



PUBLIC NOTICE

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WIRELESS TELECOMMUNICATIONS BUREAU SEEKS COMMENT ON MARITIME AUTOMATIC IDENTIFICATION SYSTEMS AND APPLICATION- SPECIFIC MESSAGES

WT Docket No. 22-232

Comments Due: July 18, 2022

Reply Comments Due: August 2, 2022

In this Public Notice, the Wireless Telecommunications Bureau (Bureau) seeks to gain a more thorough understanding of the reliability of the delivery of safety-related information carried on the two shared, narrowband maritime Automatic Identification System (AIS) frequencies, commonly referred to as channels AIS 1 and AIS 2. AIS uses shared channels to exchange navigation safety-related information to properly-equipped vessels and shore stations, including vessel identification, position, navigation status (to reduce the risk of collisions),¹ and Application-Specific Messages (ASMs), which convey weather and other maritime safety announcements. Concerns have been raised that AIS may experience reduced reliability in areas with high vessel traffic, as more vessels become equipped with authorized AIS equipment and as usage of ASMs and other AIS applications and services increase.² Below we seek comment on a range of issues, including whether the Bureau should recommend to the

¹ Amendment of the Commission's Rules Regarding Maritime Automatic Identification Systems; Petition for Rule Making Filed by National Telecommunications and Information Administration; Emergency Petition for Declaratory Ruling Filed by MariTEL, Amendment of the Commission's Rules Concerning Maritime Communications, WT Docket No. 04-344, RM-10821, PR Docket No. 92-257, *Report and Order and Further Notice of Proposed Rule Making and Fourth Memorandum Opinion and Order*, 21 FCC Rcd 8892, 8894-95 para. 4 (2006) (*AIS Report & Order*) (acknowledging that, in the aftermath of September 11, 2001, AIS also has been viewed as an important asset for homeland security because its vessel tracking and monitoring capabilities can promote maritime domain awareness); Amendment of the Commission's Rules Regarding Maritime Automatic Identification Systems; Petition for Rule Making Filed by National Telecommunications and Information Administration, WT Docket No. 04-344, RM-10821, *Memorandum Opinion and Order and Notice of Proposed Rule Making*, 19 FCC Rcd 20071, 20074 para. 5 (2004) (*AIS NPRM*).

² The International Telecommunication Union (ITU) states that, if these frequencies become overloaded, it could affect mariner situational awareness, including reduction in the navigational range of the AIS system, effectively limiting the number of vessels that can be observed within the system. Further, the ITU asserts that, when AIS VHF data link (VDL) loading exceeds 50%, the ability of the shipborne AIS to find free slots and the ability of the AIS shore infrastructure to exchange information with the shipborne AIS are impaired. See ITU, *Automatic identification system VHF data link loading*, Report ITU-R M.2287-0, section 4, at 4 (Dec. 2013), https://www.itu.int/dms_pub/itu-r/opb/rep/R-REP-M.2287-2014-PDF-E.pdf; see also *id.*, Annex 1, at 6 ("The critical 50% threshold has already been exceeded in some areas of the world where vessel traffic is high, for example, the Northern Gulf of Mexico in the United States of America . . ."); see also U.S. Department of Homeland Security, *How AIS Works* (Sept. 08, 2016), <https://www.navcen.uscg.gov/?pageName=AISworks>.

Commission that it assign additional frequencies for ASMs in order to increase their reliability and reduce congestion on AIS 1 and 2.

Background

AIS History and Spectrum. AIS is a maritime navigation safety communications system standardized by the ITU and adopted by the International Maritime Organization (IMO).³ In 2006, the Commission implemented, in Part 80 of its rules, these international AIS allocations in the United States, by designating two discrete VHF maritime Channels 87B (161.975 MHz) and 88B (162.025 MHz) as AIS 1 and AIS 2, respectively.⁴ AIS “provides vessel information, including the vessel’s identity, type, position, course, speed, navigational status and other safety-related information automatically to appropriately equipped shore stations, other ships, and aircraft; receives automatically such information from similarly fitted ships; monitors and tracks ships; and exchanges data with shore-based facilities.”⁵ Vessels worldwide, both large and small, carry AIS equipment to enhance their situational awareness and navigational safety.

