THE HUMANE SOCIETY
OF THE UNITED STATES

October 28, 1999

Mr. J. S. Johnson
Attn: SURTASS LFA Sonar OEIS/EIS Program Manager
901 North Stuart Street, Suite 708
Arlington, VA 22203
FAX: 703/465-8420

Dear Mr. Johnson:

On behalf of the more than seven million members and constituents of The Humane Society of the United States (HSUS), I am submitting these comments on the draft Overseas Environmental Impact Statement and Environmental Impact Statement for SURTASS LFA Sonar (DEIS).

Overall, The HSUS is seriously disappointed in the DEIS. We object to the DEIS' failure to observe the Precautionary Principle, which states that in the face of scientific uncertainty, the benefit of the doubt should be given to the environment and wildlife. The DEIS seems designed solely to reach a conclusion that favors operational deployment of Low Frequency Active (LFA) sonar, a course of action to which the U.S. Navy, contrary to the requirements of the National Environmental Policy Act (NEPA), has already irretrievably committed resources. We object strongly to the superficial compliance with NEPA that this DEIS represents.

The HSUS strongly recommends that the Navy and the National Marine Fisheries Service (NMFS) choose the "no action" alternative and that the Navy continue to explore alternative means to detect "quiet" submarines.

I will present the following comments in two sections. The first section deals with The HSUS' general concerns regarding the DEIS. The second section offers comments specific to the text of the DEIS.

General Comments

THE DEIS' ASSESSMENTS ARE BASED ON INSUFFICIENT DATA

The HSUS has maintained from the outset, when the Navy first proposed to conduct the Low Frequency Sound (LFS) Scientific Research Program (SRP), that whatever data scientists could collect during the one season for which the LFA sonar array was being made available for their use would be *insufficient* to significantly inform the NEPA process. We stated this in numerous communications (see *e.g.,* letter to director of the NMFS from The HSUS, August 18, 1997; letter to Mark Delaplaine of the California Coastal Commission from The HSUS, December 5, 1997; email to Ted Berger *et al.* from The HSUS, March 3, 1998) and at every meeting at which we were present, including the May 1997 meeting convened at the New England Aquarium in Boston to discuss the LFS SRP. It was a foregone conclusion that a few weeks of effort for each phase of the SRP would be inadequate to provide a large enough sample size to make statistically valid extrapolations to marine mammal populations, due to the nature of marine mammals and the difficulties inherent in studying them.

The LFS SRP should have been designed as a multi-year longitudinal study, attempting to follow as many individuals as possible to determine long-term effects of exposure to low frequency sounds. In addition, exposed populations would have to be surveyed across years to determine birth and death rates, as well as population growth rates. While it is commendable that the Navy made the LFA sonar array available to civilian researchers for one season and three phases of work in three different locations, it was not sufficient. Extrapolating a few hours worth of results from a few individuals to entire stocks and populations (let alone species) is poor science. Asserting that observing a few short-term behavioral responses establishes that no significant long-term biological impacts have occurred is poor management.

To our dismay, the Navy has done precisely what we cautioned against. It has drawn sweeping general conclusions based on observations from literally a few handfuls of animals (other than in Phase II, the gray whale study, which had a larger sample size) during a brief moment in their lives. Potential long-term impacts of exposure to the LFS SRP sounds (let alone to the actual LFA sonar sounds, which will be louder) have been ignored.

The HSUS finds it disturbing that government agencies frequently risk over-interpretation of a small data set when the conclusion such over-interpretation reaches is non-precautionary and favors the action the government prefers, while they refuse to risk "over-interpretation" of a small data set when the conclusion reached is highly precautionary and does *not* favor the action the government prefers. An example of the first kind of government analysis is this DEIS. From a very small sample, the Navy has concluded that loud low frequency sounds pose no significant risk to marine mammals (or *any* marine animals), as long as the sound pressure level (SPL) to which they are exposed is less than 180 dB re 1 µPa rms — a received level (RL) that is, as far as The HSUS can determine from the DEIS, an arbitrary number that is not based on any empirical data (see below). The amount of data collected during the SRP phases would not convince any objective scientist that this conclusion, which favors the course of action the Navy prefers, is conservative. In many ways, the data collected do not even address the relevant questions posed by the SRP (see below) and are clearly insufficient to draw population-level conclusions.

An example of the second kind of analysis is the Secretary of Commerce's recent decision to change the definition of the "dolphin-safe" label. The Secretary claimed that the small (but consistent and reinforcing) amount of data available on stress effects in dolphin stocks targeted by the eastern tropical Pacific Ocean tuna purse-seine fishery was insufficient to conclude that the fishery was having a significant adverse impact on these stocks (U.S. Department of Commerce press release, April 29, 1999). Scientists for the NMFS have stated that while data may show stress effects in individual dolphins targeted by the fishery, sample sizes are insufficient to extrapolate these negative effects to entire stocks, and are in fact insufficient to implicate the fishery as the source of stress (for the record, The HSUS feels that the dolphin data, while still preliminary, paint a very convincing picture of stress as a factor in the failure of dolphins to recover in this fishery, while the LFS SRP data, combined with other studies on sound impacts, also paint an increasingly convincing picture, albeit not the one painted by the DEIS — that loud anthropogenic sound *does* have significant adverse impacts on marine mammals).

In short, the NMFS (and the Navy) feels confident in the DEIS' extrapolation (to entire stocks and to entirely different species) of the results from a few individual baleen whales observed in the LFS SRP and in the conclusion that operational deployment of LFA sonar will have no significant biological impact on marine animals, while it simultaneously feels reluctant to extrapolate (to the same stocks) the results from a large number of individual dolphins sampled over several years and studies looking at stress, population recovery, and the possible interactions between the two. The NMFS, as the agency ultimately responsible for issuing small take exemptions and incidental harassment authorizations under the Marine Mammal Protection Act (MMPA) and the Endangered Species Act (ESA) for cetaceans, pinnipeds, and sea turtles, and as a cooperating agency in the preparation of this DEIS (DEIS, p. 1-12), is applying inconsistent burdens of proof to itself in these two unrelated situations and is standing the Precautionary Principle on its head.

THE DEIS OVER-INTERPRETS THE AVAILABLE DATA

Due to the short time period over which the LFS SRP was conducted, researchers were only able to collect limited behavioral data from a small number of animals — less than 10 in some cases. There were few observable behavioral responses from most of these animals, although in some instances, significant deviations from previous behavior were observed (particularly in Phase II, which noted significant deviations around the sound source by inshore migrating gray whales).

In Phase I, blue and fin whales exhibited some vocalization responses to the LFA sound. In Phase II, gray whales deviated around the sound source when it was close to shore (but not when it was further offshore), but continued on their migratory path. In Phase III, some humpback whales temporarily ceased vocalizing and some left the areas immediately adjacent to the sound source. All of these reactions, occurring during the context of feeding, migrating, and breeding respectively, were apparently temporary (or the Navy came up with alternative explanations for their occurrence) and thus were deemed "not biologically significant" by the Navy. In fact, the DEIS states that "all effects of operating the SURTASS LFA sonar would be temporary in nature

and would have no significant adverse long-term impacts on the maintenance and enhancement of long-term biological productivity" (DEIS, p 8-1).

