

## C. Service Rules

### 1. Regulatory Classification of Providers

92. *Space Station Providers.* In the *Notice*, we sought comment on our interpretation that certain provisions of the Communications Act grant us the discretion to impose, or refrain from imposing, common-carrier regulation in the provision of space segment capacity in the 2 GHz MSS.<sup>332</sup> We explained that, in our view, Section 332(c)(5) of the Communications Act, which relates to CMRS, authorizes the Commission “to determine whether the provision of space segment capacity to providers of commercial mobile services shall be treated as common carriage.”<sup>333</sup> In addition, we noted that Section 3(44) of the Communications Act states that “the Commission shall determine whether the provision of fixed and mobile satellite service shall be treated as common carriage.”<sup>334</sup> We tentatively concluded that we would treat the space segment component of 2 GHz MSS as non-common carriage.<sup>335</sup>

93. We adopt our tentative conclusion. The commenters support our tentative conclusion that the space segment component of the 2 GHz MSS does not have to be regulated on a common carrier basis.<sup>336</sup> In the *Notice*, we explained that the Commission has used the two-part analysis enunciated by the D.C. Circuit in *National Association of Regulatory Utility Commissioners v. FCC*, 525 F.2d 630, 642 (D.C. Cir. 1976), *cert. denied*, 425 U.S. 999 (*NARUC I*) to determine whether a space station operator offering service to another entity that then offers service to end users should be regulated as a common carrier.<sup>337</sup> *NARUC I* requires a determination of whether: (1) there is or should be any legal compulsion to serve the public indifferently; or (2) whether the service is such that the provider is likely to hold itself out to serve indifferently all eligible users.

94. We tentatively concluded that, based on the *NARUC I* analysis, it did not appear that we needed to impose common carrier requirements on 2 GHz MSS space station operators. We explained in the *Notice* that, with respect to the first prong of the *NARUC I* analysis, in the context of satellite space station operators, there only would be a need for a legal requirement to serve the public indifferently if there were an insufficient amount of satellite capacity available. Specifically, we explained that the Commission has found that if the barriers to entry for new satellite operators are low and alternative competitive sources of satellite services are available to consumers through service providers, space segment operators will have incentive to offer space segment services efficiently at low wholesale rates.<sup>338</sup> Under these circumstances, the Commission has determined that there is no need to compel operators to offer space segment capacity to service providers or the public indifferently.<sup>339</sup> We also

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<sup>332</sup> *Notice*, 14 FCC Rcd at 4875 ¶ 73.

<sup>333</sup> 47 U.S.C. § 332(c)(5).

<sup>334</sup> 47 U.S.C. § 153(44).

<sup>335</sup> *Notice*, 14 FCC Rcd at 4875-76 ¶ 74.

<sup>336</sup> Constellation Comments at 23; Globalstar Comments at 31; ICO Comments at 15; Inmarsat Comments at 16; Iridium Comments at 31-32 & Reply at 26-27; TMI Comments at 9.

<sup>337</sup> *Notice*, 14 FCC Rcd at 4875-76 ¶ 74.

<sup>338</sup> *Domestic Fixed Satellite Transponder Sales*, CC Docket No. 82-45, Memorandum Opinion, Order and Authorization, 90 F.C.C.2d 1238, 1254-55 (1982), *aff'd*, *Wold Communications, Inc. v. FCC*, 735 F.2d 1465 (D.C. Cir. 1984), *modified*, *Martin Marietta Communications Systems*, Memorandum Opinion and Order, 60 Rad. Reg. (P&F) 2d 779 (1986).

<sup>339</sup> *Notice*, 14 FCC Rcd at 4876 ¶ 75.

concluded that, under the second prong of the *NARUC I* analysis, based on the fact that 2 GHz MSS space station applicants propose to offer space segment-only services, they would not be holding themselves out to serve the public indifferently to all eligible users. In this regard, the 2 GHz MSS operators will be in a similar position as Big LEO space station licensees and, thus, we see no reason to treat 2 GHz MSS space segment operators differently than Big LEO space segment licensees.

95. The commenters agree with our *NARUC I* analysis. Globalstar notes that, with respect to the first prong of the *NARUC I* analysis, space segment providers will not serve end users directly and that satellite operators offering space segment capacity to other carriers have operated in a competitive environment for many years qualifying as private carriers.<sup>340</sup> As to the second prong of the *NARUC I* analysis, ICO asserts that there is nothing inherent in the 2 GHz MSS to require that space segment capacity be offered indifferently to the public.<sup>341</sup> ICO and Iridium both assert that because 2 GHz MSS and Big LEO operations are similar, the services should be treated the same for regulatory classification purposes.<sup>342</sup> Based on our analysis and the comments received, we adopt our tentative conclusion and will not require the space segment component of the 2 GHz MSS to be regulated as common carrier service.

96. *Earth Station Providers.* In the *Notice* we also sought comment on our tentative conclusion that, to the extent that 2 GHz MSS earth stations, including mobile earth terminals,<sup>343</sup> gateways,<sup>344</sup> and tracking, telemetry and control earth stations,<sup>345</sup> are used to make service available to the public for profit and for interconnection with the public switched network, the service must be regulated as common carriage.<sup>346</sup> We explained that if the service is offered to the public as described in the Communications Act,<sup>347</sup> service to the end user of the service would fall within the statutory definition of CMRS.<sup>348</sup> In addition, we explained that the Commission has determined that each mobile satellite service must be evaluated to determine whether the service offering is CMRS or private mobile

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<sup>340</sup> Globalstar Comments at 31-32. *See also* Iridium Comments at 31-32; TMI Comments at 9.

<sup>341</sup> ICO Comments at 15.

<sup>342</sup> ICO Comments at 15-16 (arguing that any other treatment would place ICO at a competitive disadvantage *vis-à-vis* Big LEOs); Iridium Comments at 31.

<sup>343</sup> Mobile earth terminals are mobile earth stations intended to be used while in motion or during halts at unspecified points. 47 C.F.R. § 25.201.

<sup>344</sup> Gateways are earth stations located at a specified fixed point or within a specified area on land to provide a feeder link for the mobile satellite service. 47 C.F.R. § 25.201.

<sup>345</sup> Tracking, telemetry and control earth stations are earth stations that operate in either the feeder link or service link bands for determination of orbit, velocity or instantaneous position of an object in space by means of radiodetermination, transmission of measurements made in the space station, including functioning of the space station, and transmission of signals to a space station to initiate, modify or terminate function of the equipment on a space station. 47 C.F.R. § 25.201.

<sup>346</sup> *Notice*, 14 FCC Rcd at 4877-78 ¶¶ 77-78.

<sup>347</sup> Section 332(d)(1) of the Communications Act defines “commercial mobile service” as “any mobile service . . . that is provided for profit and makes interconnected service available (A) to the public or (B) to such class of eligible users as to be effectively available to a substantial portion of the public, as specified by regulation of the Commission.” 47 U.S.C. § 332(d)(1).

<sup>348</sup> *Notice*, 14 FCC Rcd at 4877-78 ¶ 77.

radio service (PMRS).<sup>349</sup> More specifically, we pointed out that in discussing Section 332(c)(5) of the Communications Act, Congress indicated that the provision of earth segment capacity to users of CMRS, including by MSS terminals, shall be treated as common carriage. In the *Notice*, we said, however, that we would reserve the right to review individual applications on a case-by-case basis to determine if this classification is appropriate. We also noted that the Commission has forborne from applying certain provisions of Title II to CMRS providers.<sup>350</sup> We tentatively concluded that under the statutory and *NARUC I* standards, gateway earth stations and stations that may be used for tracking, telemetry and control should not be required to be licensed for common carriage because those services generally are not used to provide service to the public but rather for backhaul of large amounts of communications traffic and control of the space segment of satellite systems, respectively.

97. We adopt our tentative conclusions with respect to earth station regulatory classifications. We believe, and the commenters agree,<sup>351</sup> that the reasons we provided in the *Notice* for treating mobile earth terminals differently than gateway and tracking, telemetry and control earth stations for regulatory classification purposes under the statutory definition of CMRS are valid. We will treat the mobile earth terminal component of the 2 GHz MSS as common carriage for regulatory purposes. We will, however, reserve the right to review individual applications on a case-by-case basis to determine if this regulatory classification is appropriate. We note that Globalstar agrees with our conclusion that we should reserve the right to review each application on a case-by-case basis to determine whether a particular classification is appropriate and whether forbearance may be in order.<sup>352</sup>

98. As for gateway and tracking, telemetry and control earth stations, several of the commenters agree with our preliminary analysis and explain that because these services are not offered directly to the public there is no need to regulate these components of the systems as common carriers.<sup>353</sup>

We adopt our tentative conclusions with respect to the regulatory classification of earth station terminals in the 2 GHz MSS and will not require that gateways or tracking, telemetry and control earth stations be regulated on a common carrier basis.

## 2. System Licenses and Terms

99. As we explained in the *Notice*, the applicants in the 2 GHz MSS propose systems that include non-geostationary constellations of technically identical satellites, geostationary satellites, and a hybrid system with satellites in geostationary and non-geostationary orbits.<sup>354</sup> The *Notice* proposed granting “blanket” launch and operation licenses<sup>355</sup> for systems of technically identical satellites, which

<sup>349</sup> *CMRS Second Report & Order*, 9 FCC Rcd at 1457 ¶ 108. PMRS is defined as any service that does not meet the definition of CMRS or is not the functional equivalent of CMRS. *Id.* at 1447 ¶ 179.

<sup>350</sup> *See* 47 C.F.R. § 20.15. *See also* 47 U.S.C. § 332(c)(1)(A).

<sup>351</sup> Constellation Comments at 23-24; Globalstar Comments at 31; Inmarsat Comments at 15; Iridium Comments at 31; TMI Comments at 9.

<sup>352</sup> Globalstar Comments at 31.

<sup>353</sup> Constellation Comments at 23-24 (non-common carrier treatment for gateway earth stations is appropriate because they will be use as a private network for TT&C and system control operations); Inmarsat Comments at 16; Iridium Comments at 31; TMI Comments at 9.

<sup>354</sup> *Notice*, 14 FCC Rcd at 4854 ¶ 17.

<sup>355</sup> This follows the single-step processing and licensing policy that has been used for satellites since 1980. *See Assignment of Orbital Locations to Space Stations in the Domestic Fixed-Satellite Service*, Order and Authorizations, 11 FCC Rcd 13788 (1996).

probably will include most NGSO constellations.<sup>356</sup> We proposed to license 2 GHz MSS geostationary satellites by issuing a separate license for each orbital position to account for variations in system design, such as beam patterns, at each geostationary satellite orbital position. We proposed this distinction in licensing between NGSO and GSO satellites because of the design differences between the systems, the beam coverage variations, and our experiences licensing both types of systems.

100. We adopt this proposal. ICO, the only commenter on this issue, supports our proposal.<sup>357</sup> We believe that design differences among GSO satellites in a system affirm the value of our practice of licensing each GSO satellite individually. In addition, each GSO satellite must be internationally coordinated and technical concerns may arise unique to each satellite based on the operations of adjacent satellites. For GSO/NGSO hybrid systems, we will adopt our proposal to license the GSO component on an individual satellite basis and the NGSO constellation portion of the system on a “blanket” license basis.

