines to provide at least two years after the effective date of final rules in this proceeding for units manufactured or imported into the U.S. and three years for units marketed or installed in vessels to have a minimum DSC capability.[89] Finally, AMTS licensees ACBL/WATERCOM, Fred Daniel d/b/a Orion Telecom (Orion), and Paging Systems, Inc. (PSI) ask us to clarify that the minimum DSC capability would not apply to AMTS equipment operating in the 216-220 MHz band.[90]

31. Although they agree on the need for marine radios to have a minimum DSC capability, the commenters disagree on the specific minimum requirement. The RTCM, the Coast

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82 *See Further Notice*, 10 FCC Rcd at 5726.

83 *Id.*

84 *Id*

85 *Id.*

86 *See, e.g.*, Coast Guard Comments at 1; MMR Comments at 5; RTCM Comments at 2.

87 SEA Comments at 1.

88 *Id.*

89 Coast Guard Comments at 3; RTCM Comments at 4; SEA Comments at 3.

90 ACBL/WATERCOM Reply Comments at 2; Orion Comments at 1; PSI Comments at 2.

Guard, and SEA suggest that marine radios should meet the specifications set forth in one of the following: (1) the domestic standard for minimum DSC capability written in coordination with the Coast Guard and marine radio manufacturers, RTCM Paper 56-95/SC101-STD (SC101),[91] or (2) the international standard that presently applies to all marine radios, ITU-R Recommendation 493,[92] limited to equipment classes A, B, D, or E.[93] Necode Electronics (Necode), a manufacturer of marine radios, and Ross point out, however, that equipment meeting the minimum domestic requirements of SC101 would not necessarily meet the international standard and could not be marketed outside the United States.[94] Alternatively, Necode recommends that the Commission use the international standard, ITU-R Recommendation 493 class E,[95] supplemented by the ability to receive general geographic area calls, as the sole minimum requirement for all DSC marine radios.[96]

32. *Decision.* We conclude that a minimum DSC capability for marine radios is necessary in order to ensure interoperable distress and safety communications among compulsory and exempt vessels. This action is consistent with our decision not to mandate DSC as the single protocol for public coast station interconnection because it provides a uniform method for sending ship-to-ship and ship-to-shore distress alerts while giving CMRS providers the flexibility to choose other protocols for non-distress communications. Specifically, we conclude that MF, HF, and VHF marine radios should, at a minimum, have DSC capability in accordance with the SC101 standard, as suggested by the Coast Guard and RTCM. This approach eliminates the need for all DSC radios to have the advanced functionality required for GMDSS operation, allowing manufacturers to produce economical DSC radios for the exempt vessel market. Further, according to the Coast Guard, the minimum requirements specified in SC101 are sufficient to facilitate distress and operational communications between exempt vessels, GMDSS-equipped vessels, and coast stations world-wide. This approach is also consistent with our present treatment of conventional marine radios. For example, under our present rules, marine VHF radios must be capable of sending and receiving distress communications on the international VHF distress frequency (156.8 MHz). Similarly, our action here will require DSC marine VHF radios to be capable of sending and receiving distress communications on the international DSC distress frequency (156.525 MHz).

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[91] RTCM Recommended Minimum Standards for Digital Selective Calling (DSC) Equipment Providing Minimum Distress And Safety Capability (RTCM Paper 56-95/SC101-STD), August 10, 1995.

[92] Presently, DSC equipment used aboard U.S. vessels must meet the requirements of ITU-R Recommendation 493, Digital Selective Calling System for Use in the Maritime Mobile Service. *See* 47 C.F.R. § 80.225.

[93] RTCM Comments at 10. *See also* Coast Guard Comments at 2; SEA Comments at 3-4. Each class of DSC equipment is described in ITU-R Recommendation 493, Annex II.

[94] Necode Comments at 3; ROSS Reply Comments at 2.

[95] *See* ITU-R Recommendation 493, Appendix II.

[96] Necode Comments at 3.