This conclusion is grossly over-stated and in fact contains a number of mis-statements. First, it is unclear from the limited SRP data that *all* effects were "temporary" in nature, since only easily observable behavioral responses were measured (also see below regarding lack of long-term monitoring). The SRP did not measure the occurrence or effect of physiological reactions (*e.g.,* temporary or permanent threshold shift; other soft tissue damage) nor of less easily observed behavioral responses (*e.g.,* changes in reproductive success, foraging efficiency, or reaction time to oncoming vessels). Second, only four species of baleen whales were observed — the SRP results cannot and should not be extrapolated to fish, sea turtles, or other marine mammals.

Third, the SRP did not measure responses to full-scale operation of the LFA sonar. It measured responses to RLs of at most 155-160 dB re 1 μPa rms and as low as 115-125 dB, whereas SPL exposure during actual operation of the LFA sonar is expected to be far higher (up to and including 180 dB, if not higher), with no mitigation by the Navy. Fourth, and most importantly, the SRP did not measure *long-term* impacts. In fact, it discontinued observations within days or even hours of exposure.

As The HSUS has stated from the beginning, the LFS SRP was a good "first step" in adding to the database on the impacts of low frequency sound on marine mammals (particularly baleen whales). But it was a first step only. To use it as a "be-all and end-all" study upon which to base management decisions is not precautionary. To use it to draw sweeping conclusions about long-term impacts and biological significance is unjustified. We did not know enough about the long-term impacts of loud low frequency anthropogenic sound on marine mammals before the SRP and we *still* do not know enough. Perhaps after ten years of conducting annual LFS experiments and conducting long-term monitoring of exposed individuals and populations (including strandings), we might know enough.

THE DEIS SETS AN ARBITRARY STANDARD FOR THE LEVEL OF SOUND THAT WILL HARASS AND INJURE MARINE ANIMALS

The Navy has chosen a 180 dB criterion for the RL that *may* cause "non-serious" injury to an unspecified percentage of exposed marine mammals and "non-injurious" harassment to 95% of exposed marine mammals. The Navy proposes to practice mitigation measures *only* within the 180 dB sound field, virtually ignoring the potential for harassment and injury beyond this radius (or the potential for causing permanent hearing loss or death within this radius).

Worse still, the Navy concludes that RLs equal to or greater than 180 dB (up to some unspecified SPL) *may* cause marine mammals nothing more than "non-serious" injury (*i.e.,* temporary threshold shift [TTS]). And worst of all, the Navy concludes that a marine mammal or sea turtle would have to be nearly "co-located" with the sound source, transmitting sound at levels perhaps as great as 240 dB re 1 μPa at 1 m, to experience "serious" injury (*i.e.,* permanent threshold shift [PTS] or death). These "harm" criteria are not based on MMPA definitions of harassment or injury (see below). They are not conservative (despite their characterization as such by the Navy in the DEIS), not precautionary, and not empirically based.

The HSUS does not feel that it is a coincidence that the 180 dB sound field consists of the space within a 1 km radius of the sound source. One kilometer from the sound source is about the maximum distance a visual observer can accurately identify marine mammals and is also well within the 2 km detection range of the High Frequency Marine Mammal Monitoring (HF/M3) sonar. Coincidentally the alleged 90-95% detection range for the HF/M3 sonar is also 1 km. In short, The HSUS believes that the SPL chosen to delineate the mitigation zone was chosen not because it is an empirically-based "safe" level of sound for marine animals, but because it corresponded to the distance from the sound source that the Navy felt it could reasonably monitor (but see below regarding difficulties in detecting marine animals). The 180 dB sound field also corresponds to a SPL mentioned by experts speculatively discussing high energy seismic survey (HESS) devices as the level above which they shared serious concerns about significant impacts (HESS Review Process, 1996-1999). HESS devices, however, produce pulsed sounds that differ greatly in duration and effect on hearing from LFA sonar sounds (J. Goold, pers. comm.). In short, The HSUS believes the Navy chose the 180 dB criterion because it was convenient.

The SRP at most determined that there was little obvious behavioral impact at a RL of up to 155 dB re 1 μPa rms. No effort was made to measure physiological, less obvious behavioral, or long-term impacts of the SRP transmissions and certainly it remains unknown at what RL baleen whales would exhibit obvious and significant behavioral reactions (such as departure from an ensonified area). Given that supposedly no animal was exposed to sounds louder than 155-160 dB during the SRP, it is possible that obvious behavioral reactions in a significant number of animals, including departure from an area, would be observed at RLs as "low" as 165 or 170 dB. In short, the LFS SRP did not actually address the question relevant to operational deployment of LFA sonar, to wit: Will full-scale operation of LFA sonar cause serious adverse impacts (*e.g.,* displacement or exclusion from important habitat; TTS; PTS; masking of important communication signals or other acoustic signals such as predator noises) to marine animals? The SRP at best addressed (but did not answer definitively) the question: Do certain baleen whales exhibit obvious behavioral responses at RLs of 155 dB or less? The difference between 155 dB and 180 dB is considerable, given the logarithmic decibel scale, and the use of the LFA sonar array during the SRP was not directly comparable to how it will be used during operational deployment.

Given that the SRP did not in fact directly or fully address the question of whether operational use of the LFA sonar would harass or injure marine mammals, the DEIS' selection of the 180 dB criterion for the mitigation zone cannot be and is not based on any empirical data collected during the SRP. The discussion of safe levels above threshold hearing for humans and other animals is not germane to the selection of the 180 dB mitigation threshold, for three primary reasons. One, the threshold hearing level for baleen whales at low frequencies (indeed, at any frequencies) is unknown. Two, comparing human hearing to marine mammal hearing is questionable — the two taxa undoubtedly process sounds differently, with acoustically-oriented marine mammals possessing more sensitive and more complex hearing than visually-oriented humans (if anything, the DEIS implies that this relationship is *reversed*, counter to common sense). Three, in other discussions in the DEIS, the Navy concludes that comparing human hearing to marine mammal hearing is inappropriate, not surprisingly when such comparison does

not favor the conclusion that LFA sonar will not harm marine mammals. In fact, the Navy chooses a significantly lower RL for its harm criterion for humans — 145 dB re 1 µPa rms. The Navy cannot have it both ways — either using human hearing as a basis for discussion of LFA sonar effects on marine mammals is appropriate or it is not appropriate. If it *is* appropriate, as the Navy claims in section 4.2.5.4, then the Navy should set the mitigation threshold for all animals, human and non-human, at a RL of 145 dB, given that hearing thresholds for baleen whales at 100-500 Hz are unknown. In short, the discussion of how 180 dB was selected as the mitigation threshold for marine animals
is not convincing and relies heavily on speculation. Ultimately the selection of this SPL standard is revealed as arbitrary.