101. In the *Notice*, we proposed a ten-year license term for 2 GHz MSS operators in addition to a pre-operational testing authority.<sup>358</sup> We proposed that, like the Big LEO license term, the license term for 2 GHz MSS would end ten years following commencement of satellite operations. Thus, given construction time, the length of the authorization actually would exceed ten years. We also proposed that systems with both NGSO and GSO satellite components would have separate license terms for the NGSO portion of the system and for each GSO satellite. Finally, recognizing statutory authority for the FCC to be able to award a longer license period,<sup>359</sup> as well as the investment required to construct and launch these systems, combined with the development of satellite technology, specifically developments that have given satellites longer life spans – up to 15 or more years in some cases for geostationary satellites – we sought comment on whether the license term should exceed ten years. We also proposed that the license would include a separate pre-operational testing authority. In addition, we proposed to permit the licensee to replace any satellites lost during launch and older satellites retired before the end of the license period with technically identical satellites.

102. The commenters support our proposal to extend the license term to 15 years. The commenters argue that longer license terms will enhance system proponents’ ability to attract the large investments required to start a global MSS system.<sup>360</sup> Boeing, Inmarsat and IUSG point out that longer license terms more accurately reflect the improvements in satellite life span.<sup>361</sup> These commenters agree that the Commission has the statutory authority to extend license terms.<sup>362</sup>

103. We adopt a 15-year license term for the 2 GHz MSS space segment for NGSO constellations, individual GSO satellites, and the equivalent terms for the NGSO constellation and

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<sup>356</sup> *Id.* at 4878-79 ¶ 79.

<sup>357</sup> ICO Comments at 16.

<sup>358</sup> *Notice*, 14 FCC Rcd at 4879 ¶ 80.

<sup>359</sup> The Telecommunication Act of 1996 amended the Communications Act to modify the statutory license term limit of ten years by granting the Commission authority to “prescribe the period or periods for which licenses shall be granted and renewed . . . .” Telecommunication Act of 1996, Pub. L. No. 104-104, Title II, § 203, 110 Stat. 56, 112 (1996) (amending Section 307 of the Communications Act to eliminate ten-year term and creating new Section 307(c)(1) granting the Commission authority to determine license terms for particular classes of stations, including satellite space and earth stations).

<sup>360</sup> Boeing Comments at 37; IUSG Comments at 41; ICO Comments at 23; Iridium Comments at 27.

<sup>361</sup> Boeing Comments at 37; IUSG Comments at 41; Inmarsat Comments at 17.

<sup>362</sup> Boeing Comments at 38; Inmarsat Comments at 17; Iridium Comments at 33 & Reply Comments at 28.

individual GSO satellite portions of hybrid systems. We agree with the commenters that state that the extremely large amount of capital investment required to construct a global MSS system, particularly NGSO systems, is facilitated by the increased degree of certainty provided by a longer license term.<sup>363</sup> We also recognize that GSO satellites are being constructed with longer life-spans of 15 years or more. In this regard, we believe that it is appropriate to have a license term that is more commensurate with the life of geostationary satellites. We also adopt our proposal to start the license term once operations commence and the licensee certifies to the Commission that the first satellite in the system has been successfully placed into orbit and the first transmission to or from that satellite in the authorized frequency bands has occurred, as we required for Big LEO licensees. In addition we will authorize system operators to conduct pre-operational testing in the license grant, to the extent that applicants include such information in their applications.

104. We also adopt our proposal to permit replacement satellites to be launched within the license term of the satellite being replaced without distinction between GSO and NGSO systems. ICO agrees with our proposal and suggests that we adopt a rule to require replacement satellites to conform identically to their operational counterparts.<sup>364</sup> We have found that requiring that replacement satellites launched during the initial license term be technically identical to the authorized satellite has worked well as a policy for Big LEO licensees and will continue this requirement. Most NGSO constellations require satellites to be technically identical. Requiring GSO satellites to be technically identical will assure continued compatibility of the systems with other users of the spectrum. We also adopt our proposal that the technically identical replacement satellite requirement apply to all 2 GHz MSS system designs – NGSO, GSO and hybrid systems. As such, we will treat any non-conforming satellites as requests for license modification, as the Commission does with respect to Big LEO satellites.<sup>365</sup> In addition, as to spare satellites, we adopt our proposal to allow system operators to request authority to deploy technically identical in-orbit spare satellites in the case of NGSO constellations and collocated spares for GSO systems.<sup>366</sup> System operators can activate spare satellites as necessary, but will be required to notify the Commission, within ten days after activation, that activation of the satellite did not cause the licensee to exceed the total number of authorized space stations. As proposed, the license term for activated spare satellites will expire with the overall system's authorization term.

105. Where licensees wish to utilize next generation systems, or individual next generation satellites in the case of GSO operators, after the initial license term, they must file applications no earlier than three months before and no later than one month after the end of the twelfth year of the existing license.<sup>367</sup> As we explained in the *Notice*, this proposal, which is the same as the Big LEO rule, is designed to allow the Commission and the public adequate time to evaluate and act upon replacement applications, as well as sufficient time for the licensee to implement its next generation system. We proposed not to adopt a formal renewal expectancy for 2 GHz MSS licensees, but to proceed on a case-by-case basis as we have in other satellite services.<sup>368</sup> We adopt our proposal. Specifically, we will generally grant system operators the authority to implement replacement systems/satellites if the orbit

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<sup>363</sup> Boeing Comments at 37; IUSG Comments at 41; ICO Comments at 23; Iridium Comments at 27.

<sup>364</sup> ICO Comments at 16.

<sup>365</sup> Technically identical satellites must have identical satellite antenna footprints and transmission parameters. They need not, however, have the identical physical structure or microelectronics. 47 C.F.R. § 25.143(c).

<sup>366</sup> *Notice*, 14 FCC Rcd at 4879-80 ¶ 81.

<sup>367</sup> *Id.* at 4880 ¶ 82.

<sup>368</sup> *See Big LEO Reconsideration*, 11 FCC Rcd at 12878 ¶ 51.

location and/or frequencies remain available for use by U.S. systems.<sup>369</sup> This recognizes that changed circumstances, including intervening international agreements, may affect our ability to assign or renew orbit and spectrum resources to U.S. systems. IUSG, ICO, and Iridium argue for the grant of a license renewal expectancy in order to provide for greater investment attraction,<sup>370</sup> to assured continuity of service to consumers,<sup>371</sup> to provide a reduction in the burden associated with the grant of *ad hoc* extensions and to acknowledge the great expense of procuring the initial license.<sup>372</sup> We agree with these commenters' concerns but believe that the 15-year license term we are granting to 2 GHz MSS operators will serve the same objectives. We recognize, however, the enormous investment necessary to launch and operate 2 GHz MSS satellite systems and therefore will grant extensions for satellites that continue to operate beyond their license term, replacement authorizations, and renewals, if appropriate, unless extraordinary circumstances require a denial. Thus, we will continue to review renewal applications on a case-by-case basis. We also adopt our proposal that these policies apply to earth station renewals.

### 3. Implementation Milestones

106. In the *Notice*, consistent with Commission precedent, we proposed to adopt an implementation milestone schedule for 2 GHz MSS systems. Under that precedent, we seek to ensure speedy delivery of service to the public and prevent warehousing of valuable orbital locations and spectrum. To that end, we require systems to begin operation within a prescribed time. We continue to believe that milestone requirements promote efficient use of limited spectrum resources. As we emphasized in the *Notice*, milestone requirements are especially important because we are declining to adopt financial qualifications as an entry criterion for 2 GHz MSS systems.<sup>373</sup> Commenters generally agreed with our conclusions. We therefore adopt the following implementation milestone schedules for 2 GHz MSS systems, which will be incorporated as conditions to licensing and spectrum reservation:

- *Non-geostationary satellite systems* must enter into a non-contingent satellite manufacturing contract for the system within one year of authorization, complete critical design review ("CDR") within two years of authorization, begin physical construction of all satellites in the system within two and a half years of authorization, and complete construction and launch of the first two satellites within three and a half years of grant.<sup>374</sup>
- *Geostationary satellite systems* must enter into a non-contingent satellite manufacturing contract within one year, complete CDR within two years, begin physical construction of all satellites in the system within three years, and complete construction of, and launch, one satellite of its constellation into its assigned orbital location within five years of authorization.
- *Hybrid satellite systems* (containing NGSO and GSO components) must follow the non-geostationary milestones for the non-geostationary portion of the system and comply with the geostationary milestones for the geostationary portion of the proposed system.

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<sup>369</sup> See, e.g., *Assignment of Orbital Locations to Space Stations in the Domestic Fixed-Satellite Service*, Memorandum Opinion and Order, 3 FCC Rcd 6972, 6976 n.31 (1988).

<sup>370</sup> ICO Comments at 23.

<sup>371</sup> Iridium Comments at 33.

<sup>372</sup> IUSG Comments at 41.

<sup>373</sup> *Notice*, 14 FCC Rcd at 4881 ¶ 83.

<sup>374</sup> *Id.* at 4882 ¶ 86.

- The entire system, whether NGSO, GSO, or hybrid, will have to be launched and operational within six years of authorization.

Non-compliance with implementation milestones will result in cancellation of the authorization.<sup>375</sup>

Consistent with our practice in other services, we will require operators to submit certifications of milestone compliance, or filing disclosure of non-compliance, within 10 days following a milestone specified in the system authorization. Failure to file a timely certification of milestone compliance, or filing disclosure of non-compliance, will result in automatic cancellation of an operator's system authorization with no further action required on the Commission's part.<sup>376</sup>

107. As proposed in the *Notice*, and generally supported by commenters,<sup>377</sup> milestones will begin to run upon award of a service link license to U.S.-based applicants, or upon issuance of a Public Notice or Declaratory Ruling designating spectrum for LOI filers.<sup>378</sup> We will assess compliance with the adopted milestone schedules through review of the annual reports operators must file, which include detailed information about satellite system implementation.<sup>379</sup> In addition, operators must, within ten days after a required implementation milestone, certify to the Commission by affidavit that the system has (or has not) met the milestone.<sup>380</sup> IUSG and ICO recommend that all filers be required to make milestone reports public to all interested parties.<sup>381</sup> We agree with these commenters. While we will permit filers to request confidential treatment of information that may be proprietary, we strongly urge filers to limit the scope of confidentiality requests. Finally, we retain discretion to seek additional information from system proponents concerning any aspect of system progress.

108. The milestone schedule we adopt incorporates a number of elements of the European Milestone Review Committee ("MRC") criteria for system implementation, as suggested by Globalstar.<sup>382</sup> In particular, we are adopting CDR as a new, intermediate milestone. CDR is the stage in the spacecraft implementation process at which the design and development phase ends and the manufacturing phase starts. System proponents certifying completion of this milestone must support their certification with a declaration by the satellite manufacturing company stating the date on which the

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<sup>375</sup> *Accord Advanced Communications Corporation v. FCC*, 84 F.3d 1452 (D.C. Cir. 1996) (per curiam) (unpublished disposition; text available at 1996 WL 250460); *Norris Satellite Communications, Inc.*, Memorandum Opinion and Order, 12 FCC Rcd 22299 (1997); *National Exchange Satellite, Inc.*, Memorandum Opinion and Order, 8 FCC Rcd 636 (1993); *NetSat 28 Company, L.L.C.*, Memorandum Opinion and Order, DA 00-1264 (Int'l Bur., June 26, 2000); *Morning Star Satellite Company, L.L.C.*, Memorandum Opinion and Order, DA 00-1265 (Int'l Bur., June 26, 2000); *PanAmSat Licensee Corp.*, Memorandum Opinion and Order, DA 00-1266 (Int'l Bur., June 26, 2000).