33. We further conclude that the SC101 minimum DSC capability, as endorsed by the Coast Guard, is sufficient to ensure the ability of exempt vessel operators to initiate distress communications, contact the Coast Guard, and exchange operational communications with GMDSS-equipped vessels in areas where DSC is essential. Although radios with the SC101 minimum DSC capability will not necessarily meet the standards necessary to be marketed internationally and installed in foreign vessels, this flexible approach provides manufacturers with the option to meet the specific needs of exempt vessel operators in the United States, without having to include costly, advanced DSC capabilities that are required in GMDSS radio installations.

34. Because of the potential negative impact on exempt vessel owners in inland regions, we have decided not to implement a comprehensive set of deadlines mandating the production, importation, and installation of DSC radios in exempt vessels. Rather, we conclude that the best approach is to specify type acceptance dates to facilitate the transition process. This transition plan provides exempt vessel operators the option of continuing to use existing equipment in areas where DSC service is not yet available or needed, or transitioning to new equipment in areas where Coast Guard DSC service is available or where communication with GMDSS-equipped vessels is essential. Thus, the plan gives each vessel operator the freedom to choose equipment and a transition schedule that best fulfills its needs while balancing the need for a stable regulatory environment in which to produce affordable DSC radio equipment.

35. Therefore, in order to provide for the immediate availability of affordable DSC radios for exempt vessels, all type acceptance applications for new MF, HF, and VHF marine radios received by the Commission's Equipment Authorization Division on or after June 17, 1999, must comply with the international requirements set forth in ITU-R Recommendation 493[97] (including only equipment classes A, B, D, and E) or the minimum requirements set forth in RTCM Paper 56-95/SC101-STD.[98] Because neither of these documents provides special consideration for hand-held units or operation in the 216-220 MHz band, this requirement will not apply to battery-operated, portable hand-held radio equipment or AMTS equipment operating in the 216-220 MHz band.

36. We will allow equipment for which type acceptance applications are received prior

[97] Part 80 of our Rules continues to refer to CCIR Recommendations rather than ITU-R Recommendations. In a future action, we will update our rules to make administrative changes such as updating these references to international docoments and standards. Until that time, however, the terms "CCIR Recommendation" and "ITU-R Recommendation" will be treated in this case as identical when interpreting our rules.

[98] Managing the transition to DSC marine radios through the type acceptance process is similar to the Commission's treatment of narrowband private land mobile radio equipment in PR Docket No. 92-235. *See* Replacement of Part 90 by Part 88 to Revise the Private Land Mobile Radio Services and Modify the Policies Governing Them and Examination of Exclusivity and Frequency Assignment Policies of the Private Land Mobile Radio Services, PR Docket No. 92-235, *Report and Order and Further Notice of Proposed Rule Making*, 10 FCC Rcd 10096 (1995) (*Refarming Report and Order*).

to June 17, 1999, to continue to be manufactured and used indefinitely. Further, so that equipment manufacturers can support existing equipment and respond to normal product development cycles, we will allow equipment manufacturers to make permissive changes to existing equipment. In general, permissive changes are those changes which result in equipment which is electrically and mechanically interchangeable and do not change equipment beyond the rated limits established by the manufacturer and accepted by the Commission when type acceptance is granted.[99] We recognize that this may prolong the transition to DSC equipment for some exempt vessel operators. We believe, however, that this approach is necessary in order to reduce unnecessary regulatory burdens on exempt vessel operators in inland regions without DSC coast stations or GMDSS vessels.

(2) Automatic link establishment (2-30 MHz)

37. *Proposal.* Presently, ships and aircraft use frequencies in the 2-27.5 MHz band for long range, high seas communications. Because of the inherent variability in ionospheric propagation in this band, experienced operators are often needed to establish and maintain communications.[100] In the *Further Notice*, we proposed to permit the use of linear frequency modulated continuous wave (FMCW) technology for the purpose of ALE in the MF/HF marine and aviation bands.[101] As proposed, ALE systems would eliminate the need for a trained radio operator by automatically checking the quality of each frequency and automatically selecting a clear channel for the user. This is accomplished by transmitting a scanning FMCW signal across the band. The signal, however, would scan across the band so quickly that it would be imperceptible to the users of discrete frequencies within the band. In the *Further Notice*, we proposed to limit ALE transmissions to 2-27.5 MHz band frequencies not already used for distress, safety, or time-standard communications and asked whether the proposed technical specifications are sufficient to permit innovative high seas communications while protecting marine and aviation voice communications.[102]