AIS Services and Applications. These two narrowband frequencies are shared by all stations to support a diverse range of safety-related communications.⁶ These include a constant stream of vessel

³ 47 CFR § 80.5. The ITU is a specialized United Nations (UN) agency for information and communication technologies. The ITU “allocate[s] global radio spectrum and satellite orbits, develop[s] the technical standards that ensure networks and technologies seamlessly interconnect, and strive[s] to improve access to [Information and Communication Technologies] to underserved communities worldwide.” ITU, *About ITU*, <https://www.itu.int/en/about/Pages/default.aspx> (last visited June 16, 2022). The IMO is a specialized UN agency that “is responsible for measures to improve the safety and security of international shipping and to prevent pollution from ships.” IMO, *About IMO, Frequently Asked Questions, What Exactly is IMO?*, <https://www.imo.org/en/About/Pages/FAQs.aspx> (last visited June 16, 2022).

⁴ 47 CFR § 80.393; *AIS Report and Order*, 21 FCC Rcd at 8893, para. 2. ITU, Radiocommunication Bureau, *Final Acts WRC-97*, World Radiocommunication Conference (Geneva, 1997), Appendix S18, at 194, 196, https://www.itu.int/dms_pub/itu-r/opb/act/R-ACT-WRC.5-1997-PDF-E.pdf (1997) (Rev. WRC-97). In 2017, the Commission implemented channels AIS 3 and AIS 4 to facilitate long-range AIS broadcasts from ships, based on the ITU’s 2012 reallocation of marine VHF Channels 75 (156.775 MHz) and 76 (156.825 MHz) from the maritime mobile service to the mobile satellite service (earth-to-space). See 47 CFR § 80.393; Amendment of Part 2, 15, 80, 90, 97, and 101 of the Commission’s Rules Regarding Implementation of the Final Acts of the World Radiocommunication Conference (Geneva, 2012)(WRC-12), Other Allocation Issues, and Related Rule Updates, ET Docket No. 15-99, *Report and Order*, 32 FCC Rcd 2703, 2721 para. 55 (2017) (*WRC-12 Report and Order*) (removing all provisions for non-AIS use of Channels 75 and 76 from part 80, and prohibiting certification of non-AIS VHF radios that include those frequencies); see also ITU, Final Acts WRC-12, World Radiocommunication Conference (Geneva, 2012), Appendix 18, at 141, 143, https://www.itu.int/dms_pub/itu-r/opb/act/R-ACT-WRC.9-2012-PDF-E.pdf (Rev. WRC-12). While many applications and services are provided using AIS 1 and AIS 2, the use of AIS 3 and AIS 4 is restricted to the detection of certain classes of AIS vessels and transmits navigational data, such as longitude and latitude, time, and speed, over long ranges and does not include ASMs. See ITU, Rec. ITU-R M.1371-5, *Technical Characteristics for an Automatic Identification System Using Time Division Multiple Access in the VHF Maritime Mobile Frequency Band* (Feb. 2014), https://www.itu.int/dms_pubrec/itu-r/rec/m/R-REC-M.1371-5-201402-I!!PDF-E.pdf; see also *WRC-12 Report and Order*, 32 FCC Rcd at 2721 para. 55; Amendment of Part 1, 2, 15, 25, 27, 74, 78, 80, 87, 90, 97, and 101 of the Commission’s Rules Regarding Implementation of the Final Acts of the World Radiocommunication Conference (Geneva, 2007) (WRC-07), Other Allocation Issues, and Related Rule Updates; Amendment of Part 2, 15, 80, 90, 97, and 101 of the Commission’s Rules Regarding Implementation of the Final Acts of the World Radiocommunication Conference (Geneva, 2012) (WRC-12), Other Allocation Issues, and Related Rule Updates, ET Docket No. 12-338, ET Docket No. 15-99, *Report and Order, Order, and Notice of Proposed Rulemaking*, 30 FCC Rcd 4183, 4252-55 paras. 198-205 (2015).

⁵ 47 CFR § 80.5. See also *AIS Report & Order*, 21 FCC Rcd at 8894 para. 4.

