

Chapter 352-67 WAC
VESSEL SOUND LEVEL MEASUREMENT PROCEDURES

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WAC

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WAC 352-67-010 Purpose. The purpose of these rules is to adopt vessel sound level measurement procedures. These rules are adopted pursuant to chapter 88.12 RCW Regulation of motor boats, under authority of chapter 88.12 RCW and RCW 43.51.400. These test procedures are based on SAE recommended practices SAE J1970, Shoreline Sound Level Measurements Procedure, and SAE J2005, Stationary Sound Level Measurement Procedures for Pleasure Motorboat, and are obtained from and printed with the permission of the Society of Automotive Engineers Inc., 400 Commonwealth Drive, Warrendale, PA 15096-0001.

[Statutory Authority: RCW 43.51.400. WSR 93-21-014, § 352-67-010, filed 10/11/93, effective 11/11/93.]

WAC 352-67-020 Definitions. As used in this chapter, unless the context clearly indicates otherwise:

"dB" means the sound pressure level in decibels measured using the "A" weighting network on a sound level meter.

"Commission" means the state parks and recreation commission.

"Muffler" or "muffler system" means a sound suppression device or system, including an underwater exhaust system, designed and installed to abate the sound of exhaust gases emitted from an internal combustion engine and that prevents excessive or unusual noise.

"Operate" means to steer, direct, or otherwise have physical control of a vessel that is underway.

"Operator" means an individual who steers, directs, or otherwise has physical control of a vessel that is underway or exercises actual authority to control the person at the helm.

"Owner" means a person who has a lawful right to possession of a vessel by purchase, exchange, gift, lease, inheritance, or legal action whether or not the vessel is subject to a security interest.

"Sound level meter" means a device which measures sound pressure levels and conforms to Type 1 or Type 2 as specified in the American National Standards Institute (ANSI), Specifications for Sound Level Meters, S1.4-1983.

"Vessel" includes every description of watercraft on the water, other than a seaplane, used or capable of being used as a means of transportation on the water. However, it does not include inner tubes, air mattresses, and small rafts or flotation devices or toys customarily used by swimmers.

"Waters of the state" means any waters within the territorial limits of Washington state.

[Statutory Authority: RCW 43.51.400. WSR 93-21-014, § 352-67-020, filed 10/11/93, effective 11/11/93.]

WAC 352-67-030 Instrumentation. (1) A sound level meter which meets Type 1 or Type 2 specifications shall be used.

(2) A microphone windscreen that does not affect the overall reading by more than ± 0.5 dB shall be used.

(3) A sound level calibrator shall be used to calibrate the sound level meter. Proper acoustical calibration shall comprise the complete measurement system including extension cables, etc. Field calibration shall be performed immediately before and after each test sequence.

[Statutory Authority: RCW 43.51.400. WSR 93-21-014, § 352-67-030, filed 10/11/93, effective 11/11/93.]

WAC 352-67-040 General requirements. The following general requirements shall be followed when conducting sound level measurement procedures:

(1) The measurements shall be conducted only by persons qualified by training to perform these procedures.

(2) Proper use of all test instrumentation is essential to obtain valid measurements. Operating manuals or other literature furnished by the instrument manufacturer should be consulted for both recommended operation of the instrument, and precautions to be observed.

(3) A measurement shall be invalid if changes in the background sound level affect the applicable reading.

[Statutory Authority: RCW 43.51.400. WSR 93-21-014, § 352-67-040, filed 10/11/93, effective 11/11/93.]

WAC 352-67-050 Specific requirements. (1) A person who is qualified to conduct sound level measurement procedures may use either the shoreline sound level measurement procedure, or the stationary sound level measurement procedure, or both.