38. *Comments.* None of the commenters addressing this proposal object to the use of FMCW technology for ALE in the 2-27.5 MHz marine and aviation bands.[103] BR

[99] Manufacturers may need to make changes to type accepted equipment due to changes in manufacturing technique or due to changes in components to accommodate the availability of parts or subcomponents. *See* 47 C.F.R. § 2.1001.

[100] Availability of MF/HF frequencies depends on the time of day as well as atmospheric and solar conditions.

[101] *Further Notice*, 10 FCC Rcd at 5733. This proposal was made in response to a letter filed by BR Communications (BR). *See* Letter from Mr. Henry Goldberg, on behalf of BR Communications, to Mr. William F. Caton, Acting Secretary, Federal Communications Commission, Washington, DC (November 22, 1993).

[102] *Further Notice*, 10 FCC Rcd at 5733.

[103] BR Comments at 3; Globe Wireless at 4; MMR Comments at 19.

Communications (BR), a developer of HF radio systems, states that ALE would simplify high seas communications, increase the reliability of the medium for vessel and aircraft operators, and promote competition with other high seas services such as satellite communications.[104] For these reasons, BR argues that use of ALE will improve safety of life at sea. Additionally, BR notes that ALE would promote more efficient use of maritime and aviation radio spectrum by increasing the ease and reliability of high seas communications.[105]

39. BR also notes that specifying minimum technical requirements, in lieu of a standard ALE protocol, will allow the development of innovative technologies while reducing the potential for harmful interference to voice and data communications in the maritime and aviation bands.[106] Specifically, BR recommends that the Commission set forth limitations concerning transmitter power, sweep rate, and authorized frequencies in order to protect existing maritime and aviation communications.[107] Globe Wireless argues, however, that ALE should be prohibited on data communication channels until it is proven that the brief, scanning transmissions will not interfere with data transmissions.[108] Similarly, MMR contends that ALE should only be permitted on a secondary, non-interference basis to existing marine and aviation voice and data communications.[109] BR points out, however, that these commenters have not provided any scientific or anecdotal evidence to support their concerns of harmful interference. In this connection, BR argues that brief, low-energy ALE transmissions will be imperceptible to both voice and data communications based on the successful use of ALE for military and governmental communications in this band over the past 30 years.[110] BR also notes that it has been operating ALE transmitters in the 2-30 MHz band under developmental licenses since 1994 and has not received any complaints of harmful interference to voice or data communications.[111] Further, BR points out that data communications systems are generally more robust than voice systems and would be unaffected by FMCW transmissions.

40. BR objects, however, to our proposal to limit ALE transmissions to the 2-27.5

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[104] BR Comments at 3.

[105] *Id.*

[106] *Id.* at 5.

[107] *Id.* at 8.

[108] Globe Wireless Comments at 4, Reply Comments at 2.

[109] MMR Comments at 19.

[110] BR Reply Comments at 2-4.

[111] BR's developmental operations include two sites in the United States, as well as sites in Canada, Iceland, Spain, the United Kingdom, and Sweden. *See* BR Comments at 3; BR Reply Comments at 4.

MHz band.[112] As an alternative, BR requests that ALE transmissions be permitted in the entire 2-30 MHz band.[113] BR points out that extending the frequency range to 30 MHz will facilitate the immediate use of technologies and transmitters that have been successfully operated by the military for the past 30 years.[114] BR explains that its ALE system uses frequencies well above the actual communications channels in order to determine dynamic properties of the ionosphere, which are essential in determining the viability of the 2-27.5 MHz band communications paths in real-time.[115] Further, BR notes that limiting ALE transmissions will require ALE providers to make costly design changes in existing equipment, significantly delaying the delivery of innovative high seas communications technologies to the maritime community.[116]

