THALES

↘ AMAS acoustic sweeps are clip-on sweeps requiring no external power source.

THALES AUSTRALIA

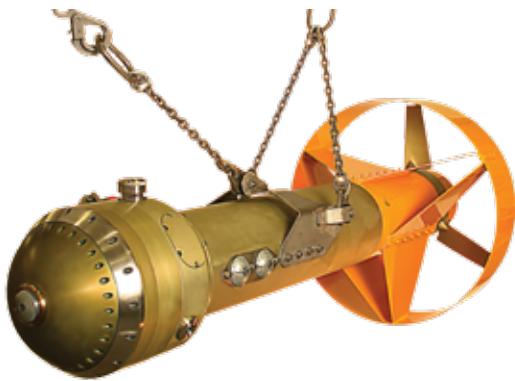# AMAS ACOUSTIC SWEEPS

Pipe Noise Maker (PNM)
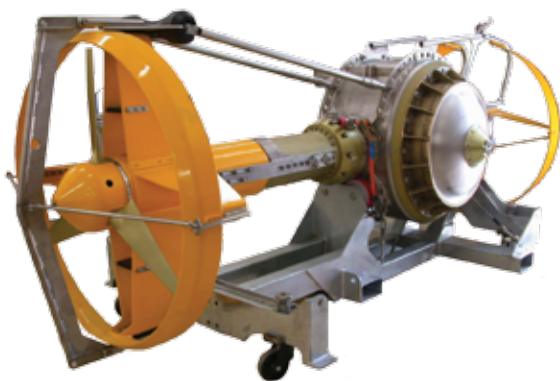
PIPE NOISE MAKER	
Weight	60 kg
Acoustic coverage	Infrasonic through ultrasonic
Material	Steel
Optimum tow speed	6 - 8 knots
Tow load	300 kgf at 8 knots

Advanced Acoustic Generator (AAG)

AAG	
Length	2056 mm nominal
Turbine shroud diameter	750 mm
Weight	222 kg in air/113 kg in seawater
Broadband frequency range	From < 5 Hz to > 30 kHz
Fundamental frequency range	5 Hz to 107 Hz or 10 Hz to 250 Hz inclusive
Line structure (tonals)	Programmable
Tow load	240 kgf at 8 knots
Frequency roll off	20 to 25dB per frequency decade
Propagation	Omnidirectional

Infrasonic Advanced Acoustic Generator (IAAG)

IAAG	
Length	3700 mm
Turbine shroud diameter	1324 mm
Weight	1210 kg in air/368 kg in seawater
Broadband frequency range	From < 5 Hz to > 30 kHz
Fundamental frequency range	5 Hz to 40 Hz inclusive
Line structure (tonals)	Programmable
Tow load	900 kgf at 8 knots
Frequency roll off	20 to 25dB per frequency decade
Propagation	Omnidirectional

AMAS ACOUSTIC SWEEPS

Clip-on sweeps requiring no external power source

PIPE NOISE MAKER

The baseline acoustic generator supplied with the Dyad Influence Sweep is a four tube Pipe Noise Maker (PNM) able to produce a ship like acoustic coverage from low frequency through the audio frequency to ultrasonic.

The PNM is a water driven, inexpensive, consumable item with an operational life of approximately 75 hours.

PROGRAMMABLE ACOUSTIC GENERATORS

Against modern mines, two types of programmable acoustic generators are available, the AAG and the IAAG. Both these state-of-the-art acoustic generators provide multiple stable line structures, an increased speed range, and programmable output spectrum.

They are water-driven turbine-powered acoustic generators and can be integrated with any sweep system. Optimum spectral structure and spatial relationship is provided by employing two generators in a sweep, one amidships, and one aft to emulate propeller blade rate and hull resonances. A single acoustic generator may be identified as a point source by a modern mine conducting passive ranging.
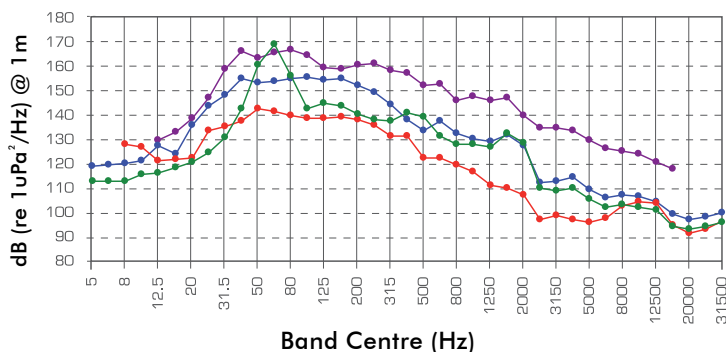
AAG