<sup>376</sup> See 47 C.F.R. §§ 25.161, 25.163.

<sup>377</sup> Globalstar Comments at 40; ICO Comments at 17-18; Iridium Comments at 35-36; IUSG Comments at 39; TMI Comments at 19.

<sup>378</sup> See *Notice*, 14 FCC Rcd at 4882 ¶ 88. As discussed in Section III.B., *supra*, we will initiate milestones upon authorization of service link spectrum, whether or not a system has obtained adequate feeder link or inter-satellite link assignments, to encourage the pursuit of attainable feeder links and discourage *de facto* milestone delays.

<sup>379</sup> 47 C.F.R. § 25.143(e)(1), as amended herein. See Appendix D. See also Section III.C.4, *infra*.

<sup>380</sup> 47 C.F.R. § 25.143(e)(3), as amended herein. See Appendix D.

<sup>381</sup> IUSG Comments at 40 & Reply at 39; ICO Comments at 17.

<sup>382</sup> Globalstar Comments at 37-39.

CDR was completed.<sup>383</sup> This new milestone will address commenters' concerns, which we share, with there being a three-year gap between the first and second milestones. The CDR milestone will aid us in assessing that prospective operators are taking immediate, concrete steps toward system implementation after meeting the first milestone, and allows us to identify any failure in system progress. This approach also will require prospective operators to identify any system modifications needing prior FCC approval well in advance of the CDR milestone.

109. Note, however, that we adopt Globalstar's suggestion that licensees meet the MRC milestones only in part, declining to adopt several suggestions for making milestone requirements stricter. We are sympathetic to concerns that milestone requirements must be effective so that spectrum does not lie fallow, and have carefully considered these requests. We believe the MRC milestones are a reasonable method for evaluating system progress, and one that complements our own efforts. The information provided to the MRC is very similar to that provided to the FCC in annual construction progress reports. We believe the more limited set of milestone requirements we adopt today will provide adequate warning if a system is not progressing toward provision of service. Similarly, we do not adopt IUSG's suggestion that we impose a separate milestone schedule to track the progress of in-orbit spares and ground segments.<sup>384</sup> While progress with respect to spare satellites and ground segment may be relevant to overall system progress, in the typical case, a system making no progress on ground segment or spare construction also will exhibit non-compliance with other milestone requirements.

110. We also reject suggestions that we relax milestone requirements for space stations. In particular, we reject Constellation's proposal that companies already licensed to construct first generation MSS systems in other frequency bands, should begin their 2 GHz MSS milestone periods on a date that would permit them to launch a second generation system including both frequency bands.<sup>385</sup> If we were to adopt this proposal, such systems might not be required to begin 2 GHz MSS operation before 2010. This is an unreasonably long period of time in which to preclude spectrum from potential use by other parties, including any new entrants that develop system plans in the next few years, and thereby delay deployment of service for U.S. customers. Modifications of currently licensed systems, of the type described by Constellation, are more appropriately considered at a later date.

111. As we noted in the *Notice*, the Communications Act states that "[w]ith respect to any other station or class of station [including space and earth stations], the Commission shall not waive the requirement for a construction permit unless the Commission determines that the public interest, convenience, and necessity would be served by such a waiver."<sup>386</sup> Consistent with our statutory authority, and with our treatment of other satellite services, we will waive the requirement that 2 GHz MSS operators obtain construction permits for space and earth stations prior to commencing

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<sup>383</sup> See 47 C.F.R. § 1.16.

<sup>384</sup> IUSG Comments at 39.

<sup>385</sup> Constellation Comments at 25.

<sup>386</sup> 47 U.S.C. § 319(d). Under this statutory authority, the Commission has eliminated the requirement that applicants be granted construction permits for space stations and earth stations under Part 25, Sections 25.113(f), (b). *Streamlining the Commission's Rules and Regulations for Satellite Application and Licensing Procedures*, IB Docket No. 95-117, Report and Order, 11 FCC Rcd 21581, 21584-85, 21590-91 ¶¶ 8, 23 (1996) (elimination of the construction permit requirement for space stations and MSS earth stations, respectively, will accelerate the provision of satellite-delivered services, and eliminate administrative burdens and potential delays).

construction. We will, however, require that 2 GHz MSS system operators notify the Commission in writing that they intend to begin construction at their own risk of satellites and earth stations.<sup>387</sup>

#### 4. Reporting Requirements

112. The *Notice* proposed applying the same annual reporting requirements to 2 GHz MSS operators as we currently apply to other satellite systems.<sup>388</sup> The reporting rules require system operators to file reports specifying satellite system implementation, anticipated launch dates, system utilization, and system outages or malfunctions. The reports also are used to determine annual regulatory fees for each system. We proposed to amend Section 25.143(e) of the Commission's rules to apply these requirements to 2 GHz MSS operators.<sup>389</sup>

113. We adopt the reporting requirements as proposed in the *Notice*, with the addition of requiring satellite operators receiving expansion spectrum to report on the actual number of subscriber minutes originating or terminating in unserved areas as a percentage of the actual U.S. system use.<sup>390</sup> The commenters agree with this proposal, with some minor exceptions.<sup>391</sup> We note that under this requirement we are not requiring foreign-licensed systems to file separately information already provided to the licensing administration. As ICO points out in its comments, because it is licensed by the United Kingdom, the Commission has determined not to subject it or other similarly foreign-authorized systems to redundant licensing requirements in the United States.<sup>392</sup> We require, however, that foreign-licensed system operators file any information required by our rules but not already filed with the licensing administration. We also require foreign-licensed operators to file copies with the Commission of information submitted to the foreign-licensing administration that is required of U.S.-licensees for purposes of monitoring compliance with our rules and the terms of entry into the U.S. market.

114. The *Notice* also proposed to apply to 2 GHz MSS operators the requirement that system operators file affidavits certifying whether milestone requirements are met.<sup>393</sup> As we explained in the *Notice*, the Commission will retain the right to request additional information to ensure compliance with milestones. These requirements are consistent with the U.S. commitments in the World Trade Organization Agreement on Basic Telecommunications because the Commission requires this information to determine whether system implementation milestones of both U.S. and foreign operators have been met and to ensure network operational status.

115. In the *Notice*, we proposed to change the deadline for filing annual reports from June 30th to October 10th. The purpose of this proposed change is to provide additional information about system operators and to coincide with the end of the Commission's fiscal year, September 30th, for

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<sup>387</sup> 47 C.F.R. § 25.113(f).

<sup>388</sup> *Notice*, 14 FCC Rcd at 4884 ¶ 91.

<sup>389</sup> 47 C.F.R. § 25.143 (e).

<sup>390</sup> *See* Section III.A.1.d., *supra*.

<sup>391</sup> *Cf.* Iridium Comments at 38 (suggesting that the Commission not require system utilization reporting) and ICO Comments at 19 (supporting non-duplicative reporting requirements).

<sup>392</sup> ICO Comments at 18.

<sup>393</sup> *Notice*, 14 FCC Rcd at 4884 ¶ 92.

more accurate determination of annual regulatory fees.<sup>394</sup> Iridium filed comments supporting this change.<sup>395</sup> We adopt this proposal.

116. We also sought comment on our proposal to allow parties to request confidential treatment for any portion of an annual report.<sup>396</sup> Iridium suggests that the Commission delete the requirement to report on system utilization and to provide confidential treatment of reports from operational systems but not of reports related to progress in meeting implementation milestones, that Iridium contends should be publicly available.<sup>397</sup> We decline to implement Iridium's suggestions. As required under our Big LEO rules, 2 GHz MSS operators will be required to file affidavits certifying that milestones have been met and operators will be permitted to request confidential treatment of an annual report pursuant to Section 0.459 of the Commission's rules.<sup>398</sup> We believe that this policy has not been burdensome for operators in the past and that it sufficiently provides for the disclosure of individual system proponents' progress toward system implementation and of operational status.

## 5. Distress and Safety Communications and Enhanced 9-1-1

117. *Distress and Safety Communications.* As we stated in the *Notice*, many of the 2 GHz MSS systems proposed would be capable of providing distress and safety communications services.<sup>399</sup> In addition to voice and data services, several of the applicants propose position determination features. We noted that 2 GHz MSS systems cannot be used in place of distress beacons, such as satellite emergency position indicating radiobeacons (EPIRBs) that are required by international agreement and statute to be carried by passenger ships and certain cargo ships.<sup>400</sup> Like Big LEO operators, however, 2 GHz MSS systems will have certain statutory obligations related to maritime distress communications. In the *Notice*, we explained that in the *Big LEO Report & Order*, the Commission stated that, although the Big LEO applicants did not have plans for extensive distress and safety service, to the extent they provided such services, the licensees would have to meet certain statutory obligations and coordinate with the appropriate safety and rescue organizations.<sup>401</sup> In the *Notice*, we sought comment on our tentative conclusion that because the services being proposed by 2 GHz MSS systems are similar to those proposed by Big LEO licensees, the distress and safety rules adopted for Big LEO licensees also should be adopted for 2 GHz MSS systems.<sup>402</sup>

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<sup>394</sup> These fees are now assessed based on system status as of September 30. The Commission does not currently have statutory authority to assess annual regulatory fees in connection with non-licensed systems.

<sup>395</sup> Iridium Comments at 38.

<sup>396</sup> 47 C.F.R. § 0.459.

<sup>397</sup> Iridium Comments at 38.

<sup>398</sup> 47 C.F.R. § 0.459.

<sup>399</sup> *Notice*, 14 FCC Rcd at 4884-85 ¶ 93.

<sup>400</sup> Compulsory equipment carriage requirements are established in portions of the Commission's rules as well as by statute. *See, e.g.*, 47 C.F.R. §§ 80.801, *et seq.*; Ch. IV, International Convention on the Safety of Life at Sea, 32 U.S.T. 47, T.I.A.S. 9700 (1974).

<sup>401</sup> The Commission explained that Big LEO operators providing safety and rescue services should coordinate with the Interagency Committee on Search and Rescue (ICSAR) and all other similar domestic and international search and rescue organizations. *Big LEO Report & Order*, 9 FCC Rcd at 6013 ¶ 200.

<sup>402</sup> 47 C.F.R. § 25.143(f).