⁶ Equipment used to mark fishing equipment is not currently permitted to operate on AIS 1 and 2. Pursuant to Congress’s directive in Section 8416 of the William M. (Mac) Thornberry National Defense Authorization Act for Fiscal Year 2021, however, the Commission issued a Notice of Proposed Rulemaking in 2021 to explore whether to

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identification/position information and periodic ASMs that provide meteorological and hydrological data, augment Broadcast Notices to Mariners, and other marine safety information.⁷ They also include (by Commission waiver) use by AIS Aid to Navigation (AtoN) stations, which are devices external to a vessel intended to assist a navigator to determine position or safe course, or to warn of dangers or obstructions to navigation.⁸ During emergencies, they also include transmissions by AIS locating devices, such as search and rescue transmitters (AIS-SARTs), which transmit a unique identification code and GPS coordinates from survival craft or distressed vessels to all AIS-enabled vessels in VHF range, and maritime survivor locating devices (MSLDs), which are devices intended to aid in locating persons in the water.⁹

ASM Proposals. Recently, the ITU and NTSB have recommended relocating ASMs to other frequencies to off-load traffic from the AIS 1 and AIS 2 channels, securing these channels primarily for maritime domain awareness, navigation safety/collision avoidance purposes in ship-to-ship use, ship reporting, and vessel traffic services applications.¹⁰ Dedicated ASM channels would also improve the likelihood that these safety critical ASM messages are timely delivered to all ships in the coverage area. In 2015, the ITU took steps to relieve potential AIS congestion, which have not been incorporated into the Commission's rules. It amended Appendix 18 of the ITU *Radio Regulations* to split duplex Channels 27 (157.350/161.950 MHz) and 28 (157.400/162.000 MHz) into unpaired simplex channels 1027 (157.350 MHz), 1028 (157.400 MHz), 2027 (161.950 MHz), and 2028 (162.000 MHz).¹¹ The ITU designated Channels 2027 and 2028 for ASMs, identifying them as ASM 1 and ASM 2, respectively.¹² In 2018, the National Transportation Safety Board (NTSB) recommended that the Commission amend its rules to implement the ITU recommendation to reserve Channels 2027 and 2028 for ASMs, to facilitate real-time reporting of weather conditions at sea.¹³

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authorize devices that can be used to mark fishing equipment for use on AIS channels without undermining the core purpose of AIS to prevent maritime accidents. See National Defense Authorization Act for Fiscal Year 2021, Pub. Law No. 116-283, Division G, Title LVXXXIV, § 8416; Part 80 of the Commission's Rules and the Use of the Automatic Identification System for Devices that Can Be Used to Mark Fishing Equipment, WT Docket No. 21-230, *Notice of Proposed Rulemaking*, 36 FCC Rcd 10499 (2021) (*AIS Fishing Equipment NPRM*).

⁷ See IMO, Circular SN.1/Circ.289, *Guidance on the Use of AIS Application-Specific Messages* (June 2, 2010), https://www.navcen.uscg.gov/pdf/IMO_SN1_Circ289_Guidance_on_use_of_AIS_ASM.pdf.

⁸ *AIS Fishing Equipment NPRM*, 36 FCC Rcd 10499, 10500-01 para. 3, n.19.

⁹ *Id.* at 10500-01 para. 3; 47 CFR § 95.2903.

¹⁰ The capabilities and performance standards of AIS are described in IMO Resolution MSC.74(69), Annex 3, RECOMMENDATION ON PERFORMANCE STANDARDS FOR AN UNIVERSAL SHIPBORNE AUTOMATIC IDENTIFICATION SYSTEMS (AIS), which states: The AIS should improve the safety of navigation by assisting in the efficient navigation of ships, protection of the environment, and operation of Vessel Traffic Services (VTS), by satisfying the following functional requirements:

- .1 in a ship-to-ship mode for collision avoidance;
- .2 as a means for littoral States to obtain information about a ship and its cargo; and
- .3 as a VTS tool, i.e. ship-to-shore (traffic management).

¹¹ See ITU, *Final Acts WRC-15*, World Radiocommunication Conference (Geneva, 2015), Appendix 18, at 117, 120 (Rev. WRC-15), https://www.itu.int/dms_pub/itu-r/opb/act/R-ACT-WRC.12-2015-PDF-E.pdf.