The Navy briefly considers the "acoustic reflex" on p. 4.2-29, in an attempt to conclude that baleen whales, who are capable of producing sounds in the range of 180-190 dB re 1 µPa at 1 m, must be able to tolerate such loud noises without injury, since it defies logic that they could be deafened or otherwise harmed by their own vocalizations. However, this conclusion itself lacks logic. It is my understanding that the acoustic reflex operates only with pulsed sounds of brief duration, such as echolocation clicks and explosive noise. The acoustic reflex would decrease in effectiveness with sounds of longer duration (such as the 6-100 second long "pings" of the LFA sonar). Of course, it is entirely speculative whether whales possess this reflex in the first place.

In addition, the DEIS states, "It is unlikely that an auditory system would evolve such that the loud calls produced by an individual would immediately cause a permanent loss of hearing sensitivity" (p. 4.2-29). While this is true, an alternative hypothesis is that whales have the anatomical ability to protect their own hearing against self-generated sound. So the vocalizing whale would not be affected by a 190 dB vocalization, while a listening whale would receive only some fraction of this source level due to attenuation. In short, there is no empirical basis to conclude that 180 dB is a conservative criterion for all marine mammals because some baleen whales are capable of producing 190 dB vocalizations.

THE DEIS RELIES ON ANALYSES AND MODELING THAT ARE BASED ON ASSUMPTIONS THAT THE NAVY HAS NOT AND CANNOT VERIFY

The Navy chose to evaluate the risk posed to wildlife by the LFA sonar with a risk continuum analysis that incorporates an acoustic integration model (AIM). Both the risk analysis and the AIM require assumptions to be made for several key variables — if these assumptions are violated or are not accurate or valid to begin with, then the analysis and model are not valid. Principle assumptions of the risk analysis are the SPL "harm" criteria used, which (as mentioned above) are not based on any empirical data. For instance, determining these criteria required gross speculation on baleen whale hearing thresholds, which are entirely unknown. The DEIS contains no discussion of the probability of these assumed criteria being invalid, thus biasing the analysis' conclusion that marine animals will suffer no significant biological impact through use of LFA sonar.

The HSUS accepts that the risk continuum analysis concept used by the Navy may better reflect reality than choosing a single threshold SPL level as a standard for harm, but we find the continuum standards and parameters to be arbitrary and the standards to start at levels much

higher than warranted by the limited data available. In fact, assuming that only 2.5% of marine mammals will suffer "non-injurious" harassment at a RL of 150 dB re 1 µPa rms is, in our opinion, not supported by the SRP data. At this SPL, a large number of animals (more than 2.5%) responded in ways indicating harassment (*e.g.,* avoiding the sound source, ceasing vocalizations) as defined by the MMPA (see below).

As for the AIM, the model requires the input of a large number of simulated variables relating to large whale behavior, including, *inter alia*, density distribution, dive pattern, and course change, most of which are unknown or unpredictable. While this model may result in the best guesses possible for estimating RLs for free-ranging animals (and was apparently endorsed by expert reviewers for the purposes of determining such estimates), The HSUS finds the model inadequate for management purposes, as opposed to academic application. If cetaceans (or pinnipeds or sea turtles or the environment) act contrary to the assumptions made for the model, the RLs to which animals are exposed may in fact be far higher (or far lower) than the model predicts, thus invalidating the mitigation protocols established by the Navy. In addition, even if the AIM resulted in a generally accurate profile of SPL exposures for animals near the LFA sonar, such information does not translate into accurate conclusions regarding the effect of such exposures. In other words, the risk analysis makes so many additional assumptions about SPLs and "harm" to marine animals that the accuracy or lack thereof of the AIM is hardly relevant.

In addition, the Navy's "single ping equivalent" concept is based on assumptions that have not and cannot be verified. The calculation that 100 pings at 170 dB must be received to cause the same impact as a single ping at 180 dB is entirely speculative — no empirical data were used to establish this relationship. However, this concept allows the Navy to dismiss any potential impacts on marine life extending beyond a 1 km radius surrounding the sound source. This dismissal is convenient, but unsubstantiated.

THE DEIS USES DEFINITIONS OF "NON-INJURIOUS" HARASSMENT, "NON-SERIOUS" INJURY, AND "SERIOUS" INJURY THAT ARE NOT CONSISTENT WITH THE MMPA'S DEFINITIONS OF LEVEL A/LEVEL B HARASSMENT AND SERIOUS INJURY

The Navy uses a category of harassment in its risk analysis that it terms "non-injurious." There is no such category of impact defined in the MMPA. The Navy fails to define "non-injurious" harassment and its indirect references to this term do not directly correspond to the MMPA's definition of Level B or Level A harassment. The DEIS' categories of "non-serious" and "serious" injury also do not correspond to any statutory or regulatory definitions of injury. The Navy seems to consider "non-serious" injury to be temporary threshold shift (TTS). Presumably "serious" injury is permanent threshold shift (PTS) or death. Arguably TTS should be considered a serious injury, as animals experiencing TTS may find themselves vulnerable to predation, ship strike, disorientation (leading to stranding), or missed breeding opportunities during recovery, to name a few possible significant consequences.

The NMFS has yet to define "serious injury" in its regulations; nevertheless, based directly on the DEIS' discussions, the LFA sonar's potential to cause injury at a RL of 180 dB re 1 µPa rms corresponds to Level A harassment at the least and proposed definitions for "serious injury"

(Angliss and DeMaster 1998) at the most. Certainly it has demonstrably caused Level B harassment at RLs well below 180 dB, again based solely on the DEIS' discussions and the results of the SRP. In short, the DEIS fails to relate its discussions to the statutory (or regulatory) definitions altogether. This results in vague, confusing conclusions about which SPLs *may* or *will* cause harassment or injury to marine mammals. It also suggests that the Navy's motivation in creating these novel categories of "harm" is to avoid certain statutory requirements for the small take exemption [§101(a)(5)(A)] or authorization for incidental harassment [§101(a)(D)(i)].

THE DEIS FAILS TO DISCUSS ALTERNATIVE HYPOTHESES FOR BEHAVIORAL RESPONSES OBSERVED DURING THE LFS SRP

The DEIS fails to discuss alternative hypotheses to explain the relatively temporary behavioral responses observed during the SRP phases. One explanation for a failure to observe an obvious avoidance response to a loud noise is that the noise is not harmful. This is the explanation preferred by the Navy and the only one considered in the DEIS. Yet from the beginning of discussions about LFA sonar, involved or consulted scientists have considered an alternative explanation, that the activity in which the animal is engaged is so important that the animal may remain in the vicinity of a disturbing or even harmful noise in order to continue the activity. In other words, an animal may risk harassment or even injury in order to pursue a biologically significant activity. For example, some food sources may be so rich and ephemeral, it becomes more important to the animal to exploit them fully while it can than to avoid a harmful (but not immediately fatal) stimulus in the vicinity of the food source. Certain preliminary results (*e.g.,* Todd *et al.* 1996, regarding humpback whale entanglement rates after being exposed to underwater explosions without exhibiting obvious behavioral reactions) suggest this possibility.