118. The comments support our proposal to adopt safety and distress rules for the 2 GHz MSS. The commenters state that the application of the Big LEO rules to 2 GHz MSS operators would be equitable because the rule already applies to the Big LEO licensees.<sup>403</sup> NTIA states that 2 GHz MSS operators providing safety and rescue services should coordinate with the National Search and Rescue Committee (NSARC)<sup>404</sup> and all other similar domestic and international search and rescue organizations, as required by Section 25.143(f)(2).<sup>405</sup> NTIA supports our tentative conclusion to modify Section 25.143(f) of the rules, to require 2 GHz MSS operators to comply with ship distress and safety requirements.<sup>406</sup> The United States Coast Guard (USCG) proposes that we adopt the International Maritime Organization's (IMO) "Criteria for use when Providing Inmarsat Shore-based Facilities" for use in the Global Maritime Distress and Safety Service (GMDSS) to address reliability of delivering emergency messages over satellite systems (IMO Inmarsat criteria) for the 2 GHz MSS systems.<sup>407</sup>

119. We agree with the commenters that it is appropriate to apply the Big LEO distress and safety rules to the 2 GHz MSS, which will offer similar services. Therefore, we adopt the distress and safety rules as proposed and amend Section 25.143(f) of our rules<sup>408</sup> to include the 2 GHz MSS service. We agree with NTIA's recommendation that the 2 GHz MSS operators providing safety and rescue services coordinate their service with NSARC. We decline, however, to adopt the USCG's recommendation that we apply the IMO Inmarsat criteria to 2 GHz MSS because of the delay that would result in adapting the requirements specifically for 2 GHz MSS. This could place unnecessary and onerous requirements on mobile satellite operators. We find that our current network reliability reporting requirements are sufficient for 2 GHz MSS systems. If a 2 GHz MSS operator wants to be recognized as part of the GMDSS or offer specialized Maritime Mobile Satellite Distress Service, we will reexamine the application of these requirements to 2 GHz MSS operators.<sup>409</sup>

120. *Enhanced 911.* In the *Notice*, we explained that in the *Big LEO Report & Order*, the Commission also considered and denied requests that Big LEO operators be required to provide caller ID, standardized position information and automatic call routing for distress and safety communications

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<sup>403</sup> IUSG Comments at 42; ICO Comments at 19; NTIA Comments at 17; TMI Comments at 10; Globalstar Reply at 17.

<sup>404</sup> The United States Coast Guard (USCG) points out that the NSARC was formerly known as the Interagency Committee on Search and Rescue (ICSAR). USCG explains that NSARC is a federal interagency standing committee chartered to oversee the National Search and Rescue Plan, coordinate development of interagency policies and positions on search and rescue matters, provide a forum for coordinated development of compatible procedures and equipment to increase the effectiveness and standardization of search and rescue. USCG states that NSARC formed the Commercial Satellite Services Working Group (CMSS) to enable MSS providers to better understand the needs of search and rescue and disaster support operations and for the search and rescue and disaster support communities to learn more about the capabilities of MSS for their communications needs. USCG Comments at 3.

<sup>405</sup> NTIA Comments at 18.

<sup>406</sup> *Id.*

<sup>407</sup> USCG Comments at 10, attachment 2.

<sup>408</sup> 47 C.F.R. § 25.143(f), as amended herein. *See* Appendix D.

<sup>409</sup> On November 25, 1999, the International Maritime Organization adopted Resolution A.888(21), Criteria for the Provision of Mobile Satellite Communication Systems in the Global Maritime Distress and Safety System which describes the requirements for operators to be recognized as part of the GMDSS. This resolution is available from the International Maritime Organization at 4 Albert Embankment, London SE1 7SR, United Kingdom. *See also* <http://www.imo.org>.

or disaster response communications, stating that it would address the issue in a separate rulemaking on enhanced 911 (E911).<sup>410</sup> We explained that, in the 1996 *E911 Report & Order*,<sup>411</sup> the Commission exempted MSS carriers from 911 obligations because MSS was still in the early development stages and faced more technological and international hurdles than terrestrial carriers.<sup>412</sup> Therefore, the Commission did not include MSS in the list of covered CMRS carriers.<sup>413</sup> The Commission stated, however, that it expected mobile satellite operators to eventually provide appropriate access to emergency services in future systems as they are deployed.<sup>414</sup>

121. In the *Notice*, we sought comment on whether 2 GHz MSS systems, particularly those at an early stage of development, should be required to implement their systems with E911 capabilities.<sup>415</sup> We noted that because four of the 2 GHz MSS applicants are Big LEO licensees proposing essentially second generation or expansion systems, it appeared appropriate to consider whether E911 capabilities should be incorporated into these expansion systems. Several commenters support adoption of E911 requirements for the 2 GHz MSS.<sup>416</sup> Specifically, commenters explain that having automatic number identification (ANI) and automatic location identification (ALI) would provide an important public safety function and assist agencies responsible for search and rescue operations in remote locations, including rural, wilderness, unserved, and maritime situations.<sup>417</sup> The USCG points out that this information is important to identify the person seeking assistance and also for prosecution and deterrence of hoax calls.<sup>418</sup> The USCG believes that it is essential for every MSS system to provide a means to

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<sup>410</sup> *Notice*, 14 FCC Rcd at 4885-86 ¶ 94. See also *Big LEO Report & Order*, 9 FCC Rcd at 6012-13 ¶ 199.

<sup>411</sup> *Revision of the Commission's Rules To Ensure Compatibility with Enhanced 911 Emergency Calling Systems*, CC Docket No. 94-102, Report and Order and Further Notice of Proposed Rulemaking, 11 FCC Rcd 18676 (1996) (*E911 Report & Order*) (imposing Basic 911 and E911 transmission requirements on certain covered CMRS carriers), *aff'd on recon.*, Memorandum Opinion and Order, 12 FCC Rcd 22665 (1997) (*E911 Reconsideration*). Basic 911 requires covered carriers to transmit all wireless 911 calls without validation to a Public Safety Answering Point (PSAP), thereby providing any 911 wireless caller with a voice connection to request emergency response services in localities that provide such services. 47 C.F.R. § 20.18(b). E911 requires that, in addition to Basic 911, covered carriers transmit certain information with 911 calls to help the PSAP find the location of the caller. 47 C.F.R. § 20.18(d)-(k). For purposes of this *Report and Order*, E911 includes Basic 911.

<sup>412</sup> *E911 Report & Order*, 11 FCC Rcd at 18718 ¶ 83.

<sup>413</sup> 47 C.F.R. § 20.18(a).

<sup>414</sup> *E911 Report & Order*, 11 FCC Rcd at 18718 ¶ 83; *E911 Reconsideration*, 12 FCC Rcd at 22706-08 ¶¶ 87-89. The E911 requirements are imposed in two phases and are not triggered until the PSAP requests service and is capable of utilizing the information. In Phase I, which began April 1, 1998, covered carriers are to transmit the 911 caller's callback number and cell site or base station location. In Phase II, which begins October 1, 2001, covered carriers are to provide the location of a 911 call by longitude and latitude in accordance with certain accuracy standards and timetables that depend on the technology used. *Revision of the Commission's Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems*, CC Docket No. 94-102, Third Report and Order, 14 FCC Rcd 17388, 17420-21 ¶ 72 (1999) (*E911 Third Report & Order*), *modified on recon.*, Second Memorandum Opinion and Order, 14 FCC Rcd 20850, 20866-67 ¶¶ 38-40 (1999).

<sup>415</sup> *Notice*, 14 FCC Rcd at 4885 ¶ 94.

<sup>416</sup> APCO Comments at 2; BellSouth Comments at 6 & Reply at 8; Celsat Comments at 30 & Reply at 27-28; NTIA Comments at 16; USCG Comments at 4-5.

<sup>417</sup> APCO Comments at 2-3; BellSouth Comments at 6; NTIA Comments at 16; USCG Comments at 4-5.

<sup>418</sup> USCG Comments at 8.

reach a real person, not an automated system, 24 hours a day to ensure that the proper Public Safety Answering Points (PSAPs) are identified.<sup>419</sup>

122. The USCG explains that there is also an international component to the E911 discussion. The USCG requests that the Commission closely coordinate any compatibility requirements and standards with international regulatory bodies.<sup>420</sup> The USCG states that standards are needed to allow these wireless systems to transmit ALI, ANI, priority and routing information to emergency service providers in other countries.<sup>421</sup> The USCG states further that the International Maritime Organization is working to resolve international access for emergency calls from ships over MSS.

123. We also explained in the *Notice* that several of the 2 GHz MSS applicants are proposing systems that may complement terrestrial wireless communications networks, which are required to provide E911 capabilities. Because of the potential for seamless use of the 2 GHz MSS systems, we sought comment as to whether we should require 2 GHz MSS operators to provide a seamless network with similar emergency services for users as terrestrial systems. Some commenters point out that the public's expectations of the capabilities of 2 GHz MSS handsets, especially those designed for seamless roaming, may be that the handset will have the same capabilities as terrestrial systems.<sup>422</sup> Commenters explain that because 2 GHz MSS has yet to be implemented, the 2 GHz MSS rulemaking is the best time for the Commission to set standards and avoid the delays in implementation faced by the cellular and Personal Communications Service industries.<sup>423</sup> The USCG and NTIA request that if the Commission does not require all consumer wireless equipment to have E911 capability, that any equipment not capable of providing emergency calling functions be labeled clearly to indicate that it cannot be used for emergency purposes.<sup>424</sup>

124. Other commenters oppose the adoption of E911 requirements for the 2 GHz MSS.<sup>425</sup> They argue that E911 requirements would be inappropriate at this time because the MSS industry is still in the nascent stages of development and is facing unique global technological and regulatory hurdles.<sup>426</sup> Some argue that because of MSS technological characteristics and coverage requirements, it is more difficult for MSS operators to provide E911 service than for terrestrial wireless providers to do so.<sup>427</sup>

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<sup>419</sup> *Id.* at 9.

<sup>420</sup> *Id.* at 5.

<sup>421</sup> *Id.* at 5-6.

<sup>422</sup> APCO Comments at 2-3; NTIA Reply at 8-9.

<sup>423</sup> APCO Comments at 3; BellSouth Comments at 6; Celsat Comments at 30.

<sup>424</sup> USCG Comments at 10; NTIA Reply at 11.

<sup>425</sup> Boeing Comments at 19; IUSG Comments at 43; Constellation Comments at 26; Globalstar Comments at 40; ICO Comments at 19; Iridium Comments at 38-40; SIA Comments at 2; TMI Comments at 10; and Inmarsat Reply at 20. Celsat initially supported the adoption of E911 requirements but states in its reply comments that the issue may be more appropriate for a Further NPRM and Report and Order to avoid delay in authorizing the 2 GHz MSS. Celsat Reply at 27-28.

<sup>426</sup> IUSG Comments at 43; Constellation Comments at 27; Globalstar Comments at 43; Iridium Comments at 38-40; Inmarsat Reply at 20.

<sup>427</sup> Constellation Comments at 26-27; Globalstar Comments at 42; ICO Comments at 19; TMI Comments at 10 (complex cost recovery and potential liability issues); SIA Comments at 2 (increase cost, handset size, and reduced operating time due to presence of GPS hardware and interference); Inmarsat Reply at 19.

125. We appreciate the comments received on these issues and value the concerns raised including those regarding public safety. We recognize that whether terrestrial wireless- or satellite-based, deployment of E911 features can save lives and improve the efficiency and effectiveness of emergency police, fire, and medical services across the country. We also note that, since the adoption of the *E911 Report & Order*, there have been significant strides in the development of GPS-based location technology.<sup>428</sup> We further note some commenters' position that, because 2 GHz MSS has yet to be implemented, this rulemaking is the best time for the Commission to adopt E911 obligations. We find, however, that there is insufficient information in the record in this proceeding to mandate specific requirements. We believe, therefore, that it is better to address the E911 issue in the forthcoming Global Mobile Personal Communications by Satellite (GMPCS) rulemaking (*GMPCS Proceeding*).<sup>429</sup> To that end, we direct the International Bureau to issue a Public Notice in the *GMPCS Proceeding* seeking additional information regarding the technological, regulatory, and international aspects of Basic 911 and E911 for satellite services. Addressing this issue in the *GMPCS Proceeding*, moreover, will allow us to simultaneously consider the full scope of technical and other issues on a wide-scale basis for the entire satellite industry, including all MSS and FSS services, rather than only the 2 GHz MSS at issue here.

