Statement of

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Good afternoon Senator Wyden, Senator Murry, Senator Cantwell and members of the Port Authority. I am Steven Schorer, President of L-3 Communications, Ocean Systems Division. Ocean Systems is a world leader in underwater detection technologies both domestically and internationally.

The tragic events of 9/11 serve to illustrate the unconventional nature of the war we now find ourselves fighting and the pressing need to examine other potential vulnerabilities inherent in a free and open society. I applaud the Committee's and the Port Authority's actions today to bring into open discussion a critical element in any Homeland Defense strategy. While significant attention is now being focused on making the Nation's skyways safe, too little attention has been given to our relatively unprotected and open ports and harbors. Commerce is the lifeblood of

our Nation and economy, but just as the terrorists used our own aircraft against us, they have the capability to exploit commercial shipping in similar and unimaginable ways.

The threat today includes everything from huge container ships to small sailboats. Thousands of watercraft operate in our Nation's inland waterways, as well as in our traditional ocean side harbors, making cities like Minneapolis and St. Louis as vulnerable to attack as New York and Seattle. A major port like the Port of Los Angeles handles over 110 million metric revenue tons a year with cargo value exceeding $120 billion. Yesterday alone, over 100 container ships entered Los Angeles Harbor.

The sheer numbers of vessels involved makes its almost impossible for the Coast Guard or Port Authority to reasonably be expected to stop all potential terrorist activities using conventional methods. There have been recent reports in the press indicating the Al-Qaeda terrorists are training in underwater operations, which lends an even greater sense of urgency to resolving this complicated issue. Small diesel submarines are widely available for purchase in the international marketplace and, as recently demonstrated in Columbia, submarines can be constructed by virtually any industrial facility for non-military uses.

Much of the current discussion in the press centers around the threat of a

terrorist organization smuggling in weapons or detonating explosives, conventional or unconventional, in a major city's port. The ensuing loss of life and disruption in commerce would have far reaching and possibly long lasting implications for our country. However this discussion seems to ignore other, equally devastating, scenarios. One example of this would involve the threat posed by underwater mines or explosives placed at the access to a harbor, in a choke point, on a pier's pilings or on a pipeline or cableway running across the sea floor. Virtually any vessel operating in our waters can covertly deploy mines. They are easy to build, inexpensive and readily available worldwide. A typical mine like the widely exported Italian Manta is a lethal anti-ship mine which is widely available, easy to deploy very difficult to detect.

The Manta is a shallow water mine with a 290 lb warhead that could easily sink any of today's commercial cargo ships. The appearance of a mine in one harbor not only shuts down commercial activities in the affected port, but it requires an examination of all other ports and waterways to ensure they are mine-free before normal activities can resume. Communication and electrical cables, sewage lines, oil pipelines and bridge pilings are all possible targets for attack.

Mine clearance becomes a particularly onerous problem when you consider the vast majority of the US Navy's mine warfare equipment is located in Ingleside, Texas. The transit time alone (2 weeks) from Texas to Seattle would result in an

unacceptable delay in re-opening the port for commerce. Once on station, some estimates indicate it could take as long as three weeks to conduct mine-hunting operations in New York Harbor alone. To complicate matters further, the undersea environment poses some unique challenges not encountered in surface based surveillance methods. Detection and detection ranges are affected by numerous, constantly changing, variables such as bottom type and contour, salinity, temperature gradients, water depth and ambient noise levels.

Historically, the perceived mining threat was from an enemy intent on bottling up the US Navy or merchant Fleets in time of war – today's threat is no different. What is different is that the enemy might not deploy his mines or explosives from a submarine or aircraft, but instead could simply push them off the back of a pleasure craft or freighter in the dark of night. It is reasonable to expect that an enemy intent on disrupting port operations could attach an explosive device to the bottom of an oil tanker or large merchant ship as well.

The key to isolating newly planted objects in a harbor or waterway is knowing what is already there. Most harbor bottoms contain a fair amount of existing debris; things like cars, refrigerators, 55-gallon drums and the like, all appear on a sonar operator's screen and make the job of locating new objects more difficult.