The HSUS finds the DEIS' failure to even consider this alternative hypothesis to be a serious omission. This omission is an element of the DEIS that supports our contention that the Navy sought merely to pay lip service to its legal obligations, while directing the DEIS discussion and conclusions toward inevitable acceptance of its preferred course of action. The DEIS' interpretation and discussion of the research results from the LFS SRP lack objectivity and inclusiveness. Indeed, the DEIS' failure to consider yet another alternative hypothesis, that the sample sizes in Phases I and III were simply too small to detect significant short- (or long-) term reactions, is unacceptable. The possibility that the SRP may have been measuring irrelevant parameters must also be taken into consideration.

THE DEIS EXPRESSES AN OVERLY OPTIMISTIC BELIEF THAT THE NAVY WILL DETECT ALL MARINE ANIMALS WITHIN THE 180 dB SOUND FIELD

All marine mammal field biologists know the difficulty in spotting and following marine mammals. Admittedly the Navy will have access to equipment and technology not always available to researchers, but at least one such tool (the HF/M3 sonar) is untested and itself may prove a hazard to the hearing of dolphins and other marine animals with good hearing in the mid-high frequency range. Interestingly, one of the mitigations for the HF/M3 sonar is a ramp-up period, to avoid exposing any nearby animals to its full intensity immediately and allowing animals to move out of the ensonified zone before the sonar reaches full intensity (up to 220 dB

re 1 μPa at 1 m). Yet for LFA sonar there will be no ramp-up period (a standard mitigation protocol for many loud human-made sound sources, such as the Acoustic Thermometry of Ocean Climate [ATOC] sound source). While understandable from a tactical point of view, it is an obvious omission in the Navy's mitigation protocols for routine use of LFA sonar.

Regardless of the use of the HF/M3 sonar, the Navy's confidence that it will be able to detect all potentially affected marine animals in the 180 dB sound field is unwarranted. It is of note that the Navy has agreed not to operate the LFA sonar within the critical habitat of the North Atlantic right whale, perhaps the most critically endangered large whale species and for which the potential biological removal is less than one whale per year. In other words, apparently the Navy is not completely confident of its ability to detect a right whale within the 180 dB sound field before operating the sonar, making the risk of injuring or even killing one of these animals large enough for the Navy simply to avoid this risk and operate only outside the whale's critical habitat. This added precaution for a species that cannot afford the loss of a single animal suggests strongly that the Navy's confidence that it will be able to detect all endangered marine animals, even large baleen whales (let alone small sea turtles), within 1 km of the sound source is not absolute (despite its presentation as such). The Navy's prediction that few animals will be harassed and even fewer injured "non-seriously" and virtually *none* injured "seriously" is unfounded and biased.

THE DEIS FAILS TO DISCUSS HIGHLY RELEVANT INFORMATION

The HSUS notes that the DEIS fails to discuss particular cetacean strandings that may have been associated with use of low frequency sonar by the U.S. Navy or its NATO allies. The HSUS requested the authors of the DEIS, during an informal scoping period (see email to Joe Johnson from Naomi Rose, July 1998), to attempt to correlate known mass strandings of cetaceans with use of the LFA sonar during its R&D testing phase going back almost ten years. Apparently this effort was never made, although data on the timing, location, and circumstances of many such mass strandings do exist in various databases (see *e.g.,* Mazzuca *et al.* 1999). There has also been a recent series of strandings of beaked whales and pilot whales in the Caribbean, which may have occurred subsequent to Naval maneuvers, that have apparently been under-investigated (Mignucci-Giannoni, pers. comm.).

In addition, despite a specific HSUS request to do so in the same email, the DEIS fails to discuss or even mention the paper by Alexandros Frantzis (1998) regarding a mass stranding of beaked whales (toothed whale species that, along with sperm whales, may be particularly vulnerable to low frequency sounds) in the Mediterranean, an omission that is frankly inexplicable. The potential for low frequency sonars to cause cetaceans to strand clearly exists and was taken seriously by scientists discussing the issue at a SACLANT meeting in Europe in 1997. Therefore, the DEIS should have discussed it and yet did not. This is unacceptable.

In addition, there is no discussion of the results of the ATOC Marine Mammal Research Program (MMRP). This too seems an inexplicable omission, although the fact that some of the results of the California ATOC MMRP indicate that whales avoided the ATOC sound source when it was operating (Calambokidis *et al.* 1998) suggest a motivation for the omission. Also missing is any discussion of other studies that indicate a connection between loud anthropogenic noise and

significant reactions by or impacts on marine mammals (*e.g.,* Rendell and Gordon 1999; Todd *et al.* 1996; Olesiuk *et al.* 1995). While the DEIS devotes some time to discussing hearing, it fails to devote adequate time to discussing the small amount of data available regarding marine mammal reactions to loud anthropogenic noise.

THE DEIS' CONCLUSION THAT LFA SONAR WILL ACCOMPLISH THE NAVY'S TACTICAL GOALS IS QUESTIONABLE

Active sonar has one serious weakness, to which the Navy refers only once, obliquely and briefly. The DEIS states "Passive sonars have the advantage of silence, meaning that they do not emit any sound that an enemy might detect, thus betraying the location of the searching ship or submarine" (DEIS, p. 1-4). The LFA sonar support vessel will betray its location to foreign and enemy submarines with every ping. It cannot move faster than 3 kt when the system is deployed and operating, meaning its ability to perform evasive maneuvers is virtually non-existent. While it will be accompanied by other vessels whose function, *inter alia*, will be to protect it, these other vessels too will have their locations betrayed by LFA sonar. In addition, enemy submarines, while being detected themselves, will also be able to use the LFA pings to detect *U.S.* submarines, if they are within range of the LFA support vessel. In short, The HSUS fails to see how the LFA sonar system will accomplish the stated tactical goal of the Navy, which is to detect quiet submarines at distance *while remaining undetected*. The DEIS' conclusion that this goal can only be realized with LFA sonar, as opposed to the other technologies explored (and perhaps others not yet explored), seems at best questionable and at worst erroneous. The HSUS has requested clarification on several occasions of the seeming discordance with common sense of the LFA sonar's ability to remain undetected and has yet to receive a satisfactory response. The DEIS also fails to supply one.

In addition, The HSUS finds the discussion in Chapter 1 regarding alternatives to LFA sonar for accomplishing the Navy's tactical goals to be unconvincing. Missing is an expanded discussion of other passive sonar possibilities; while current passive sonar may be insufficient to detect quiet submarines, the DEIS fails to consider the possibility of developing more acute devices to filter out ambient noise and isolate submarine noises.