126. In the interim, we are concerned that in an emergency situation consumers may have difficulty distinguishing between services provided by satellite and those provided by terrestrial wireless networks, which are required to offer Basic 911 services, and E911 services under certain conditions.<sup>430</sup> As a result, consumers likely will expect 911 services to be available whether they are on terrestrial systems or roaming on a satellite network. Until the Commission adopts an order in the *GMPCS Proceeding*, we require any handset used for 2 GHz MSS that does not have the capability of providing basic 911 or E911, to clearly indicate that it cannot provide those functions in the form of a sticker or label affixed to the handset. In addition, we strongly encourage the 2 GHz MSS industry to design the space segment portion of their networks with sufficient flexibility to be capable of accommodating earth station operators providing 911 services and to be able to provide basic and E911 services upon commencement of service to the public. We also recognize that MSS operators may be compelled by market forces to provide such 911 services in order to compete with terrestrial providers. In addition, we encourage continued development of international standards for emergency calling capabilities.

127. Finally, manufacturers of 2 GHz MSS equipment and service providers whose equipment and service do not have the capability of providing emergency calling functions and have not been fully coordinated with NSARC are prohibited from marketing their equipment and services to ships for distress or safety functions. In order to be eligible to market or operate such equipment and services, manufacturers of MSS equipment and service providers are required to notify the FCC that their service has been fully coordinated with NSARC.

## 6. Trafficking

128. In the *Notice*, we sought comment on whether we should adopt an anti-trafficking rule for 2 GHz MSS licensees.<sup>431</sup> We explained that the Commission adopted an anti-trafficking rule to

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<sup>428</sup> See *E911 Third Report & Order*, 14 FCC Rcd 17388, 17397-98 ¶ 18.

<sup>429</sup> See *Amendment of Parts 2 and 25 to Implement the Global Mobile Personal Communications by Satellite (GMPCS) Memorandum of Understanding and Arrangements*, IB Docket No. 99-67, Notice of Proposed Rule Making, 14 FCC Rcd 5871 (1999) (*GMPCS Notice*).

<sup>430</sup> See 47 C.F.R. § 20.18 (b)-(e).

<sup>431</sup> *Notice*, 14 FCC Rcd at 4887 ¶ 96.

govern the transfer of Big LEO licenses, which were not granted through competitive bidding.<sup>432</sup> We also explained that the purpose of the anti-trafficking rule is to prevent unjust enrichment of those who had obtained a license only for speculation and would not implement systems.<sup>433</sup> We cautioned that it is not our intent to adopt an anti-trafficking rule that would prevent debt or equity transactions, but rather to ensure that licensees do not sell bare licenses for profit.

129. ICO and IUSG oppose the adoption of anti-trafficking rules. ICO believes that the anti-trafficking prohibition on license sales is inappropriate in the volatile global telecommunications marketplace.<sup>434</sup> ICO would allow trafficking and would address the associated spectrum speculation issue through the use of milestones and inter-system coordination procedures that only recognize operational systems.<sup>435</sup> IUSG argues that anti-trafficking rules are not necessary because the complex licensing procedures will deter any party from applying for a 2 GHz authorization in order to transfer it purely for profit.<sup>436</sup> IUSG believes that licensees are also deterred from speculative trafficking practices because they are likely to have other vital interests before the Commission.<sup>437</sup>

130. We are not convinced by ICO and IUSG's arguments. As we have stated, we do not intend our anti-trafficking rule to be an impediment to legitimate investments in 2 GHz MSS systems. We agree with these commenters that licensing procedures and milestones also will protect against speculative applications. These rules, however, do not cover the entire licensing process. For instance, without an anti-trafficking rule, a successful licensee/spectrum designee with no intention to provide service could transfer its authorization for significant profit.

131. We adopt the anti-trafficking rule as proposed in the *Notice*. We believe that the policies of deterring speculation and unjust enrichment are well-served by this rule in other services, without hampering a licensee's ability to raise capital.<sup>438</sup> We will review transfer and assignment applications in 2 GHz MSS under the same criteria we have used in other satellite services.<sup>439</sup>

132. We also sought comment on whether, if adopted, an anti-trafficking rule should apply to foreign systems for which a spectrum reservation has been made and how we would retain the discretion to address our unjust enrichment policy concerns in connection with spectrum reservations for foreign-licensed satellites. In its comments, Iridium states that it supports anti-trafficking rules but only if equally applied to foreign-licensed systems with special attention to the ICO/Inmarsat relationship.<sup>440</sup> Iridium suggests that the Commission place special restrictions on transfers between Inmarsat and ICO because of their affiliated ownership and control. Iridium believes that any ICO/Inmarsat transfers should be allowed only if the Commission determines that: (1) all other global MSS systems are able to

<sup>432</sup> 47 C.F.R. § 25.143(g).

<sup>433</sup> *Cf.* 47 U.S.C. § 309(j)(3)(c).

<sup>434</sup> ICO Comments at 21.

<sup>435</sup> *Id.* See also paragraph 9, *supra*.

<sup>436</sup> IUSG Comments at 46.

<sup>437</sup> *Id.*

<sup>438</sup> See, e.g., *KaStar 73 Acquisition, LLC, and KaStar 109.2 Acquisition, LLC*, Memorandum Opinion and Order, 15 FCC Rcd 1615 (Int'l Bur. 1999).

<sup>439</sup> 47 C.F.R. § 25.143 (g) (Big LEO trafficking rule); 47 C.F.R. § 25.145 (d) (Ka-Band trafficking rule).

<sup>440</sup> Iridium Comments at 43.

obtain access to markets and spectrum in every country where ICO or Inmarsat have access; and (2) an ICO/Inmarsat transfer is in the public interest.<sup>441</sup>

133. ICO and Inmarsat object to Iridium's suggestion that restrictive transfer rules should apply only to ICO and Inmarsat. These commenters argue that such a rule would unfairly predicate transfers of spectrum upon conditions over which neither company has any control.<sup>442</sup> ICO also points out that an ICO/Inmarsat specific rule would violate the Commission's own principles as outlined in *DISCO II*.<sup>443</sup> Inmarsat also argues that Iridium does not show why its proposed rules should not apply to all applicants.<sup>444</sup>

134. As we have said before, our service rules will apply equally to U.S.-licensed and foreign-licensed systems, including our anti-trafficking rule.<sup>445</sup> If a foreign-licensed spectrum designee's ownership undergoes a change prior to the issuance of an earth station authorization for use of any spectrum reserved in a space station processing round, that designee must file a notification with the FCC so that we may ensure that the circumstances continue to warrant a spectrum reservation. For example, we will need to know whether the transferee's licensing administration is a WTO member country for purposes of our market access analysis. Once we receive notification of the change, we will determine if we need additional information to conduct an anti-trafficking analysis. We will not adopt an ICO/Inmarsat specific rule. We believe that our licensing and spectrum designation process combined with the *DISCO II* analysis and prohibition on exclusionary arrangements are sufficient to address Iridium's market access concerns.

## 7. Orbital Debris Mitigation

135. In the *Notice*, we outlined the steps undertaken by Executive Branch agencies to develop guidelines for orbital debris mitigation, and asked whether the Commission should take any complementary steps.<sup>446</sup> In particular, we sought comment on whether some or all elements of the National Aeronautics & Space Administration (NASA)/Department of Defense (DoD) draft debris mitigation standard practices should be incorporated in the Commission's rules.<sup>447</sup> We asked, in the alternative, whether we should require submission, in connection with satellite licensing, of narrative information concerning debris mitigation.<sup>448</sup>

136. A number of commenters stated they considered it their responsibility to mitigate orbital debris generated by their operations.<sup>449</sup> Several commenters agreed with our observation in the *Notice* that debris issues are not unique to satellites operating at 2 GHz, and suggested that any debris mitigation

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<sup>441</sup> *Id.* at 43-44.

<sup>442</sup> ICO Reply at 24-25; Inmarsat Reply at 13.

<sup>443</sup> ICO Reply at 24-25.

<sup>444</sup> Inmarsat Reply at 13.

<sup>445</sup> *DISCO II Order*, 12 FCC Rcd at 24158 ¶ 149, 24162-63 ¶ 159, 24168-69 ¶ 173.

<sup>446</sup> *Notice*, 14 FCC Rcd at 4887-88 ¶¶ 97-102.

<sup>447</sup> *Id.* at 4887-88 ¶¶ 98-100 & 4901-03 (Draft U.S. Government/Industry Orbital Debris Mitigation Practices).

<sup>448</sup> *Id.* at 4888 ¶ 100.

<sup>449</sup> TMI Comments at 11; Boeing Comments at 40-41.

requirements should be addressed in a separate proceeding concerning all commercial communications satellites.<sup>450</sup>

137. The DoD, through the Office of the Assistant Secretary of Defense, Command, Control, Communications, and Intelligence, filed comments stating its concern with “what may appear to be a desire to make mandatory all aspects of the DoD/NASA voluntary debris mitigation standards,” especially that portion involving disposal of spacecraft at the end-of-life.<sup>451</sup> DoD offered several specific comments to aid the Commission in determining “what aspects of the voluntary guidelines are mature for consideration as regulations.”<sup>452</sup> DoD emphasized that the NASA/DoD guidelines are voluntary, and must be analyzed in individual cases in light of impact on mission objectives and cost.<sup>453</sup> DoD observes that “[t]he current state of knowledge on orbital debris does not support a regulation requiring the mandatory deorbit or deboost of satellites.”<sup>454</sup> DoD noted, however, that “requiring documentation of debris mitigation design strategies and end-of-life plans may not be unreasonable.”<sup>455</sup>

138. Currently, the FCC addresses concerns regarding orbital debris and satellite systems on a case-by-case basis, typically in response to concerns raised by potentially affected third parties. Any such concerns are analyzed under the general “public interest, convenience, and necessity,” standard in the Communications Act. Based on the comments received, and giving particular weight to the expertise of DoD on this matter, at this time we will continue to address orbital debris concerns for all systems, including 2 GHz MSS, on a case-by-case basis. In order to ensure an adequate opportunity for comment by potentially affected entities, however, parties to our 2 GHz MSS processing round must submit a narrative statement describing the debris mitigation design and operational strategies, if any, that they will use. System proponents must include this narrative statement in the amendments to applications or LOIs to be filed no later than 30 days after a summary of this *Report and Order* is published in the Federal Register. Applicants are specifically required to submit a casualty risk assessment if planned post-mission disposal involves atmospheric re-entry of the spacecraft. In preparing such exhibits, parties may find helpful the NASA/DoD guidelines and the ITU Recommendation concerning end-of-life maneuvers by geostationary satellites.<sup>456</sup> We intend to commence a rulemaking proceeding proposing to adopt filing requirements for all FCC-licensed satellite services. In addition, the rulemaking will explore other orbital debris mitigation issues, including selection of safe flight profiles and operational configurations, and post-mission disposal practices.