Traditionally, the US Navy has conducted Q-Route surveys in military ports to

locate and map objects on the bottom of a channel or operating area (OPAREA) in peacetime, so that in wartime they can look at the same area and note the differences between the two surveys. In the presence of a threat, this enables them to quickly eliminate known objects and to focus their attention on new mine-like contacts for further investigation and neutralization. This is an exceptional capability, however it is extremely limited due to the size of our mine countermeasures force, their geographic location, and that many of the assets are forward deployed supporting international operations. The Navy uses specially designed and equipped ships of the MCM and MHC classes to conduct these surveys, in addition to limited helicopter borne search assets. While the sonars used aboard these ships and aircraft are good, they do not provide the kind of photographic resolutions necessary for use in harbor defense. To effectively counter the threat posed by an underwater attack to our ports and infrastructure requires dedicated assets and an on-going, nearly continuous, survey effort. Furthermore, this survey must encompass more than just shipping channels, but must also look at other potential underwater targets. In my view, the United States must intensify and broaden its conduct of civilian q-route surveys in our major ports and waterways to enable us to quickly recover from the mining of a harbor. Since 9/11, the Canadian Navy has plans to conduct this type of survey of the Saint Lawrence River and most, if not all, Canadian ports.

The problem of searching a large volume of water in a short period of time

requires the use of extremely sophisticated underwater surveying equipment. The system must possess exceptional resolution under a variety of water conditions, depths and sea states for the accurate identification of targets. Resolution must be such that a detected object's geographic location is accurately plotted on a chart to facilitate removal or further investigation by other assets – this degree of accuracy is not typically available in commercial sonars. Additionally, the equipment operator must be able visually identify the detected object to eliminate false targets and to effectively coordinate removal activities.

The system must be user friendly enough to require minimal operator training, and should be easily deployable from existing vessels rather than requiring the construction of a dedicated search platform. Given the large size of many of our harbors, the system must also provide the user with a high rate of search coverage.

I would offer the following as one possible concept of operations employing the use of a sidescan sonar to conduct commercial Q-Route surveys and to perform periodic surveillance to detect mines or other suspicious devices in our waterways. Upon acquisition of a suitable system, the port authority would conduct a detailed initial survey to accurately locate and plot objects on the harbor or channel bottom. The results of this survey are then stored in a national computer database to which all other surveys will be compared to, thereby enabling port authority officials to determine the appearance of new, potentially hostile, objects. As I previously

stated, the system used must be able to provide sufficient resolution to eliminate having to investigate every coffee can or car detected during the survey. Additional surveys can be then conducted to rapidly identify objects requiring further investigation. The number of surveys conducted is largely dependent on the size of the search area and the number of search assets available. While a harbor the size of Los Angeles, New York, or Seattle seems formidable, the search area is actually somewhat more manageable since you are primarily concerned with the shipping lanes, choke points, cable and pipeline crossings and waterfront approaches. Additionally, survey assets can be deployed to specific locations in response to a treat or to reports from surface based observers. Once a suspicious object is located, the port authority can isolate the affected area until the object can be visually identified, removed or neutralized.

L-3 Ocean Systems currently produces a high-resolution sidescan sonar system with the ability to locate and display objects as small as a piece of 3/16's inch chain with nearly photographic imagery. All of the sonar images in this presentation are taken from unretouched raw sonar output. The system is presently in use by the Canadian Navy and was successfully used in locating and mapping the wreckage of SwissAir flight 111 that crashed off the coast of Halifax on September 2, 1998. The L-3 sidescan sonar system provides a credible, near-term, solution to closing one area of port vulnerability in our Homeland Defense strategy.

Since most modern sea mines are designed specifically to reduce sonar reflectivity, the L-3OS side scan sonar system possesses a high shadow contrast ratio allowing the operator to determine the shape, size, and orientation of underwater objects. Positional accuracy of plotted contacts is approximately three meters RMS, which enables rapid reacquisition of the contact for further investigation or removal. The system is easily installed on the stern of virtually any surface ship, but for port operations it would ideally be placed on a harbor craft of 100 tons or greater. The system is capable of search speeds of up to 10 knots and, due to its superior detection ability, resolution, increased range and accuracy, its search area coverage is equivalent to that of many airborne sonar systems towed at 25 knots. It uses an automatically stabilized towed body with motion compensated beam steering coupled with a motion compenstaed handling system. This design results in a system capable of effective operations in up to Sea State 4, which translates into wave heights of approximately 6 to 7.5 feet.

The threat to our Nation's ports is real. In my opinion it is just a matter of time before a terrorist group exploits this vulnerability and once again brings the war on terror to our shoreline. We must act proactively to avoid another 9/11 style attack on America. The approach I have proposed today is not a panacea for the defense of our harbors, but only serves as one strand in the overarching security net we must construct to counter the threat posed by an enemy waging an unconventional war against us. I have provided the committee with a copy of the detailed performance

specifications and capabilities of the L-3 sidescan sonar system. I thank the committee for giving me the opportunity to address this important issue.