Specific Comments

Executive Summary

p. ES-8: The DEIS states that "animals exposed to RLs up to 155 dB were not seen to respond, or exhibited only temporary behavioral response with no lasting biological significance..." Given the brief period during which observations were conducted, the DEIS is in no position to draw this conclusion from the SRP data. The SRP *did not measure* "lasting biological" impacts. In addition, this statement clarifies that animals were exposed to a maximum RL of only 155 dB. Even if the behavioral parameters measured during the SRP phases were directly reflective of significant biological impacts (which they were not), making the leap that exposure to 180 dB of sound will have no more effect than 155 dB is unjustified on its face.

The DEIS also clarifies that the SRP data on four species of baleen whale were used to model the potential risk for other species. It goes on to state that "This is a critical element of the logic of the LFS SRP." The HSUS finds this logic to be critically flawed. Extrapolating data from a handful of individuals belonging to four baleen whale species to populations of species as diverse as sperm whales, beaked whales, pinnipeds, and sea turtles is not scientifically sound.

p. ES-11: The DEIS lists the fact that the source vessel will always be moving as a mitigating factor. This does not necessarily follow. First, there are positives and negatives associated with both stationary and moving sound sources. For example, a stationary source allows animals to predict the location of the sound and relocate as appropriate; however, it also increases the risk of excluding animals from an area around the source location that may have significant value to the animals. A moving source means the sound will eventually move past and beyond any animals in its path, minimizing exposure; however, it also means that if animals are moving directionally (for example, during a migration), they may find the sound source paralleling their path. Regardless, the positive aspect of a moving source is somewhat negated in the case of LFA sonar, as the source vessel travels at only 3 kt.

p. ES-12: The DEIS states that one of the criteria for determining the biological significance of the risk faced by animals exposed to LFA sonar is "any effect [involving] a significant behavioral change in a biologically important activity." Key elements missing from this statement are *time, resolution,* and *ease of observation*. While the SRP did not measure any "significant" behavioral changes in the short-term, the true measure of impact would be in parameters not measured by the SRP - *e.g.,* birth rates, individual and population growth rates, and mortality rates, which require multi-year observations at the individual and population level. Also, while the SRP measured behavioral responses easily observed by researchers (*e.g.,* movement away from the sound source, cessation of vocalization), it did not measure responses more difficult for researchers to observe, such as changes in foraging efficiency, reaction time to oncoming vessels, or ability to detect obstacles.

The DEIS also states that "*it was believed* that marine mammals exposed to RLs near 140 dB would depart the area" (emphasis added) before the LFS SRP was conducted. This is only partially correct. While some researchers hypothesized that animals would vacate an area, others hypothesized that they would not, if the activity in which they were engaged was important enough. There is evidence in several species, including humans, that sometimes continuing an activity takes precedence over avoidance of an aversive stimulus. The DEIS is inappropriately selective regarding the hypotheses and data that it chooses to discuss and its omission of any discussion of this alternative hypothesis is unacceptable.

pp. ES-18 through ES-19: The discussion of the LFA sonar's effects on fish and sea turtles can be summed up as follows; there is insufficient information to draw any conclusions. Therefore, the conclusion drawn by the DEIS (that LFA sonar will have negligible or no impact on these taxa) is unfounded and speculative.

<u>Chapter 1</u>

Section 1.3.3 establishes that the effects of LFA sonar on marine mammal *could* constitute incidental takings under the MMPA and the ESA. The DEIS should consider (and subsequently use) the statutory and regulatory definitions of harassment and injury; why it does not is unclear.

Chapter 2

p. 2.7: The DEIS indicates that a second LFA support vessel "*is expected to be operational in Fiscal Year (FY) 2000"* (emphasis added). The HSUS finds this a blatant admission of the commitment of irretrievable resources to this system prior to the finalization of the EIS. This is unacceptable. (The construction of this second support vessel is in addition to the vast [and irretrievable] R&D resources already put into the system before preparing this DEIS.)

p. 2-15: The DEIS states that the "operating procedures [of the HF/M3 sonar] have been designed so that the source level would be adjusted to *ensure* that RLs are below the levels that could potentially cause non-serious injury to marine mammals or sea turtles..." (emphasis added). This statement is without meaning, given that SPLs that can potentially cause "non-serious" injury to most marine mammals and all sea turtles are unknown.

p. 2-16: The Navy's rationale for conducting a long-term monitoring program is disingenuous. The Navy states that although no "significant disruption" of marine mammal behavior was observed during the LFS SRP — which was *short-term* — it will nevertheless conduct a long-term monitoring program, to be prudent. However, a long-term monitoring program is *essential*, because short-term reactions may not bear a direct or substantial relationship to potential long-term impacts. The Navy is implying that the short-term behavioral responses observed during the SRP make definitive statements about long-term impacts and the long-term monitoring program is optional and a precautionary gesture on the Navy's part. However, this implication is not supported by evidence, common sense, or scientific objectivity. Long-term monitoring is neither optional nor precautionary — it is essential to measure the actual effects of LFA sonar on marine animals.

Chapter 3

p. 3.2-3: The HSUS finds the Navy's optimism regarding the improbability of any invertebrates being close enough to the LFA support vessel to be able to hear the LFA sounds to be unfounded. In fact, the likelihood of the LFA support vessel detecting a school of squid within the 180 dB sound field (well above the hearing threshold for these animals) is low.

Table 3.2-4: The HSUS notes the following odontocete species produce sounds (and thus can hear, either in theory or confirmed through testing in captivity) within the frequency range of LFA sonar — sperm whales, bottlenose whales, *Mesoplodon* spp., killer whales, pilot whales, Risso's dolphins, common dolphins, rough-toothed dolphins, *Stenella* spp., bottlenose dolphins, *Lagenorhynchus* spp.,*Cephalorhynchus* spp., and Dall's porpoises. Several of these species are deep divers, thus reducing the likelihood of detection through the proposed mitigation protocols. However, none of these animals were included in the SRP, although the researchers attempted to include sperm whales.

pp. 3.2-49 through 3.2-53: The discussion of otariids emphasizes that little is known about several species' hearing capabilities (including endangered and threatened species). The HSUS feels that dismissing all significant discussion of impacts on these species because of their generally coastal distribution is unwarranted.

Table 3.2-6: This table indicates that several phocid species produce sounds and/or can hear within the frequency range of LFA sonar. Elephant seals in particular, because they are pelagic and deep-diving (and cryptic at the surface), may be most at risk from exposure to LFA sonar. While the ATOC MMRP results did not reveal any overt behavioral reactions from elephant seals, it is no more appropriate to over-interpret these results than it is to over-interpret the LFS SRP results.

p. 3.3-11: The HSUS notes that the brief mention of the ATOC project in Chapter 3 fails to mention the extraordinary controversy that originally met its announcement and development.