## 8. Exclusionary Arrangements

139. In the *Notice*, we sought comment on our proposal to apply to 2 GHz MSS our rule applicable to other satellite services prohibiting exclusionary arrangements for traffic between the United States and foreign countries.<sup>457</sup> As explained in the *Notice*, exclusionary arrangements are arrangements that offer a particular satellite system as the only permissible facility through which to obtain a particular

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<sup>450</sup> See e.g., PanAmSat Comments at 7.

<sup>451</sup> DoD Comments at 1.

<sup>452</sup> *Id.*

<sup>453</sup> *Id.*

<sup>454</sup> *Id.*

<sup>455</sup> *Id.*

<sup>456</sup> Recommendation ITU-R S.1003.

<sup>457</sup> *Notice*, 14 FCC Rcd at 4889 ¶ 103.

satellite service between the United States and another country.<sup>458</sup> We reiterated in the *Notice* that it is our policy to prohibit exclusionary arrangements in other satellite services to facilitate competition.<sup>459</sup> We also explained that prior to the DISCO II decision, the Commission applied this prohibition to U.S. licensees and that the *DISCO II Order* extended this policy to non-U.S. systems.<sup>460</sup> Under this policy, if a provider (U.S. or non-U.S.) has an exclusionary arrangement, we will not authorize service by the provider between the United States and the country with which the provider has such an exclusionary arrangement.<sup>461</sup>

140. Congress has recently enacted a statutory bar to exclusionary arrangements in the ORBIT Act.<sup>462</sup> Because there is now a statutory prohibition against such arrangements, we do not believe that it is necessary to adopt our proposal to apply to 2 GHz MSS our rule applicable to other satellite services. Therefore, we do not adopt our proposal on exclusionary arrangements. We note, however, that there are additional statutory requirements for intergovernmental satellite organizations and their affiliates with respect to exclusionary arrangements that we will evaluate in the licensing and spectrum reservation phase of this proceeding.<sup>463</sup>

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<sup>458</sup> Exclusionary arrangements, as defined in our rules, can take the form of concessions, contracts, understandings, or working arrangements, to which a licensee or any persons or companies controlling or controlled by the licensee are parties.

<sup>459</sup> 47 C.F.R. § 25.142 (d) (Non-voice, non-geostationary MSS prohibition of certain agreements); 47 C.F.R. § 25.143 (h) (Big LEOs prohibition of certain agreements); 47 C.F.R. § 25.145 (e) (Ka-band prohibition of certain agreements).

<sup>460</sup> *DISCO II Order*, 12 FCC Rcd at 24166 ¶ 166. A policy that prohibits exclusive agreements promotes the goal of fair and effective competition and is consistent with the WTO commitments made by the United States because it is applied equally to U.S. and non-U.S.-licensed systems. *DISCO II Order*, 12 FCC Rcd at 24165-66 ¶¶ 166-167.

<sup>461</sup> As stated in the *Notice* and the *DISCO II Order*, we recognize that certain countries may not yet have mechanisms in place by which to authorize competitive systems. In these cases, consistent with the *DISCO II Order*, we will allow non-U.S.-licensed systems to access the U.S. market but will prohibit service between the U.S. and the country with which it has the exclusionary arrangement.

<sup>462</sup> ORBIT Act at Section 648. Section 648 of the ORBIT Act states as follows:

- (a) IN GENERAL.—No satellite operator shall acquire or enjoy the exclusive right of handling telecommunications to or from the United States, its territories or possessions, and any other country or territory by reason of any concession, contract, understanding, or working arrangement to which the satellite operator or any persons or companies controlling or controlled by the operator are parties.
- (b) EXCEPTIONS.—In enforcing the provisions of this section, the Commission—
  - (1) shall not require the termination of existing satellite telecommunications services under contract with, or tariff commitment to, such satellite operator; but
  - (2) may require the termination of new services only to the country that has provided the exclusive right to handle telecommunications, if the Commission determines the public interest, convenience, and necessity so requires.

<sup>463</sup> ORBIT Act, Section 624 (1) creating specific additional licensing criteria with respect to Inmarsat privatization with respect to ties between Inmarsat and ICO, including a prohibition on exclusive arrangements.

#### D. Mobile Earth Station Licensing

141. Even though the 2 GHz MSS ground segment proposals are unique in their design, they all are comprised of three principal elements: mobile earth stations operating in the 2 GHz MSS frequency bands, fixed earth “gateway” stations operating in the feeder link frequency bands, and TT&C earth stations operating in either the feeder link or other space frequency bands. Furthermore, the proposed 2 GHz MSS systems’ ground segments are analogous in their functionality to Big LEO systems’ ground segments. Recognizing these common aspects of MSS ground segment design in the Notice, we proposed to amend the existing Big LEO licensing procedure and rules for the mobile earth stations to include the 2 GHz MSS systems and to license 2 GHz gateways and TT&C stations as fixed-satellite earth stations under Part 25.<sup>464</sup> In addition, we sought comment on whether, in conjunction with the GMPCS certification procedure, we need to adopt new requirements beyond those already proposed or applicable for the operations of the 2 GHz mobile earth terminals, such as position determination, out-of-band emissions, transponder’s operational frequency range or radiation hazard standard.

142. The commenters generally support our proposal to extend the Big LEO earth station licensing procedure to the 2 GHz MSS systems.<sup>465</sup> Under these procedures, each 2 GHz MSS service provider will be required to obtain blanket licenses to cover multiple user transceiver units.<sup>466</sup> Because of the similarity of services offered by Big LEOs and 2 GHz MSS systems, and because these procedures have been proven to ensure safe and secure communications for the public and other licensees while reducing the regulatory burden, we adopt these rules as proposed in the *Notice*.

143. Several parties support the application of the GMPCS certification procedure for 2 GHz MSS Mobile Earth Terminals (MET) and associated additional requirements.<sup>467</sup> Other commenters assert that in order to promote free cross-border circulation of METs, the Commission should adopt even more stringent technical standards that are consistent with the international standards.<sup>468</sup> Conversely, TMI points out that global circulation is not required for systems that will provide only regional service. Therefore, TMI argues, the Commission should not mandate GMPCS certification as part of the 2 GHz MSS service rules.<sup>469</sup>

144. Although the current interim FCC certification process for GMPCS equipment is voluntary, it may become an essential part of the Commission’s blanket licensing process for mobile earth stations. We currently are conducting a rulemaking to integrate the GMPCS certification into our existing regulatory framework.<sup>470</sup> We expect this rulemaking to finalize the technical requirements and procedures associated with the GMPCS certification. We, therefore, defer consideration of GMPCS requirements for the 2 GHz mobile earth stations pending completion of the *GMPCS Proceeding*, and plan to address the comments filed on the issue of GMPCS certification in the *GMPCS Proceeding*.

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<sup>464</sup> See *Notice*, 14 FCC Rcd at 4889-90 ¶ 104.

<sup>465</sup> See *Constellation Comments* at 29; *TMI Comments* at 11.

<sup>466</sup> 47 C.F.R. § 25.115(d). This authorization would include authority for operation of transceivers owned by both Government and non-Government customers.

<sup>467</sup> See *Constellation Comments* at 29; *Inmarsat Comments* at 17; *Iridium Comments* at 47-48.

<sup>468</sup> See *Constellation Comments* at 29; *Globalstar Comments* at 48-50; *ICO Comments* at 22-23.

<sup>469</sup> See *TMI Comments* at 11.

<sup>470</sup> See *GMPCS Notice*, 14 FCC Rcd 5871.

## E. International Coordination

145. As we stated in the *Notice*, all proposed 2 GHz MSS systems require some degree of international coordination. In this regard, we sought comment on the policies we should adopt for international coordination of the U.S.-licensed 2 GHz MSS systems. We also sought comment on the coordination policies that we should adopt toward the non-U.S. licensed systems that we may authorize to operate in the United States in accordance with *DISCO II Order*.<sup>471</sup> Lastly, recognizing the public benefit of ensuring compatibility between varying 2 GHz MSS spectrum band plans around the world, we asked for comment on our spectrum sharing proposals.

146. The 2 GHz MSS applicants urge the Commission to ensure that U.S.-licensed 2 GHz MSS systems are not denied access to provide service in other countries due to inability to coordinate spectrum with non-U.S. systems or incompatibility of spectrum band plans. There is no clear consensus on what these measures should be. Some applicants argue that access to U.S. spectrum by non-U.S. licensed systems should be conditioned on cooperation in international spectrum coordination.<sup>472</sup> Others state that the Commission should work to encourage other administrations to follow the U.S. band plan and to ensure that U.S. licensed systems are provided the means (*i.e.*, spectrum) to access foreign markets.<sup>473</sup> The European Community (EC) and ICO argue that conditioning access to U.S. spectrum on completion of international coordination would delay or deny entry to non-U.S. licensed systems, and strongly oppose any such proposals.<sup>474</sup> ICO also notes that to require other countries to accept the U.S. spectrum sharing arrangement would be in violation of the U.S. commitments under the WTO Basic Telecom Agreement.<sup>475</sup>

147. In responding to assertions that non-U.S. licensed operators should be required to facilitate international spectrum coordination, we rely on the ITU coordination procedure. All 2 GHz MSS systems are subject to the ITU coordination procedure. This procedure assures that worldwide coordination is accomplished in a manner that requires both the administration proposing the system and the administration that is affected by the proposed system's frequency use to cooperate in resolving any coordination difficulties. We expect all administrations, and administrations representing the interests of the non-U.S. licensed 2 GHz MSS systems in particular, to collaborate in the coordination of the U.S. licensed systems in accordance with the procedure prescribed by the ITU. We have no reason to believe that other administrations will act in bad faith. We, therefore, conclude that it is neither necessary nor appropriate to condition non-U.S. licensed systems' access to U.S. spectrum on cooperation in international coordination process. We do, however, require all operators to meet their international coordination obligations defined by the ITU Radio Regulations (ITU RR). We also retain discretion to address any unfair gaming of the U.S. spectrum reservation process.

148. In accordance with ITU RR, the U.S. administration will effect coordination for the U.S.-licensed 2 GHz MSS systems with other administrations under the provisions of ITU RR, Article S9. Before the frequency assignments for the U.S. licensed satellite network can be recorded in the Master International Frequency Register, a coordination agreement must be reached with each administration identified in accordance with Article S9. In the past, our policy has been that completion

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<sup>471</sup> See *DISCO II Order*, 12 FCC Rcd at 24173 ¶ 185.

<sup>472</sup> MCHI Comments at 19; Boeing Reply at 17-18.

<sup>473</sup> Iridium Comments at 48-51 & Reply at 7-8; Globalstar Comments at 48; MCHI Comments at 19-21.

<sup>474</sup> EC Reply at 3-4; ICO Reply at 27.

<sup>475</sup> ICO Reply at 27.

of international coordination is not a prerequisite for licensing, launching and operating MSS systems.<sup>476</sup> We note, however, until completion of the international coordination, the U.S. licensed systems have no protection from interference caused by radio stations authorized by other administrations.<sup>477</sup> We find no reason to deviate from this policy. Furthermore, we intend to follow the coordination procedure prescribed by the ITU and will work with the global community to promote mobile satellite services through the development of sharing techniques and the exploration of other technical issues.

