

# Recreation Tech Tips

United States Department of Agriculture  
Forest Service



Technology &  
Development Program

May 1992

2300

9223 1303-SDTDC

## PLEASURE BOAT NOISE TEST PROCEDURES

*William J. Makel, Project Leader; Robin T. Harrison, P.E., Program Leader*



### INTRODUCTION

Recreation managers, boaters, other forest users and marine equipment manufacturers have been concerned about excessive watercraft noise for a number of years. Excessive noise from boats interferes with the enjoyment of other watercraft and shoreline users and has led to efforts to totally ban power boats and personal watercraft from some lakes and rivers.

To help manage this noise problem, the Society of Automotive Engineers (SAE) developed a Recommended Practice (SAE J34-Apr 77) for measuring boat noise. This was designed to provide manufacturers of marine equipment with a test procedure to measure the maximum sound levels of boats and motors. The Recommended Practice establishes a test procedure for measuring the exterior sound levels of pleasure boats under controlled conditions. It measures total boat noise (engine, hull, pump, etc.) but is expensive to set up, and requires professional drivers.

About 20 states have set maximum boat noise emission standards measured by SAE J34-Apr 77. The procedure is effective when used for the purpose it was intended – an engineering development test method. It is not suitable for enforcement of noise control regulations in the field since it requires a course set-up, is difficult to administer, and has potential safety and liability problems.

SAE J34-Apr 77 has been revised to improve the accuracy and repeatability of sound level measurements. The revision, SAE J34a, will also change the measuring distance to harmonize U.S. practice with international standards. However, the contemplated revised procedure will still not be suitable for field enforcement.

Recreation managers need safe, easy-to-apply procedures to regulate boat noise. They must be able to identify boats that are being operated in a manner so as to produce excessive noise or that have been

**TD**

**For additional information contact:** The Project Leader for Recreation Noise Studies, which is part of the Aviation Program, San Dimas Technology & Development Center, 444 East Bonita Ave., San Dimas, CA 91773. Phone: 714-599-1267; FTS: 700-793-8000; FAX: 714-592-2309; DG-SDTC: WO7A

modified in a manner that creates excessive noise. SAE has developed two new procedures to assist in this effort. SAE J2005-Dec 91 is designed as a guide for governmental agencies to enforce the requirement for effective exhaust muffling. SAE J1970-Dec 91 is designed to measure the sound level of individual pleasure boats at the shoreline of recreational boating areas.

SAE only develops test methods. They do not recommend or set sound levels. The National Association of State Boating Law Administrators (NASBLA) has recommended maximum sound levels for these test methods.

### **SAE J2005-Dec 91**

Exhaust noise has been a major source of boat noise complaints. This Recommended Practice defines a method to measure exhaust noise from boats. It is designed as an enforcement tool suitable to administer under field conditions.

Since the boat is tested at the dock in a stationary condition, no course is necessary and it can be performed with a minimum delay to the user. It enables regulatory agencies to set and measure exhaust noise requirements which can identify poorly maintained, inappropriate, or inappropriately modified exhaust systems.

### **SAE J1970-Dec 91**

A majority of boat noise complaints originate from people who are engaged in other activities on the shore. This Recommended Practice defines a test procedure to accurately measure pleasure boat operation noise at the shoreline. How loud a boat sounds is a function of its exhaust system, boat hull, manner of boat operation (e.g., distance from shore, engine speed, and trim angle) and other factors.

This procedure has the advantage of placing the responsibility to control and minimize the noise at shoreline directly with the boat operators. It is designed as an enforcement tool that allows regulatory agencies to set noise standards for the operation of the boat rather than regulating the boat itself. This test procedure is suitable for personal watercraft (jet skis).

### **NASBLA**

NASBLA has drafted a model act regulating motorboat noise levels based on the use of the two field enforcement test procedures. They recommend

that no person be allowed to operate a boat manufactured before 1993 that exceeds a sound level of 90 dBA when subjected to a stationary sound level test as prescribed by SAE J2005-Dec 91. The level drops to 88 dBA for engines manufactured on or after January 1, 1993. They also recommend that no person be allowed to operate a boat in such a manner as to exceed a noise level of 75 dBA measured as specified in SAE J1970-Dec 91.

The recommended sound level for SAE J2005-Dec 91 is suitable for all Forest Service boating areas.<sup>1</sup> The recommended sound level for J1970-Dec 91 is suitable for reservoirs and lakes where there is ample opportunity for boat operators to get sufficiently far from shore to enjoy an appropriate boating experience while not adversely impacting shoreline users.

We recommend that the 75 dBA sound level at shoreline NOT be implemented for rivers. The recommended shoreline sound level may be unduly restrictive for rivers which are narrow and/or on which the operators may not have the latitude to change their operation to comply with these standards. Maximum sound levels at river shorelines should not be set without first conducting a detailed analysis which includes but is not limited to:

1. The type of powerboat use which is deemed appropriate by the river management plan
2. The river characteristics (e.g., width, depth, speed, seasonal fluctuations, rapids, etc.)
3. Variations in sensitivity to the noise along the shoreline (e.g., campgrounds, residences, trail, etc.)
4. The type of motorboat operation required to provide the experience the user desires
5. Boat requirements related to the appropriate desired experience (e.g., jets vs. propellers, minimum horsepower, etc.).

The maximum shoreline sound level set on rivers should be able to exclude the excessively noisy boats while still allowing boaters the opportunity to experience appropriate boating activities.

<sup>1</sup> These sound levels are only guidelines which cannot be enforced until laws or regulations are enacted by the appropriate law enforcement agencies.

NASBLA recognizes that rivers may require special treatment and is currently investigating the unique situation on rivers. We will keep you informed of any new developments regarding shoreline sound level limits for rivers.

## SOURCES

Copies of SAE J34a, SAE J2005-Dec 91, and SAE J1970-Dec 91 can be obtained at a cost of \$17.00 each from:

SAE  
Customer Service  
400 Commonwealth Drive  
Warrendale, PA 15096-0001  
(412) 776-4970

Copies of NASBLA model act for motorboat noise can be obtained from:

Ted Woolley  
Boating Coordinator  
Utah State Parks  
1636 West North Temple  
Salt Lake City, UT 84116

---

*The Forest Service, U.S. Department of Agriculture has developed this information for the guidance of its employees, its contractors, and its cooperating Federal and State agencies, and is not responsible for the interpretation or use of this information by anyone except its*

**TD**

*own employees. The use of trade, firm, or corporation names in this publication is for the information and convenience of the reader and does not constitute an endorsement by the U. S. Department of Agriculture of any product or service to the exclusion of others that may be suitable.*