Chapter 4

p. 4.1-4: In reference to study results that indicate that exposure to high intensity sound has the potential to damage fish ears, the DEIS points out that "[these] results must be interpreted and/or extrapolated to other species with the utmost caution." This is true; however, the subsequent discussions throughout the remainder of the DEIS suggest that the Navy feels this caution only applies when the results of a study do not support the Navy's preferred course of action. The Navy neither interprets nor extrapolates to other species the results of the LFS SRP with the "utmost caution."

Here, as well as in the discussions of the potential impacts on sharks and sea turtles, the DEIS concludes that the likelihood of individuals or groups of these taxa being within the 180 dB sound field (let alone nearly "co-located" with the sound source) is so small as to be negligible. The HSUS fails to see the rationale behind these conclusions. Sharks and sea turtles in particular are small enough to escape detection by the proposed mitigation methods.

p. 4.1-7: The DEIS states that "Due to the wide dispersion for pelagic fish, few individuals would be present in the 1 km...maximum 180 dB (RL) radius." This statement assumes that fish are uniformly distributed in the water column, are not dense in any one area, and will rapidly move beyond the LFA sonar support vessel because they are highly mobile. This is incorrect; fish distribution tends to be clumped and fish can school and mill in one area for considerable periods of time. In fact, while the odds that any one concentration of fish would be within the 180 dB sound field during LFA sonar operation are low, should such a concentration be present, its likelihood of remaining in the vicinity and of going undetected (especially if it is at depth) is relatively high.

p. 4.1-9: The DEIS assumes that, due to "the wide dispersion of pelagic sharks, few individuals would be expected to be within the 1 km...180 dB RL radius." It also seems to assume that any sharks inside the 180 dB sound field will be detected. Finally, it implies that so few individuals have the potential to be affected that shark stocks as a whole cannot be harmed by LFA sonar.

However, sharks appear to be attracted to objects suspended in the water column by cables, such as anchor lines, CTD apparatuses, and presumably the LFA sonar array (which, while not stationary, moves very slowly) (personal observation). Given the slow growth, low fecundity, and long lives of many pelagic sharks, as well as their current status of being over-fished (which includes unsustainable take due to "finning"), it is quite possible that even a relatively small number being affected by LFA sonar could impact a stock. In this case, the Navy must consider cumulative impacts, incorporating all human threats faced by these species. Altogether, the DEIS exhibits unwarranted optimism about its possible impact on sharks.

p. 4.1-9 through 4.1-10: The DEIS states that "based on the best available data, a zone of influence (ZOI) for potential harm to fish (including sharks) has been assumed in this OEIS/EIS to be 180 dB (RL) which is no more than 1 km (0.54 nm) from the SURTASS LFA sonar transmit array." This assumption is not based on the "best available data" — in fact, the previous DEIS discussion on fish hearing (including that of sharks) shows that 180 dB may very well adversely affect the hearing of many species of fish (including some sharks). In this instance, 180 dB is clearly not conservative. The DEIS exhibits reasoning inconsistent with its own discussion of available information when it makes such assumptions.

pp. 4.1-10 through 4.1-12: The entire discussion of impacts on sea turtles is based on virtually no data. To reach the conclusion that the 180 dB sound field is a safe mitigation zone for sea turtles is the epitome of non-precautionary, given the endangered or threatened status of all sea turtle species.

p. 4.2-1: The DEIS states that "The best available evidence [in 1995] indicated that many cetacean species might be 'harassed' at RLs as low as 120 dB. The Navy developed the LFS SRP to test the behavioral responsiveness of three species of cetaceans in conditions that maximized the chances of detecting responses and *evaluating their biological significance*" (emphasis added). Given the brevity of the SRP and its small sample sizes, the biological significance of the responses (or lack thereof) observed is impossible to determine. Caution in interpreting and extrapolating data under these circumstances (brief observation period relative to life span, small sample sizes relative to population size) is standard procedure in science. The DEIS fails to exhibit caution in its analysis.

In addition, it continues to be true that the best available evidence indicates that many baleen whales are "harassed," as defined in the MMPA under Level B harassment, at RLs as low as 120 dB re 1 μPa rms. Level B harassment is defined as "any act of pursuit, torment, or *annoyance"* that has "the potential to *disturb* a marine mammal or marine mammal stock in the wild by causing *disruption* of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering" (emphases added) [§3(18)(A)(ii)]. Gray whales avoid a sound source (and avoided the LFA sonar during Phase II of the SRP) at SPLs of at least 120 dB — this is Level B harassment. RLs as low as 115-125 dB re 1 μPa rms disrupted the vocalizing of male humpbacks targeted in Phase III of the SRP — this is Level B harassment. The HSUS believes that the problem in the Navy's evaluation of the SRP results arises because the Navy created an harassment definition (or term, since the term remained undefined) that is inconsistent with the MMPA's definition of harassment.

p. 4.2-19: As stated earlier, The HSUS finds the DEIS' comparisons of human hearing and marine mammal hearing to be inconsistent. The DEIS states that "the human model is the best objective foundation for an assessment." If this is true, then mitigations for marine mammals should begin at a RL of 145 dB, not 180 dB, since this is the RL used for the human mitigation threshold. To assign different mitigation thresholds to these two taxa while claiming that they can be assessed as equivalent is inconsistent.

p. 4.2-20: This discussion and explanation of the risk continuum function emphasizes how many of its parameters are assumptions without empirical basis. The following parameters in the risk equation are entirely speculative: B (RL below which there is zero risk); K (adding K to B gives the RL at which there is 50% chance of response); and A (value measuring the slope of the risk transition). The DEIS implies that these values are based on the results of the LFS SRP, but this is not true. The SRP results were insufficient to establish a zero risk criterion for any species (let alone the four that were observed), a 50% (or 95%) risk criterion, or a risk transition value.

In general, the discussion in section 4.2.3.2 is pure speculation, couched in unjustifiably confident terms, with assumptions described repeatedly as "conservative" when in fact they are based on best case scenarios.