41. *Decision.* We conclude that increasing technical flexibility to allow brief ALE transmissions on a secondary, non-interference basis, for the purposes of measuring the quality of high seas radio channels and establishing long range communications for stations in the maritime and aviation services is in the public interest. ALE technologies can benefit maritime and aviation service licensees by simplifying the use of radio equipment, reducing operating costs, and increasing the overall reliability of the medium.[117] This fundamental change in the operation of high seas radio equipment provides vessels and aircraft with yet another viable option for long distance communications and promotes direct competition between public coast and satellite communications service providers. Based on the information provided by BR stressing the successful performance of ALE systems for military and governmental communications, as well as BR's own experience under developmental licenses, we conclude that the technical limitations set forth in the final rules will be sufficient to minimize the potential for harmful interference to both voice and data communications in the 2-30 MHz band.

42. We also conclude that it serves the public interest to permit ALE transmissions over the entire 2-30 MHz band. This approach will permit the rapid delivery of innovative ALE technologies to the maritime and aviation communities by allowing service providers to utilize existing equipment that has been used successfully for the past 30 years. Further, by authorizing brief ALE transmissions on frequencies above the actual communications channels (27.5-30 MHz), service providers will be able to make more accurate real-time assessments of the use of

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[112] BR Comments at 3.

[113] *See* BR comments at 3; BR *ex parte* filing, "Justification for Chirpsounding at Frequencies Between 27.5 and 30 MHz," (August 6, 1996) at 1.

[114] BR Comments at 8; BR Reply Comments at 4;.

[115] BR *ex parte* filing, "Justification for Chirpsounding at Frequencies Between 27.5 and 30 MHz," (August 6, 1996) at 3-4.

[116] *Id.* at 1.

[117] BR Comments at 3.

maritime and aviation communications channels. These brief, low-energy transmissions, however, must not cause harmful interference to stations in the maritime, aviation, international broadcast, or amateur radio services which are authorized on a primary basis in certain portions of the 2-30 MHz band.

43. In order to minimize the potential for harmful interference to other radio services, we are setting forth licensing requirements and equipment authorization procedures. The licensee of each public coast station providing high seas communications service will be authorized by rule to also use 2-30 MHz only for ALE service. Entities other than public coast station licensees may apply for authorization to provide ALE service using FCC Form 503. Each transmitter must be type accepted by the Commission based on the technical specifications provided in our rules. This approach will minimize administrative burdens for service providers while ensuring the integrity of high seas voice and data communications for the maritime and aviation communities.

44. In order to implement this decision, we are adding a new United States footnote, US340, to the Table of Frequency Allocations, 47 C.F.R. § 2.106. Footnote US340 reads as follows:

> The 2-30 MHz band is available on a secondary noninterference basis to Government and non-Government maritime and aeronautical stations for the purposes of measuring the quality of reception on radio channels. See 47 C.F.R. § 87.149 for the list of protected frequencies and bands within this frequency range. Actual communications shall be limited to those frequencies specifically allocated to the maritime mobile and aeronautical mobile services.

In addition, we take this opportunity to update the international table to reflect the decisions of the 1995 World Radiocommunication Conference for these frequency bands.[118] *See* Appendix E.

(3) Narrow-band direct-printing (NB-DP)

45. *Proposal.* NB-DP is a form of radiotelegraphy, standardized internationally for the automatic transmission and reception of data communications in the marine HF band. NB-DP is used for communications either from ships to public coast stations or between ships. Because

[118] *See Final Acts of the World Radiocommunication Conference (WRC-95)*, Geneva, 1995. The ITU is transitioning to new Simplified Radio Regulations, which use the "S" numbering scheme for international footnotes. In anticipation of the ITU's ultimate conversion to the Simplified Radio Regulations, we are employing the new "S" numbering scheme for international footnotes adopted in this proceeding. The Commission lists the international footnotes immediately following the Table of Frequency Allocations in Section 2.106 of the Rules. See 47 C.F.R. § 2.106. Until such time as this list is entirely revised to comport with the new "S" numbering scheme, those international footnotes that are amended to the new scheme in individual proceedings will be listed in Section 2.106 immediately prior to the list of unamended footnotes employing the old numbering scheme.