The AAG produces a ship like, broadband acoustic output from the infrasonic to the ultrasonic, with multiple stable line structure. Algorithms loaded to an onboard processor enable the programming of multiple tonals and the AAG is independent of external sources for either power or control. The system can be readily deployed by a wide range of vessels, including remote control drones.
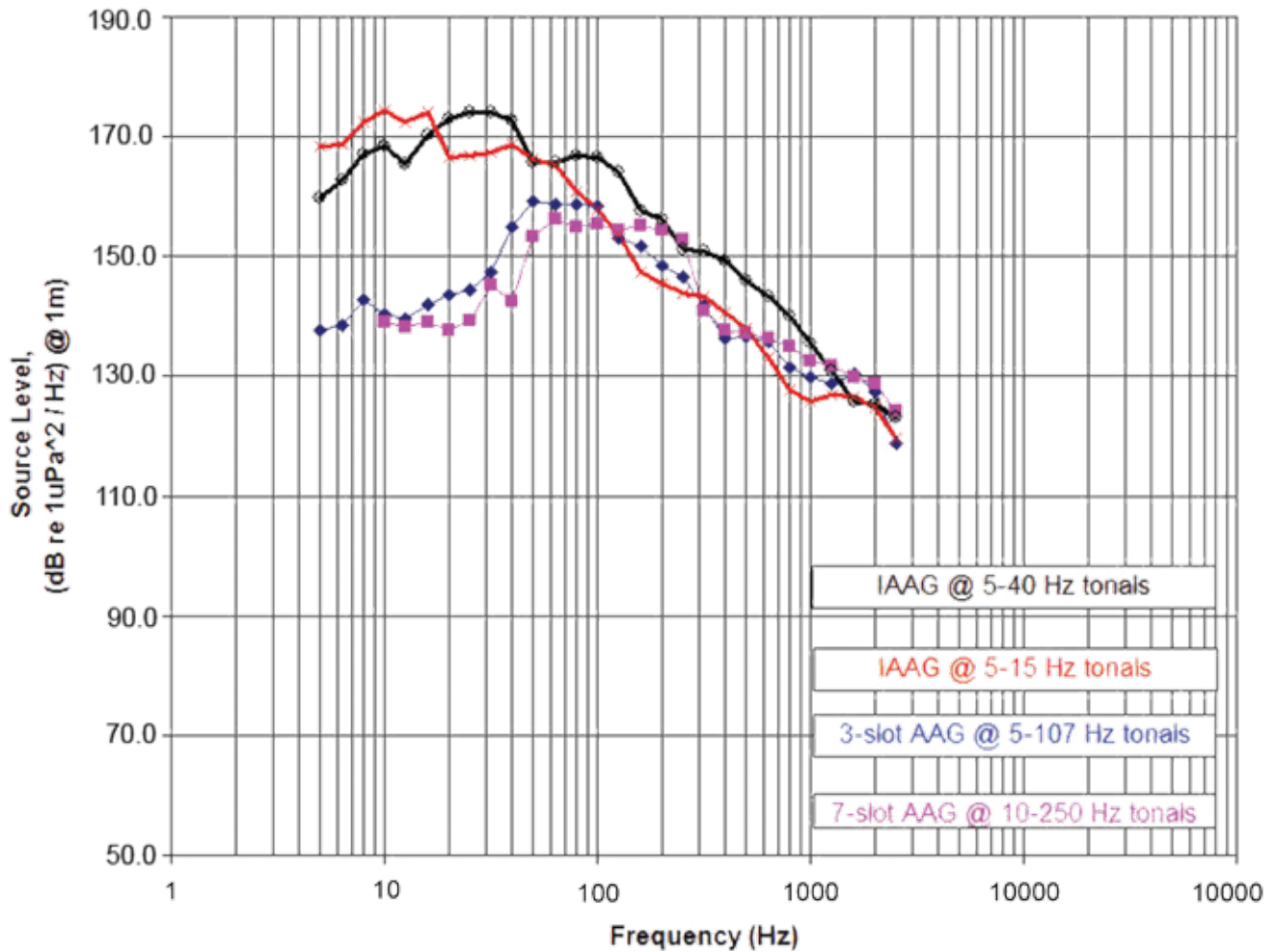
IAAG

While the AAG produces very good warship emulation up to a medium size destroyer and is able to emulate smaller merchant ships below 5 thousand tonnes, there is a capability requirement for sweeping in Mine Setting Mode (MSM) against the large number of existing obsolescent acoustic mines and for sweeping in Target Setting Mode (emulation) for modern mines targeted against large warships and large merchant ships.

The IAAG has two hydraulic vibrator sources (AAG technology) in a back-to-back configuration, driving two acoustic pistons each of 750 mm diameter. The IAAG fundamental frequency range is 5 Hz to 40 Hz producing high SPL at low frequencies, just like large ships.

AAG - recorded third octave spectrum of different programs from a single AAG (Power Spectral Density)

Typical AAG & IAAG signatures simulated using AGMOD II v1.04.01

OUTPUT MANIPULATION OF AAGS & IAAGS

The output control algorithm for a particular mission can be selected and downloaded to the onboard electronics module immediately prior to deployment. Alternatively, previously downloaded algorithms can be selected remotely during the mission through the Sweep Tracker Monitor System (STMS) supplied with each AAG/IAAG sweep. The algorithm determines the energy distribution and resulting spectral shape.

Alternative programs can be loaded during deployment from a RHIB via a programming box and a remote download cable at the surface.

29/11/13. Cover and page 3 image of demolition charge detonating, courtesy of www.navy.mil