Section 4.2.4.1: The discussion here implies that the Navy's consultations with academics, non-governmental organizations and others led them to select baleen whales as the focus of the three SRP phases because they were the most likely to be impacted by LFA sonar. However, The HSUS was present at most of the meetings at which scientists were consulted and we remember it somewhat differently. Four species of baleen whales were chosen as subjects (with one toothed whale, the sperm whale, as a hoped-for fifth) because they were the most *convenient* species expected to be impacted, in terms of timing, location, and activity represented (feeding, migrating, and breeding). Several species of equal concern, not the least of which are endangered and threatened sea turtles, were deemed too difficult to examine, especially given the brief time during which the Navy was making the LFA sonar array available. It was understood that efforts would be made to examine some of these species in captivity, with studies planned on small numbers of bottlenose dolphins, California sea lions, harbor seals, and elephant seals, only one of which was a species of particular concern (elephant seals). The HSUS notes that the pinniped study indicates that SPLs far lower than 180 dB induced TTS for all three species (Kastak *et al.* 1999). This study also expressed serious concerns regarding the potential for exposure to loud anthropogenic sounds to result in "dramatic fitness effects."

p. 4.2-22: The DEIS states "The scope of study for the LFS SRP was designed to address a broader range of species and behavioral contexts in order to complement the limited scope of data from previous studies." While the SRP was certainly intended to complement and add to limited data, in fact the data on hearing and noise impacts are *still* limited, given the brief duration and small sample sizes of the SRP (and the limited number of species observed). To imply otherwise is misleading.

p. 4.2-23: The observation that fin and blue whales "appeared to be more influenced by the distribution of prey than by the playbacks" can also be interpreted to support the hypothesis that feeding on clumped prey concentrations is more important than avoiding an aversive stimulus,

even if that stimulus is harmful. The only way to disprove this hypothesis is to follow the animals exposed to the LFS playbacks and verify that no changes in long-term biologically significant life history parameters occur. To conclude that the relative lack of an immediate avoidance response indicates no long-term impacts is premature and non-precautionary.

The DEIS states that "Further analysis is required to establish how often male humpbacks stop singing in the absence of the SURTASS LFA sonar transmissions..." This is certainly true, but it is telling that the DEIS focuses on the possible *insignificance* of these song cessations, rather than their possible *significance*. This is not conservative, regardless of how the DEIS insists repeatedly that the Navy's assumptions, focus, and interpretations are conservative.

The sentence continues over to p. 4.2-24, "...and to evaluate the significance of the song cessation observed during playbacks." Again, this is true, because from what we know now, the cessations are equally likely to be significant or insignificant. However, this could be said about every behavioral response observed during the SRP and that is precisely the problem with the manner in which the DEIS discusses the SRP results. It neglects to consider the possible long-term significance of the short-term behavioral responses observed (this sentence is in fact one of the few times the DEIS even acknowledges the possibility of an observed short-term response having long-term significance). Its conclusions simply assume that there *is* no long-term significance.

Section 4.2.4.2 purports to discuss previous studies, but neglects to mention any ATOC MMRP results, results from studies other than those involving Arctic cetaceans (such as those involving harbor porpoises [Olesiuk *et al.* 1995] or pilot whales [Rendell and Gordon 1999]), or results from the pinniped literature. It also fails to discuss Frantzis (1998), an inexplicable omission.

Interestingly, this section emphasizes that the LFA sonar transmissions differ in tonal quality, duration of signals, and duty cycle to most previous studies, implying that it would be unjustified or at least incautious to extend the results from those studies that indicate a sensitivity to sound at levels far lower than the DEIS proposes for mitigation purposes to the Navy's Alternative 1 proposal. However, the DEIS and Alternative 1 are largely founded on the premise that the SRP results, involving only four species of baleen whales, can be extended to all other baleen whales, toothed whales, pinnipeds, sea turtles, and fish. This double standard is inappropriate, illogical, and unsupported.

Section 4.2.5.1: Choosing 120 dB as the 'B' parameter in the risk continuum function is not precautionary, as the 'B' parameter is the RL below which there is *zero* risk. Yet at 120 dB many marine mammals exhibit behavioral responses. Given that it is unknown how behavioral responses do or do not correlate with or indicate biological significance, 120 dB as the zero risk limit cannot be considered precautionary, on its face.

Section 4.2.5.2: To The HSUS, the sentence "The choice of a more gradual slope than the empirical data was consistent with all other decisions to make conservative assumptions when extrapolating from other data sets" makes no sense. Choosing a more gradual slope than the empirical data support when determining a risk transition is *not* conservative (regardless of the effect on the AIM analysis). A gradual slope results in risk increasing slowly, such that by the

time the analysis finds a large number of animals at risk, the sound must be at a very high SPL. A sharper slope results in risk increasing more rapidly, such that by the time the analysis finds a large number of animals at risk, the sound would be at a lower SPL — clearly the latter is more conservative.

Choosing 150 dB as the SPL at which 2.5% of exposed animals would experience "non-injurious" harassment is revealed here as arbitrary and non-precautionary. If this choice were in fact based on the SRP data, as claimed, then the 2.5% value of risk would correspond with a SPL below 120 dB, since more than 2.5% of whales observed exhibited some disruption of behavior (see the MMPA definition of Level B harassment) at this SPL.

Section 4.2.5.3: This paragraph underlines that the risk analysis only assigns risk values to the category of "non-injurious" harassment. While the DEIS states that the risk of "non-serious" injury *starts* at 180 dB (a value for which this paragraph shows no empirical support), it does not indicate a percentage of animals likely to experience "non-serious" injury at this SPL, nor does it indicate a percentage of animals likely to experience "serious" injury at levels higher than 180 dB.

Section 4.2.5.4: As noted in the General Comments section above, the entire discussion on how the Navy arrived at the 180 dB criterion is confusing and inconsistent, and merely serves to establish that the value is not conservative and is arbitrary. The logic used to arrive at the 180 dB criterion is based throughout on overly optimistic assumptions about marine mammal hearing and its sensitivity to sound.

p. 4.2-37: The HSUS notes that the sample size required to achieve statistical significance in the AIM analysis was at least 100 animals and 200 animals for two different locations respectively, while the sample sizes for various behavioral observations during Phases I and III of the SRP were on the order of 5-30 animals.

p. 4.2-40: The DEIS states that "For the purposes of this OEIS/EIS, the LFS SRP was the best option available to obtain critical scientific data under time and funding constraints." This is an accurate assessment, but it is not the equivalent of saying, as the DEIS implies, that the data obtained under these constraints were adequate or even good. They were merely the best obtainable and were, in our opinion and the opinion of numerous other scientists, inadequate to draw any definitive conclusions.

Section 4.2.7.3: The HSUS again expresses its concern regarding the possible effects of the HF/M3 sonar on marine mammals with hearing ranges in the mid-high frequencies. The DEIS statement that the proposed mitigation measures (standard operating procedure with most human-made sound devices) "would *prevent* any significant impact" over-states the case as well. The measures are meant to prevent and are presumed to prevent impacts for the purposes of permitting, but it is not certain that these standard mitigation measures for sound are completely effective.

p. 4.2-56: The DEIS refers several times (including here) to the statement in Richardson *et al.* (1995) that it would be unlikely that any marine mammal would remain for long in areas where

there was continuous underwater noise exceeding 140 dB. First of all, this statement was highly speculative and reflected the opinion of only four authors. It should not be referred to as if it represents a universal belief in the marine mammal scientific community. In addition, the LFA sonar transmissions used in the LFS SRP were not continuous, as the DEIS itself points out more than once. Therefore it cannot be concluded, *based on SRP data*, that "avoidance of the >140 dB zone of exposure was not as expected." The SRP provided no information to disprove the hypothesis proposed in Richardson *et al.* (1995); neither did it provide information to disprove the alternative hypothesis that animals would remain in an area where there was continuous underwater noise exceeding 140 dB if the activity in which they were engaged was biologically significant.

p. 4.2-57: The DEIS states that at RLs above 180 dB 1 μPa rms, "it was assumed the risk of injury reached one." The HSUS assumes this means that above 180 dB, 100% of exposed animals would experience at least TTS. However, this is not specifically stated in the DEIS and therefore, it remains unclear at what levels and percentages the LFA sonar is presumed to pose significant risk of harm to exposed animals. The vague explanation that marine mammals might be assumed to risk PTS at 100 m from the sound source, and tissue damage or mortality even closer to the sound source, has no empirical basis (it is based, apparently, on one publication's speculation of when PTS might occur in marine mammals and entirely speculative estimates of whale hearing thresholds).

