

vehicles from SNI's Alpha Launch Complex (ALC) and smaller supersonic and subsonic missiles and targets from either ALC or the Building 807 Launch Site (Building 807). Launches at this annual level would be approximately double the recent activities at SNI. The NAWCWD conducted a total of 19 launches (including one dual launch) between August 15, 2001 and July 18, 2002 (14 Vandal launches and 5 other missiles and targets) under an IHA.

The purpose of these launches is to support activities associated with operations on the NAWCWD's Point Mugu Sea Range. The Sea Range is used by the U.S. and Allied military services to test and evaluate sea, land, and air weapon systems; to provide realistic training opportunities; and to maintain operational readiness of these forces. Some of the SNI launches are used for practicing defensive drills against the types of weapons simulated by these vehicles. Some launches may be conducted for the related purpose of testing new types of targets to verify that they are suitable for use as operational targets. While SNI is under the land management responsibility of NAWS, planned missile and other target launches are conducted by the NAWCWD. A detailed description of the operations is contained in the NAWS application (NAWS, 2002) which is available upon request (*see ADDRESSES*).

Measurement of Airborne Sound Levels

The following section is provided to facilitate understanding of airborne and impulsive noise characteristics. In its application, NAWS has referenced both pressure and energy measurements for sound levels. For pressure, the sound pressure level (SPL) is described in terms of decibels (dB) re micro-Pascal (micro-Pa), and for energy, the sound exposure level (SEL) is described in terms of dB re micro-Pa²-second. In other words, SEL is the squared instantaneous sound pressure over a specified time interval, where the sound pressure is averaged over 5 percent to 95 percent of the duration of the sound (in this case, one second).

Airborne noise measurements are usually expressed relative to a reference pressure of 20 micro-Pa. Also, airborne sounds are often expressed as broadband A-weighted (dBA) or C-weighted (dBC) sound levels. A-weighting refers to frequency-dependent weighting factors applied to sound in accordance with the sensitivity of the human ear to different frequencies. With A-weighting, sound energy at frequencies below 1 kHz and above 6 kHz is de-emphasized and approximates the human ear's response to sounds

below 55 dB. C-weighting corresponds to the relative response to the human ear to sound levels above 85 dB. C-weight scaling is useful for analyses of sounds having predominantly low-frequency sounds, such as sonic booms.

While it is unknown whether the pinniped ear responds similarly to the human ear, a study by C. Malme (pers. commun. to NMFS, March 5, 1998) found that for predicting noise effects, the Navy believes that A-weighting is better than unweighted pressure levels because the pinniped's highest in-air hearing sensitivity is at higher frequencies than that of humans. In this document, whenever possible sound levels have been provided with A-weighting.

Description of the Specified Activity

In general, launch vehicles are the Vandal and a variety of other supersonic and subsonic missiles and targets. Most other vehicles used would be similar in size and weight or slightly smaller and would have characteristics similar to the Vandal. NAWS has also requested that its incidental take authorization include coverage for up to three launches annually by vehicles that are larger than the Vandal (but under 50,000 lbs (23,000 kilograms (kg)) in weight). Potential impacts to pinnipeds by launch vehicles of that size are unanalyzed and must be assessed before NMFS can issue an authorization to take pinnipeds incidentally to that activity. Any proposed modification of these regulations to include these larger launch vehicle activities would be published in the **Federal Register** with opportunity for public comment.

Vandal Target Missiles

The Vandal (designated MQM-8G) target missile is a relatively large, air-breathing (ramjet) vehicle with no explosive warhead that is designed to provide a realistic simulation of the mid-course and terminal phase of a supersonic anti-ship cruise missile. These missiles are 7.7 m (25.2 ft) in length with a mass at launch of 3,674 kg (8,100 lbs) including the solid propellant booster. There are variants of the Vandal; they all have the same dimensions, but differ in their operational range. The Vandals are remotely controlled, non-recoverable missiles. At launch, the Vandal is accelerated for several seconds by a solid propellant rocket booster to a speed sufficient for the ram-jet engine to start. After several seconds of thrust, the booster is discarded, falls into the water of the Sea Range, and the Vandal continues along its flight path at supersonic speed under ramjet power.

The Vandal and most other targets are launched from the ALC on the west-central part of SNI, a land-based launch site. The ALC is 192 m (630 ft) above sea level and is approximately 2 kilometers (km)(1.25 miles (mi)) from the nearest pinniped haul-out site. Launch trajectories from ALC may vary from a near-vertical liftoff, crossing the west end of SNI at an altitude of approximately 3,962 m (13,000 ft) to a nearly horizontal liftoff, crossing the west end of SNI at an altitude of approximately 305 m (1,000 ft). However, to date, most Vandal launches during NAWS first IHA monitoring program had low angles (8 degrees) crossing the SNI beaches at an altitude of about 1,300 ft (396 m)(Lawson, 2002). Four Vandals however, had high angle (42 degrees) profiles, crossing SNI beaches at an altitude of about 9,600 ft (2,926 ft)(Lawson, 2002).

Vandal launches produce strong noise levels. Sound measurements collected during two Vandal launches in 1997 and 1999 indicated received A-weighted SPLs ranged from 123 dB (re 20 micro-Pa) (SEL of 126 dB re 20 micro-Pa²-sec) at 945 m (3,100 ft) to 136 dB (re μ 20 Pa) (SEL of 131 dB re 20 micro-Pa²-sec) at 370 m (1,215 ft) (Burgess and Greene, 1998; Greene, 1999). The most intense sounds occurred during the first 0.4 to 4.1 seconds after launch (Greene, 1999; Greene and Malme, 2002). However, what is important for this action is not the noise level near the launch site but the noise level over the pinniped haulouts on the SNI beaches. This issue will be discussed later in this document.

Supersonic and Subsonic Targets and Other Missiles

The Navy also plans to launch other subsonic and supersonic vehicles to simulate various types of threat missiles and aircraft. These are small unmanned aircraft that are launched using jet-assisted take-off (JATO) rocket bottles. Once launched, they continue offshore where they are used in training exercises to simulate various types of subsonic threat missiles and aircraft. The larger target, BQM-34, is 7 m (23 ft) long and has a mass of approximately 1,134 kg (2,500 lbs) plus the JATO bottle. The smaller BQM-74, is 420 centimeters (cm) (165.5 inches (in)) long and has a mass of approximately 250 kg (550 lbs) plus the JATO bottle. Additional types of small vehicles that may be launched include the Exocet and Tomahawk missiles, and the Rolling Airframe Missile (RAM).

All of these smaller targets are launched from either the ALC or from Building 807. Building 807 is approximately 10 m (30 ft) above sea