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INCORPORATED

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To: The Minerals Management Service & National Marine Fisheries Service

Re: MMS EIS on Seismic Noise

The Pew Oceans Report and the US Commission on Ocean Policy Report agree on the following point: The world's oceans are in peril. The two leading causes of this decline are over fishing and pollution.

There has been a substantial rise in ambient noise from human sources. Acute sound sources have been directly linked to marine mammal deaths. We do not know the level or duration of noise that is capable of causing harm. Until this is understood, we must look for ways to reduce the total quantity of sound (both acute and chronic) that we humans are creating in the seas.

During the nine years that I've been studying this problem, I've looked at many different mitigation ideas. From these, I believe there are simple off the shelf technologies that can be adopted by sound generating organizations that are capable of substantial reductions of both acute and chronic noise. The following are examples intended to stimulate further discussion.

Oil&Gas – Sound sources: Seismic, drilling, production

Most of the continental shelf has now been shot. The data resides in seismic libraries and is for sale. This data can be used to define an area of interest without re-shooting another wide area survey.

VLF Electro Magnetic Pulse (EMP) technology has been developed and tested. It has demonstrated a capability equal to or greater than traditional seismic for 'fine-tuning' a given prospect. EMP technology is quiet and should have zero interaction with living organisms.

Seismic source levels may be reduced as a function of water depth.

Increasing hydrophone sensitivity, quieting amplifiers and increasing the use of digital signal processing techniques may allow for quieter source sounds for a reduced period of time. (A DARPA/Navy collaboration may prove to be extremely helpful in this area).

The discovery of a species specific 'go away' signal may provide substantial positive protection for marine mammals. (This type of mitigation will provide no relief for non-mammalian life).

Thank you for your time,

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