¹² See *id.*; ITU, ITU-R Rec. M.2092-1, *Technical Characteristics for a VHF Data Exchange System in the VHF Maritime Mobile Band* (Feb. 2022), https://www.itu.int/dms_pubrec/itu-r/rec/m/R-REC-M.2092-1-202202-!!PDF-E.pdf (superseded ITU-R Rec. M.2092-0 (Oct. 2015), at 2.1.1).

¹³ See NTSB, Sinking of US Cargo Vessel SS *El Faro*, NTSB/MAR-17/01, at 238-41, 251 (2018) (NTSB *El Faro* Report), <https://www.nts.gov/investigations/AccidentReports/Reports/MAR1701.pdf> (last visited June 16, 2022); see also NTSB, Safety Recommendation M-17-051, <https://data.nts.gov/carol-main-public/sr-details/M-17-051> (last visited June 16, 2022).

VHF Public Coast Licenses. In the United States, however, Channels 2027 and 2028 are included in the spectrum assigned to VHF Public Coast (VPC) licenses,¹⁴ which provide wireless services to vessels in coastal areas, and land mobile services nationwide.¹⁵ VPC spectrum, which was first auctioned in 1998, is licensed in 42 geographic areas (9 license areas covering coastal and inland areas and the remaining 33 covering exclusively inland areas).¹⁶ A single license was offered per geographic area, with each license consisting of channel pairs, but the spectrum amount varied by geographic area with a maximum license size of 500 kHz.¹⁷ There are also site-specific VPC licenses that were granted prior to auction that are entitled to protection from the geographic licenses.

This tension between the Commission's VPC exclusive-use licensing and the new international allocations was raised by commenters in response to a public notice seeking comment on a Radio Technical Commission for Maritime Services (RTCM) petition seeking the modernization of Part 80.¹⁸ MariTEL stated that it "supports development of ASMs, including in conjunction with use of its licensed [VPC] channels . . . [and] requests that any such language attempting to restrict ASM apply only to AIS 1 and AIS 2."¹⁹ Motorola argued that AIS should not be expanded in a manner that imposes constraints on existing users or services, and that ASMs should be restricted to AIS 1 and AIS 2.²⁰ Further, Motorola stated that, to the extent alternative channels are used, current VPC licensees' operations should be protected or accommodated and that no additional constraints should be placed on co-channel or adjacent channel services.²¹ Iridium Communications, Inc. and the U.S. Coast Guard supported revising our rules to be consistent with international spectrum allocations, authorizing the use of ASM 1 and ASM 2 for ASMs.²²

Discussion

We seek comment on whether there is congestion on the AIS 1 and AIS 2 channels in the United States (offshore or in inland waterways) that reduces its reliability or degrades its safety or efficacy. If so, how has congestion affected the operations and reliability of various AIS applications and services, and where have congestion and related impacts been experienced? Further, we seek comment on the extent to which ASMs are contributing to this congestion. If possible, commenters should provide detailed information about specific instances when the proper functioning of AIS was disrupted due to congestion and any data demonstrating that ASMs were the cause.

¹⁴ 47 CFR § 80.371(c)(1)(i). There are 88 active geographic VPC licenses (44 of these licenses cover all or parts of VPC geographic areas 1-9 that include coastal areas) held by 31 entities, as well as 13 site-specific VPC licenses held by 9 incumbents granted prior to the band being auctioned, and that are entitled to protection from the geographic licenses.

¹⁵ Federal Communications Commission, Coast Radio Stations, <https://www.fcc.gov/wireless/bureau-divisions/mobility-division/maritime-mobile/coast-radio-stations> (last visited June 16, 2022).

¹⁶ 47 CFR § 80.371(c)(1)(ii).

¹⁷ Federal Communications Commission, Auction 20: VHF Public Coast, Fact Sheet, Licenses Offered, <https://www.fcc.gov/auction/20/factsheet#Licenses%20Offered> (last visited June 16, 2022).

¹⁸ Wireless Telecommunications Bureau Seeks Comment on Radio Technical Commission for Maritime Services Petition for Rulemaking to Update Part 80 of the Commission's Rules, RM-11765, *Public Notice*, 31 FCC Rcd 3554 (2016).

¹⁹ See MariTEL Comments, RM-11765, at 3.

²⁰ See Motorola Reply Comments, RM-11765, at 8-9.

²¹ See *id.* at 8-11.

²² See Iridium Comments, RM-11765, at 5; Coast Guard Reply Comments, RM-11765, at 6.

