

Dear All

With the great work by Joel Reynolds, Naomi Rose, Michael Jasney et. al. - and their support, we still have some work to do on this little issue. In her ruling, Judge Laporte apparently was convinced by the Navy's argument that the system works by her comment that the Navy demonstrated that the system "is likely to significantly increase our ability to timely detect very quiet submarines."

Perhaps someone in this list does know if the Navy has demonstrated that the system works as stated, though I am unaware of any actual tests that have resolved submarine targets at long distances with LFA. I also remain skeptical that the system is a surveillance system as stated by the Navy.

There are many reasons for my skepticism, though simply boiled down, the technology and setting does not clearly support the stated use. While the technical aspects are deep and diverse, the basics are:

1) The system wavelengths are not consistent with resolving ~200 ft. vessels. The carrier frequencies around 200 - 300 Hz have a wavelength of 15' - 20' and these could theoretically resolve a 200' target at the proposed distances, but the long wavelength differential frequencies that the system generates (and relies on) are below 30 Hz and longer than 150' wavelength. A 200' vessel will not reflect these wavelengths efficiently - so the vessel is invisible to these signals.

2) The system relies on the deep water sound channel. The depth of the upper boundary of this is as deep as 3000', to near the surface at the poles. The depth varies with latitude and over the seasons. Sound from the LFA system needs to be below this depth in order to achieve the proposed distances. Some tactical submarines can travel at depths of 1000', and in the best design cases perhaps as deep as 1200'. Most tactical submarines will travel at 300' - 600' depth. Above 300' exposes them to satellite detection, below 600' stresses the vessel. This depth range of LFAS in the sound channel is not a good match for surveillance at the 300' - 600' ranges.

3) There are environmentally benign surveillance systems that can resolve quiet submarines, but these technologies are not entering in to the Navy surveillance discussion. The Navy is not refuting the ability to use existing technology, let alone entertaining the idea of refining these existing systems. This indicates to me that the stated task of locating enemy submarines may not be the driving force behind the proposed development of LFA.

There is an extended discussion behind all of these, but for the moment, I hope I have effectively conveyed some reasons for my skepticism.

What I propose for a strategic move on the part of environmental defense is to request that the Navy clearly demonstrate the effectiveness of LFA to detect quiet submarines at long distances in a manner that would persuasively support use of the LFA system over

passive, or other more environmentally benign surveillance systems.

So far the Navy has hid behind the rubric of National Security on benchmarking LFA. We have had to take them on their word about the its effectiveness. With the level of concern expressed by the public, and the amount of tax dollars we are spending on the system, it would seem reasonable to benchmark its effectiveness in daylight before we permit the Navy to use it.

It seems under Judge Laporte's ruling that the Navy will have a chance to use the system in some manner and somewhere. Due to the contentious nature of this debate, I feel that the public should have some provisions to monitor the system use - perhaps in the form of access to the SOSUS system for environmental monitoring. Given the Navy's questionable track record of self monitoring, I feel that a public eye (or ear) on the development and deployment of LFA is the least we should expect.

I welcome any response or feedback to the assumptions that I have made above.