Section 4.2.7.7: In general The HSUS finds the discussion of masking to be inadequate. It does not consider the masking of important communication signals and inappropriately downplays the significance of the potential for masking predator or prey signals. Certainly for predator noise, even a very brief period of masking could lead to mortality.

Table 4.2-15 seems to be overly optimistic in its calculations of risk potential without mitigation (when mitigation supposedly includes both geographic and monitoring methods). The "increase of potential for effects" column, which lists only minor increases in potential if the LFA sonar operates without mitigation, underlines that both the unmitigated and the mitigated risk LFA sonar poses to marine life is under-estimated by the Navy throughout the DEIS.

p. 4.3-3: The DEIS states that the results from studies examining reactions in Navy divers, which were meant only to be applied to divers "equivalent in medical health and fitness to Navy divers," can be used to conclude that Alternative 1 "would have *no potential* effects on diving or related human activities in the water" (emphasis added). This assumes that all recreational divers are equivalent in health and fitness to Navy divers, an assumption that is easily disproved empirically. This conclusion, regardless of the relative fitness of the average recreational diver, also seems inconsistent with the DEIS' earlier insistence that no two whales would react alike to LFA sonar (DEIS, p. 4.2-21). If no two whales will react alike, then no two people will either and claiming that studies conducted on a select sub-section of the human population can be applied to all divers is inconsistent with previously stated assumptions.

Section 4.3.3.2: The HSUS does not follow why the DEIS dismisses the possibility of impacts on all non-diving academic research. If such research involved the observation of vocalizing

whales, for example, operation of the LFA sonar anywhere within 50 km or more might affect results.

Section 4.4: The HSUS has often expressed concern regarding the tendency of many sound producers to dismiss the addition of *their* sound to the cumulative burden of anthropogenic noise marine animals must bear. While each sound producer may contribute only incrementally to this noise burden, nevertheless the cumulative effect of these sounds may result in adverse impacts and it would be impossible to isolate the "straw that broke the camel's back." The Navy's repeated insistence, in meetings, in correspondence, and now here in the DEIS, that the "LFA sonar system does not add appreciably to the number of acoustic events to which species are exposed" (DEIS, p. 4.4.-1) fails to appreciate this problem. It is true that there are other anthropogenic sound sources that are of grave concern, but the LFA sonar system should not be dismissed or excused simply because the field of offenders is so large.

Overall, The HSUS finds the DEIS' discussion of cumulative impacts inadequate and inappropriately eager to shift the focus from LFA sonar (which is the only sound source in question in this DEIS) to other sound sources (such as shipping), rather than truly taking all sound sources into account and considering the LFA sonar as one among many concerns.

Chapter 5

Section 5.1: The HSUS finds that the Navy's designation of geographic areas of biological importance fails to include a great many areas known to be important habitat for many species of marine mammals. In addition, there are several species of marine mammals, including baleen whales, for whom important habitat is unknown; for example, although one calving ground for North Atlantic right whales is known, additional calving grounds have yet to be identified and it is uncertain where breeding occurs. Therefore, the Navy's confidence that its geographic restrictions on use of LFA sonar will *prevent* exposure of animals in critical or important habitat is unjustified.

Section 5.2: The HSUS questions the proposal by the Navy that the Officer in Charge would suspend operation of the LFA sonar should a marine animal of concern be detected within the 180 dB sound field or on a track that would cause it to enter the 180 dB sound field. The HSUS wishes to express its skepticism that the Navy would allow a single sea turtle to disrupt, delay, or in any way affect massive Naval maneuvers, involving multiple ships, aircraft, and land-based systems and personnel.

Chapter 7

Chapter 7: The single paragraph devoted to the discussion of unavoidable adverse effects is simply inadequate. It fails to consider unplanned-for possibilities and expresses an unwarranted confidence that unplanned-for exposures, impacts, and effects will never occur. As an example: Should operation of LFA sonar just outside the critical habitat of the North Atlantic right whale result in causing TTS or PTS in a single right whale, which subsequently is struck by a ship because it could not hear its approach, the Navy's belief that LFA sonar will have no unavoidable (or unforeseen) adverse effects will be tragically disproved.

Conclusions

The HSUS finds the DEIS inadequate, unsubstantiated, superficial, and narrow in scope. It does not include vital information and over-interprets the LFS SRP results. The DEIS discussion progresses inevitably and unjustifiably toward acceptance of Alternative 1, operational deployment of LFA Sonar with geographic restrictions and monitoring. The DEIS represents no more than a *pro forma* adherence to the required NEPA process.

The HSUS strongly recommends that the Navy and the NMFS revise the DEIS. We ask that the "no action" alternative be chosen and urge the Navy to continue its search for improved methods for detecting "quiet" submarines, methods that do not negatively impact (or do not have the significant potential to negatively impact) the marine environment and marine animals.

Thank you for your consideration of our comments on this extremely important matter. The HSUS would also like to incorporate by reference the comments submitted by the Natural Resources Defense Council on this DEIS.

Sincerely,

Naomi A. Rose, Ph.D.
Marine Mammal Scientist
Wildlife and Habitat Protection

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cc: The Honorable Richard Danzig, Secretary of the Navy
The Honorable Penelope Dalton, National Marine Fisheries Service
The Honorable George Frampton, Council on Environmental Quality
The Honorable John Twiss, Marine Mammal Commission

The Honorable Ted Stevens, Senate
The Honorable Robert Byrd, Senate
The Honorable Daniel Inouye, Senate
The Honorable Daniel Akaka, Senate
The Honorable Barbara Boxer, Senate

The Honorable Don Young, House of Representatives
The Honorable George Miller, House of Representatives
The Honorable C.W. "Bill" Young, House of Representatives
The Honorable David Obey, House of Representatives
The Honorable Jerry Lewis, House of Representatives
The Honorable John Murtha, House of Representatives
The Honorable Neil Abercrombie, House of Representatives
The Honorable Patsy Mink, House of Representatives

Mr. Joel Reynold, Esq., Natural Resources Defense Council