We also seek comment on whether congestion has significantly affected the reliability of ASMs. If AIS or ASM efficacy is a problem, we seek comment on whether there are technical or other solutions to address the problem. To the extent commenters believe additional spectrum is needed for ASMs, we seek comment on the considerations for and against the Commission implementing the ITU's international allocation, moving ASMs to ASM 1 and ASM 2 at 161.950 MHz and 162.000 MHz. Commenters should also discuss whether frequencies other than ASM 1 and ASM 2 could be used for ASMs, including other VHF-FM marine-band spectrum.

Finally, we seek comment on the effects of implementing the ITU's international allocation (moving ASMS to ASM 1 and ASM 2) on VPC licenses already authorized on that spectrum. What is the current use of these ASM 1 and ASM 2 frequencies? Can VPC licensees share ASM1 and ASM 2 or would VPC licensees need to be transitioned off those frequencies? Which VPC licenses would be affected (coast and/or inland)?

Procedural Matters

Pursuant to sections 1.415 and 1.419 of the Commission's rules, 47 CFR §§ 1.415, 1.419, interested parties may file comments and reply comments on or before the dates indicated on the first page of this document. Comments may be filed using the Commission's Electronic Comment Filing System (ECFS). *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://apps.fcc.gov/ecfs/>.
- Paper Filers: Parties who choose to file by paper must file an original and one copy of each filing.
 - Filings can be sent by commercial overnight courier, or by first-class or overnight U.S. Postal Service mail. All filings must be addressed to the Commission's Secretary, Office of the Secretary, Federal Communications Commission.
 - Commercial overnight mail (other than U.S. Postal Service Express Mail and Priority Mail) must be sent to 9050 Junction Drive, Annapolis Junction, MD 20701. U.S. Postal Service first-class, Express, and Priority mail must be addressed to 45 L Street NE, Washington, DC 2055
 - Effective March 19, 2020, and until further notice, the Commission no longer accepts any hand or messenger delivered filings. This is a temporary measure taken to help protect the health and safety of individuals, and to mitigate the transmission of COVID-19. *See* FCC Announces Closure of FCC Headquarters Open Window and Change in Hand-Delivery Policy, Public Notice, DA 20-304 (March 19, 2020), <https://www.fcc.gov/document/fcc-closes-headquarters-open-window-and-changes-hand-delivery-policy>.

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The proceeding this Notice initiates shall be treated as a "permit-but-disclose" proceeding in accordance with the Commission's ex parte rules. Persons making ex parte presentations must file a copy of any written presentation or a memorandum summarizing any oral presentation within two business days after the presentation (unless a different deadline applicable to the Sunshine period applies). Persons making oral ex parte presentations are reminded that memoranda summarizing the presentation must (1) list all persons attending or otherwise participating in the meeting at which the ex parte presentation was made, and (2) summarize all data presented and arguments made during the presentation. If the presentation consisted in whole or in part of the presentation of data or arguments already reflected in the presenter's written comments, memoranda or other filings in the proceeding, the presenter may provide citations to such data or arguments in his or her prior comments, memoranda, or other filings (specifying

the relevant page and/or paragraph numbers where such data or arguments can be found) in lieu of summarizing them in the memorandum. Documents shown or given to Commission staff during ex parte meetings are deemed to be written ex parte presentations and must be filed consistent with rule 1.1206(b).

In proceedings governed by rule 1.49(f) or for which the Commission has made available a method of electronic filing, written ex parte presentations and memoranda summarizing oral ex parte presentations, and all attachments thereto, must be filed through the electronic comment filing system available for that proceeding, and must be filed in their native format (e.g., .doc, .xml, .ppt, searchable .pdf). Participants in this proceeding should familiarize themselves with the Commission's ex parte rules.

Pursuant to section 1.49 of the Commission's rules, 47 CFR § 1.49, parties to this proceeding must file any documents in this proceeding using the Commission's Electronic Comment Filing System (ECFS): <http://apps.fcc.gov/ecfs/>.

For further information, contact Roger Noel of the Mobility Division, Wireless Telecommunications Bureau, at (202) 418-0698 or via e-mail at roger.noel@fcc.gov.

Action by the Acting Chief, Wireless Telecommunications Bureau.