149. We recognize the concern expressed by commenters that other administrations may deny U.S. licensed systems access to provide service on its territory subject to completion of international coordination with existing or planned space networks, in most cases other 2 GHz MSS systems. A coordination agreement that allows an operator to provide 2 GHz MSS service to another country on an exclusive basis, particularly given the limited amount of available spectrum, would appear to be contrary to the goal of maximizing competition. We, however, believe that there is no demonstrated need for the Commission to adopt rules to address this concern. Instead we will address any such concerns on a case-by-case basis. In the event a satellite operator in this processing round is prevented from providing service to another country because the administration of that country requires as a prerequisite completion of coordination and this operator has been unable to complete coordination due to unresolved concerns raised by another participant in this 2 GHz MSS processing round, we would examine such situation in light of our rules and policies prohibiting exclusionary arrangements.<sup>478</sup>

150. We also decline to require as a condition of reserving spectrum that other administrations adopt the U.S. 2 GHz MSS band plan. It is not clear at present that operating constraints developed to accommodate 2 GHz MSS service in the United States will be effective in other jurisdictions, particularly given the regional differences in 2 GHz MSS allocations and incumbent users. At this time, we find no requirement to take special measures with regard to the Pan-European 2 GHz spectrum-use plan adopted in 1997.<sup>479</sup> The ERC Decision designates 2 GHz MSS spectrum for systems that will enter service by January 1, 2001. Based on developments since the *Notice*, however, it appears unlikely that any MSS system will commence operations in 2 GHz spectrum prior to January 1, 2001, and, therefore, the current ERC Decision is of limited applicability.

## F. Interservice Sharing

### 1. Sharing in 1990-2025 MHz and 2165-2200 MHz bands (In-band sharing)

151. In the *Notice*, we recognized that 2 GHz MSS systems would be required to share the 1990-2025 MHz and 2165-2200 MHz bands with existing services. In this regard we noted that in the *2 GHz MSS Allocation Order*, the Commission found that incumbents affected by new 2 GHz MSS systems would be treated in accordance with our *Emerging Technologies* policy.<sup>480</sup> In particular, the Commission concluded that MSS and BAS could not share spectrum without unacceptable mutual

<sup>476</sup> See *Big LEO Report & Order*, 9 FCC Rcd at 6018 ¶ 211.

<sup>477</sup> 47 C.F.R. § 25.111.

<sup>478</sup> 47 C.F.R. § 25.143(h) and *DISCO II Order*.

<sup>479</sup> See Conference of European Postal And Telecommunications Administrations: European Radiocommunications Committee Decision on the Harmonized Use of Spectrum for Satellite Personal Communication Services (S-PCS) operating within the bands 1610-1626.5 MHz, 2483.5-2500 MHz, 1980-2010 MHz, and 2170-2200 MHz, ERC/DEC/(97/03) ("ERC Decision").

<sup>480</sup> See *2 GHz MSS Allocation Order*, 12 FCC Rcd at 7406 ¶ 42 (citing *Emerging Technologies Proceeding*).

interference. The Commission, therefore, determined that it is necessary to relocate BAS in order to accommodate MSS in the 1990-2025 MHz band. The Commission also concluded that it would provide for MSS sharing with, and any necessary relocation of, FS. The Commission decided that MSS cannot begin operations in the 2165-2200 MHz band until that spectrum is cleared of all FS licensees who would receive harmful interference from MSS licensees, but that MSS licensees will not be required to relocate any FS incumbent with whom they can successfully share spectrum.<sup>481</sup> In the *2 GHz Second R&O and Second MO&O*, the Commission specified that 2 GHz MSS ability to share with the FS in the 2165-2200 MHz band must be analyzed in accordance with the Telecommunications Industry Association's Technical Service Bulletin 86 (TSB-86). TSB-86 provides technical methodologies and criteria for assessing MSS/FS sharing.

152. In the *Notice*, we suggested that it was not necessary to adopt additional rules or policies to address sharing between 2 GHz MSS systems and other services in the 1990-2025 MHz and 2165-2200 MHz frequency bands. It was our view that the policies the Commission adopted in the *2 GHz MSS Allocation Proceeding* should adequately address all aspects of the 2 GHz MSS in-band sharing.<sup>482</sup> The commenters agree with our proposed approach. American Petroleum Institute (API) specifically requests the Commission to ensure that the band plan it adopts does not frustrate or limit relocation rights of FS incumbents.<sup>483</sup> Others, however, urge the Commission to take into account relocation and sharing issues in adopting a final 2 GHz MSS band arrangement so as to ensure that the band arrangement is competitively neutral and does not favor certain operators in the band.<sup>484</sup>

153. Recently the Commission adopted the *2 GHz Second R&O and Second MO&O* in which we finalized the rules and policies that govern the sharing with or relocation of incumbent services in the 2 GHz MSS bands.<sup>485</sup> These rules and policies establish comprehensive in-band sharing and/or relocation criteria and form the basis of the band arrangement we adopt in this *Order*. We find that the commenters have not raised any new issues that were not addressed by the *2 GHz MSS Allocation proceeding*. We, therefore, affirm our tentative conclusion in the *Notice* that there is no need to adopt additional rules to address in-band sharing issues between incumbent services and MSS in this proceeding.

## 2. Adjacent Band Sharing

154. As with any radio transmitting device, the 2 GHz MSS systems' transmitters are expected to emit certain amount of power outside of their assigned frequency band. These "out-of-band" or "unwanted" emissions may cause interference to services operating in adjacent frequency bands. For this reason, in the *Notice*, we noted the general unwanted emissions limits for satellite space and earth stations specified in the Commission's Rules,<sup>486</sup> but sought comment on whether these limits are sufficient to eliminate the potential for interference between 2 GHz MSS and existing services in adjacent bands.<sup>487</sup> We specifically noted that in the 2025-2110 MHz band, the U.S. Government operates

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<sup>481</sup> *Id.* at 7406-07 ¶¶ 42-43.

<sup>482</sup> *See Notice*, 14 FCC Rcd at 4892 ¶ 113.

<sup>483</sup> *See API Reply* at 7.

<sup>484</sup> *See Iridium Comments* at 52-53; *MCHI Comments* at 23.

<sup>485</sup> *2 GHz Second R&O and Second MO&O*, FCC 00-233.

<sup>486</sup> *See* 47 C.F.R. § 25.202(f).

<sup>487</sup> *See Notice*, 14 FCC Rcd at 4892 ¶ 114.

high power Earth-to-space transmitters that may cause unwanted emission interference to 2 GHz MSS service uplinks in the 1990-2025 MHz band. We also noted that in the 2200-2290 MHz band, the U.S. Government operates high gain space-to-Earth receivers that may be susceptible to out-of-band emissions interference from 2 GHz MSS service downlinks in the 2165-2200 MHz. We sought comment on whether any additional 2 GHz MSS service rules are needed to mitigate these potential interference issues. Furthermore, in response to comments from Wireless Communications Association International, Inc. (WCA) regarding the potential for interference to 2 GHz MSS service downlinks from Multipoint Distribution Service (MDS) operations in the 2150-2165 MHz band, we asked commenters to assess this adjacent band sharing situation. Lastly, noting NTIA's petition for the need to protect the reception of aeronautical radionavigation signals in the 1559-1605 MHz band from MSS terminals operating in the 1610-1660.5 MHz band, we proposed to extend the same requirement to 2 GHz MSS terminals.<sup>488</sup>

155. Most commenters favor the application of the existing out-of-band emission limits specified in Section 25.202(f) to all 2 GHz MSS systems and the adoption of additional requirements for the protection of aeronautical radionavigation service.<sup>489</sup> NTIA expresses concern regarding the potential for out-of-band interference into Government operations in the 2200-2290 MHz band from MSS downlink transmissions in the 2165-2200 MHz band.<sup>490</sup> NTIA states that interference to adjacent band Government space systems must be taken into consideration when the Commission adopts power limits and out-of-band emission limits for the 2 GHz MSS systems. NTIA further notes that 2 GHz MSS systems design should account for extensive government operations in the 2025-2110 MHz band that is immediately adjacent to the 1990-2025 MHz MSS uplink band.<sup>491</sup> Boeing notes that out-of-band emissions interference with U.S. Government users in the 2025-2110 MHz and 2200-2290 MHz bands cannot be solved by guardbands due to the scarcity of spectrum, but will require close cooperation and coordination.<sup>492</sup>

156. We note NTIA's concerns regarding potential for adjacent band interference between the Government space operations and 2 GHz MSS systems. We also recognize that the potential for adjacent band interference is highly dependent on systems design and that all proposed 2 GHz systems designs are unique. Thus, we are concerned that adopting a general requirement to address this issue may not be sufficient but is likely to unnecessarily restrict the implementation of MSS systems.

157. Recently, we initiated a proceeding to establish appropriate limits on unwanted emissions from satellite networks.<sup>493</sup> In that proceeding, we intend to address the technical and regulatory aspects of unwanted emissions and, if necessary, revise relevant Commission's rules. Until completion of satellite network unwanted emissions proceeding, however, we rely on a presumption that 2 GHz MSS and Government operators are motivated to cooperate on the resolution of adjacent band interference issues on a system-by-system basis. We expect all 2 GHz MSS operators to account for existing Government's space operations in the adjacent bands and emphasize that, in addition to the Commission's technical and service rules, each 2 GHz MSS authorization will be subject to other public

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<sup>488</sup> In response to petition from NTIA, we proposed in the *GMPCS Notice* to impose certain limits on out-of-band emissions from MSS terminals transmitting in the L-band in order to protect aircraft reception of aeronautical radionavigation signal in the 1559-1605 MHz band. See *GMPCS Notice*, 14 FCC Rcd at 5896-97 ¶¶ 61-62.

<sup>489</sup> See ARINC Comments at 7; Boeing Comments at 38; ICO Reply at 7-8; Iridium Comments at 53.

<sup>490</sup> See NTIA Comments at 20.

<sup>491</sup> See *id.* at 23.

<sup>492</sup> See Boeing Comments at 38-39.

<sup>493</sup> See FCC Proceeding RM-9740.

interest requirements. For these reasons, we find that adopting additional restrictions on 2 GHz MSS emissions in order to facilitate spectrum sharing with Government operations in the 2025-2110 MHz and 2200-2290 MHz bands is unwarranted at this time.

158. WCA reiterates its concern that 2 GHz MSS operators may deploy interference-prone receivers that may suffer out-of-band interference from Multipoint Distribution Service operations in the 2150-2162 MHz band. WCA urges the Commission to clarify that 2 GHz MSS systems are required to accept unwanted emissions interference from current and future MDS operations that comply with the Commission's MDS spectral mask and EIRP limitations. WCA also suggests that 2 GHz MSS satellite systems be required to limit their power flux density (pfd) levels at the earth's surface to  $-190$  dBW/m<sup>2</sup>/Hz. WCA explains that the Commission adopted this limit to protect MDS response station hubs from co-channel interference. In response, Globalstar and Inmarsat advocate that WCA's recommendations lack the necessary technical justification and, therefore, should be rejected.