(2) The shoreline sound level measurement procedure shall be performed as follows:

(a) A suitable measurement site is the shore of a body of water, or dock projecting out from the shore into the body of water, or a raft, or a vessel moored to a dock, or anchored so that the sound level meter or microphone is not more than six meters (twenty feet) from shore. If the measurement is made from a dock, the dock shall be of open construction so that it presents a minimum of reflecting surfaces. The area around the microphone and vessel being measured shall be free of large obstructions or reflective surfaces including but not limited to buildings, high embankments, sea walls, hills, large piers, or breakwaters, for a minimum distance of thirty meters (one hundred feet).

(b) The applicable reading does not require that the vessel subject to the procedure be at any specific distance from the shoreline or microphone.

(c) This measurement procedure shall not be used during the time period of thirty seconds following engine start up and/or preceding engine shutdown.

(d) The microphone shall be placed 1.2 meters to 1.5 meters (four feet to five feet) above the water, and no less than 0.6 meter (two feet) above the curve of the shore, dock, or platform. If on a dock or platform, the microphone shall be placed near or beyond the end of the dock or platform. If the measurement is made from a vessel, the micro-

phone shall be held at a height of not less than 0.6 meter (two feet) above the surface of the water. A suitable vessel for this purpose is of open hull construction.

(e) The meter shall be set for slow response and the A-weighting network on the sound level meter.

(f) The observer reading the meter shall not be closer than arm's length from the microphone. Only one other person may be within fifteen meters (fifty feet) of the microphone when measuring from the dock or shoreline, and that person shall be directly behind the observer reading the sound level meter.

(g) The applicable reading shall be the highest sound level measured during a period when the background sound level is at least ten dB lower than the maximum allowable sound level. Background sound level includes wind effects, noise from boats other than the one being measured, wave action, boat wakes, and other extraneous noises. Readings due to hull slaps which create intermittent sound levels shall be disregarded.

(h) The observer shall record the applicable reading and the background sound levels taken immediately before and immediately after applicable reading.

(i) When sound level readings are taken from inside a vessel, three dB shall be subtracted from the reading to better correlate with shoreline readings.

(3) The stationary sound level measurement procedure shall be performed as follows:

(a) A suitable measurement site is a body of water free of large obstructions or reflective surfaces including but not limited to buildings, vessels other than those involved in the procedure, large embankments, or breakwaters, for a minimum distance of eight meters (twenty-five feet) from the vessel being measured. The vessel being tested shall either be moored to a dock or lashed to another vessel. If moored to a dock, the dock shall be of open construction so that it presents a minimum of reflecting surfaces. If the measurement is made in open water, the vessel being measured shall be lashed to the measurement vessel to prevent relative motion and to allow positioning of the microphone in the prescribed location. The measurement vessel shall be positioned to minimize reflected sound.

(b) The engine or motor of the vessel being evaluated shall be operated at low idle speed within the engine manufacturer's recommended operating range, in neutral gear if so equipped. For vessels without a neutral gear, the engine or motor shall be operated at its lowest operational speed. The engine or motor shall be operated for a sufficient amount of time to allow water to flow through the exhaust system before taking measurements.

(c) The microphone shall be placed at a distance of 1.2 meters to 1.5 meters (four feet to five feet) above the water and no closer than one meter (3.3 feet) from the vertical projection of any part of the vessel in the area adjacent to the exhaust outlet(s).

(d) The meter shall be set for slow response and the A-weighting network.

(e) The observer reading the meter shall not be closer than arm's length from the microphone to minimize sound reflections.

(f) The applicable reading shall be the average sound level measured during a period when the background sound level is at least ten dB lower than the measured sound level. Background sound level includes wind effects, noise from vessels other than the one being measured, wave action, vessel wakes, and other extraneous noises. Peak

readings of intermittent sound levels created by wave slaps or changes in sound level due to wave action and/or engine or motor speed variation shall not be included in the applicable reading.

(g) The observer shall record the applicable reading and the background sound levels taken immediately before and immediately after the applicable reading.

[Statutory Authority: RCW 43.51.400. WSR 93-21-014, § 352-67-050, filed 10/11/93, effective 11/11/93.]