

Submission: **SR02-14**

**Offshore Special Regulations – 3.29.1(p)**

AIS to Share Masthead VHF Antenna

A submission from the US Sailing

Purpose or Objective

The current rule implies that it is possible to have both a VHF and an AIS antenna mounted at the masthead. It isn't.

The current rule doesn't require any minimum level of AIS antenna performance or maximum coax loss, so there is a perverse incentive to have non-functional AIS antennas and coax.

This proposal addresses both problems.

Proposal

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| m) A class A AIS  | MoMu0   |
| n) An AIS Transponder   | MoMu1,2 |
| o) An AIS Transponder is recommended  | MoMu3   |
| p) <del>An AIS antenna shall be mounted on top of the main mast</del>   |         |
| p) <b><u>The AIS Transponder shall share the masthead VHF antenna via a low loss AIS antenna splitter. An acceptable alternative is a dedicated AIS antenna that is a minimum of 0.9 meters long, mounted with its base at least 3 meters above the water, and fed with coax that has a maximum 40% power loss.</u></b> |         |
| MoMu0,1,2   |         |

Current Position

As Above

Reason

- The ISAF OSR's currently require the AIS antenna to be on the masthead. This requirement makes sense in order to maximize the range at which AIS PLB's, transmitting from water level, can be received. AIS PLB's are rapidly becoming recognized as one of the most practical ways of locating a MOB.
  - Our rules additionally require the VHF radio antenna to be at the masthead. 3.29.1 b)ii
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- Antennas in the same frequency band should be spaced at least one wavelength apart, which at VHF/AIS frequencies is about 1 meter. So mounting two antennas on the masthead, one for VHF and one for AIS, isn't practical.
  - Increasing numbers of events are requiring AIS transponders to actively transmit while racing. It is expected that this requirement will become more prevalent with time. In order for the required use of AIS to have an even-handed effect on the competition, it is necessary to require that the AIS antenna and the coax feeding the antenna have consistent performance across the fleet. This will avoid the perverse incentive that would otherwise be in effect for competitors to have very lossy coax feeding tiny antennas for their AIS transponders, in order to minimize the range at which they can be tracked by competitors.
  - Requiring the AIS transponder to share the existing masthead antenna via a low loss AIS antenna splitter solves both problems, because we already have rules describing the maximum loss of the coax feeding the VHF antenna, and another submission covers minimum performance for the VHF antenna.
  - Low loss AIS antenna splitters are widely available. Most of these splitters are capable of 12.5 watts on the AIS input so they are capable of handling class A AIS transponders in addition to class B transponders. These splitters, of course, handle 25 watts on the VHF input.
  - Note that if a commercial vessel that has a GMDSS/SOLAS requirement to carry an AIS A transponder, enters a race, they may not be able to use an antenna splitter under the regulations. The alternative installation of a dedicated AIS antenna with its base at least 3 meters above the water is provided to address this and provide an alternative for those who choose to not use a splitter. The minimum length specification for the antenna eliminates the "3dB" spec which is not defined, a minimum mounting height is specified, and reusing the maximum coax loss spec here eliminates the possible loophole of using lossy coax. This installation will provide shorter receive range to an AIS/PLB transmitting at water level than will the masthead installation, but the AIS functionality for all other purposes will be fine.
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