159. On the issue of interference to 2 GHz MSS downlinks from MDS facilities operating in the 2150-2162 MHz band, first we accept WCA's assertion that there is nothing in the record to suggest that the Commission's prior conclusion with respect to Big LEO downlinks is not transferable to 2165-2200 MHz downlinks.<sup>494</sup> We also note that for the case of MSS spread spectrum systems this conclusion was operationally validated when Globalstar initiated provision of commercial MSS service in the 2483.5-2500 MHz band without reported instances of interference from MDS operations. We, therefore, do not expect 2 GHz MSS systems to experience interference from the out-of-band emissions of MDS operations. Nonetheless, we clarify for the record that we expect the 2 GHz MSS receivers to be designed to accept levels of unwanted emissions interference from MDS that are specified in our rules.<sup>495</sup>

160. With regard to WCA's recommendation to limit MSS power flux density at the earth's surface, we note that the  $-190$  dBW/m<sup>2</sup>/Hz level at station hub receivers was deemed acceptable interference only from neighboring, co-channel transmitting MDS stations.<sup>496</sup> Furthermore, in case of adjacent channel interference, the protection level was set at  $-151$  dBW/m<sup>2</sup>/Hz, with a 20 dB reduction in either case when the interference signal is cross-polarized.<sup>497</sup> We agree with commenters that WCA's explanation of why this specific, in-service sharing criteria should be extrapolated to space-based transmitters operating in the entirely different frequency band lacks the necessary technical basis.<sup>498</sup> Moreover, as discussed above, operational experience to date demonstrates that adjacent frequency band operations of MSS and MDS are feasible under current Commission's rules.<sup>499</sup> We, therefore, find no requirement to adopt additional rules in this regard.

161. Commenters are divided as to the requirements the Commission should adopt to protect aeronautical radionavigation satellite (ARNS) service in the 1559-1610 MHz band from out-of-band emissions of 2 GHz MSS terminal transmissions in the 1990-2025 MHz band. ARINC and Iridium support the out-of-band ARNS service protection limits proposed in the *Notice*.<sup>500</sup> NTIA supports the

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<sup>494</sup> See WCA Comments at 5.

<sup>495</sup> See 47 C.F.R. §§ 21.904, 21.908 for definition of MDS spectral mask.

<sup>496</sup> See *Amendment of Parts 21 and 74 to Enable Multipoint Distribution Service and Instructional Television Fixed Service Licensees to Engage in Fixed Two-Way Transmissions*, MM Docket No. 97-217, Report and Order, 13 FCC Rcd 19112, 19138 ¶ 49 (1998).

<sup>497</sup> *Id.*

<sup>498</sup> See WCA Comments at 8-9.

<sup>499</sup> See 47 C.F.R. §§ 21.904, 21.908, 35.202(f).

<sup>500</sup> See ARINC Comments at 7; Iridium Comments at 53.

Commission's proposal for a wide band equivalent isotropically radiated power (EIRP) limit of -70 dBW/MHz and a narrow band EIRP limit of -80 dBW in the 1559-1610 MHz band but rejects the proposed limit of -70 dBW/MHz at 1605 MHz and -10 dBW/MHz at 1610 MHz with the levels in between determined by linear interpolation. NTIA argues that because it is less challenging for the 2 GHz MSS systems to suppress emissions in the 1559-1610 MHz band than for the L-band systems, the 2 GHz systems should be held to a higher standard.<sup>501</sup> Furthermore, NTIA recommends that in order to facilitate GMPCS certification, the Commission should harmonize the 2 GHz MSS out-of-band emission standards with established international standards. Based on adopted international standards, NTIA recommends that the Commission adopt a wide band limit of -70 dBW/MHz and a narrow band EIRP limit of -80 dBW in the 1559-1625 MHz band for MSS terminals operating in the 1990-2025 MHz band. NTIA also argues that for 2 GHz MSS terminals employing TDMA technology, the proposed out-of-band emission limits averaged over a 20 msec time interval are inadequate to protect FAA's GPS augmentation system such as the Wide Area Augmentation System (WAAS). The 20 msec time interval proposed in the *Notice* is based on the 50 bit per second data rate of the GPS navigation message. The WAAS has a much higher data rate than GPS, with a much shorter symbol duration of 2 msec. As a result of the shorter symbol duration, WAAS systems are more vulnerable to disruption by long duration pulsed signals. To provide protection for these augmentation systems, NTIA recommends that the unwanted emissions of MSS terminals employing TDMA technology should be averaged over a time interval of duration that is equal in length to the transmission time slot and not 20 msec as proposed in the *Notice*.<sup>502</sup> Furthermore, noting that at any one time the majority of MSS terminals will be in the carrier-off state, NTIA recommends that the Commission account for the cumulative power effect and, consistent with international standards, adopt carrier-off limits for the 2 GHz MSS terminals that are 10 dB lower than the proposed carrier-on limits.

162. Globalstar and ICO support NTIA's recommendation to adopt out-of-band emission limits in the 1559-1626.5 MHz band of -70 dBW/MHz for broadband signals consistent with established international standards, but disagree with the proposed -80 dBW narrow band limit.<sup>503</sup> Globalstar and ICO explain that, contrary to NTIA's assertion, the narrow band limit is not part of international standards and is unnecessary. Inmarsat questions NTIA's assertions given that there are no ARNS operations above 1610 MHz.<sup>504</sup>

163. On the issue of protection of aeronautical radionavigation operations from 2 GHz MSS out-of-band emissions, we recognize the support and interest expressed by the commenters. In the *Notice* and in the *GMPCS Proceeding*, with respect to suppression of unwanted emissions to protect aeronautical radionavigation, we stated our intent to adopt requirements for 2 GHz MSS that are analogous to the L Band MSS requirements.<sup>505</sup> In doing so, the Commission recognized that the *GMPCS Proceeding* would establish guiding principles for the protection of aeronautical radionavigation from MSS out-of-band emissions. At this time, however, we have not completed consideration of the issues in that proceeding. We, therefore, will address the comments and resolve the issues concerning protection for aeronautical radionavigation in the 1559-1610 MHz band from 2 GHz MSS mobile earth terminals

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<sup>501</sup> See NTIA Comments at 10. TDMA systems divide the radio frequency spectrum into time slots in which at any one time only one terminal can transmit.

<sup>502</sup> See *id.* at 12.

<sup>503</sup> See Globalstar Reply at 24-25; ICO Reply at 26.

<sup>504</sup> See Inmarsat Reply at 15.

<sup>505</sup> See *Notice*, 14 FCC Rcd at 4893-94 ¶ 116; *GMPCS Notice*, 14 FCC Rcd at 5906-07 ¶¶ 94-96.

(METs) in the *GMPCS Proceeding*. In this regard, we emphasize that the 2 GHz MSS METs will be subject to applicable rules and policies the Commission will adopt in the *GMPCS Proceeding*.

#### IV. CONCLUSION

164. This *Report and Order* opens the way for rapid deployment of 2 GHz mobile satellite services in the United States by establishing service and technical rules based on the public interest. We have devised an innovative methodology for authorizing spectrum that provides incentives for system operators to initiate service as quickly as possible, and promote development of regional and global communications to unserved communities in the United States, while providing enough certainty to encourage investment in the proposed systems. We apply the system service rules equally to U.S.-licensed and non-U.S.-licensed systems, with strict milestones for implementing service to ensure that spectrum is not warehoused. Our adopted band arrangement is flexible enough to accommodate the divergent satellite and radio communications technologies envisioned by the 2 GHz MSS system proponents without preferring one technology or service over another. We anticipate that these MSS systems, once authorized, will provide competitive voice and data services, and in some cases, additional seamless world-wide capacity, for MSS providers and terrestrial systems.

#### V. PROCEDURAL MATTERS

165. *Final Regulatory Flexibility Analysis*. The Final Regulatory Flexibility Analysis for this *Report and Order*, pursuant to the Regulatory Flexibility Act, 5 U.S.C. § 604, is contained in Appendix B.

166. *Final Paperwork Reduction Act Analysis*. The requirements adopted in this Rulemaking have been analyzed with respect to the Paperwork Reduction Act of 1995 (the "1995 Act") and found to impose new or modified information collection requirements on the public. Implementation of any new or modified requirements will be subject to approval by the Office of Management and Budget ("OMB") as prescribed by the 1995 Act's emergency processing provisions. OMB approval is requested to be granted no later than 30 days from the date of publication of this Rulemaking in the Federal Register. The Commission, as part of its continuing effort to reduce paperwork burdens, invites the general public to comment on the information collections contained in this *Report and Order*, as required by the Act 1995. Public comments are due 21 days from date of publication of this *Report and Order* in the Federal Register. Comments should address: (a) whether the proposed collection of information is necessary for the proper performance of the functions of the Commission, including whether the information shall have practical utility; (b) the accuracy of the Commission's burden estimates; (c) ways to enhance the quality, utility, and clarity of the information collected; and (d) ways to minimize the burden of the collection of information on the respondents, including the use of automated collection techniques or other forms of information technology.

167. Written comments by the public on the new or modified information collection requirements are due 21 days after publication of this Rulemaking in the Federal Register. Comments on the information collections contained herein should be submitted to Judy Boley, Federal Communications Commission, 445 Twelfth Street, S.W., Room 1-C804, Washington, D.C. 20554, or over the Internet to [jboley@fcc.gov](mailto:jboley@fcc.gov) and to Edward C. Springer, OMB Desk Officer, Room 10236 NEOB, 725 17th Street, N.W., Washington, DC 20503 or via the Internet to [edward.springer@omb.eop.gov](mailto:edward.springer@omb.eop.gov). For additional information on the information collection requirements, contact Judy Boley at (202) 418-0214 or via the Internet at the above address.

168. For further information concerning this proceeding, contact Chris Murphy at (202) 418-2373/cmurphy@fcc.gov, Howard Griboff at (202) 418-0657/hgriboff@fcc.gov, or Alex Roytblat at (202) 418-7501/aroytbla@fcc.gov, International Bureau, Federal Communications Commission, Washington, DC 20554.

## VI. ORDERING CLAUSES

169. IT IS ORDERED that, pursuant to Sections 4(i), 7, 302, 303(c), 303(e), 303(f) and 303(r) of the Communications Act of 1934, as amended, 47 U.S.C. Section 154(i), 157, 302, 303(c), 303(e), 303(f) and 303(r), this *Report and Order* IS ADOPTED and that Part 25 of the Commission's Rules IS AMENDED, as specified in Appendix C, effective 30 days after publication in the Federal Register, except that amendments to §§ 25.143(b)(1), (e)(1)(iii), and (e)(3) SHALL become effective upon approval by the Office of Management and Budget.

170. IT IS FURTHER ORDERED that the applicants and LOI filers will be required to file conforming amendments and all necessary fees no later than 30 days after a summary of this *Report and Order* is published in the Federal Register for continued consideration in this processing round.

171. IT IS FURTHER ORDERED that the Regulatory Flexibility Analysis, as required by Section 604 of the Regulatory Flexibility Act and as set forth in Appendix B, IS ADOPTED.

172. IT IS FURTHER ORDERED that the Commission's Consumer Information Bureau, Reference Information Center, SHALL SEND a copy of this *Report and Order*, including the Final Regulatory Flexibility Analysis, to the Chief Counsel for Advocacy of the Small Business Administration.

FEDERAL COMMUNICATIONS COMMISSION



**Magalie Roman Salas**  
Secretary