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SAFETY STARTS IN THE SHIPYARD

R & D update: **Tomorrow's technologies for building safer ships**

Day 2 – Toulon: Tuesday 21st October 2008

Moderator:

Ann Morrison, Contributor, Time Magazine, and former Editor, Time Europe

Speakers :

Xavier Allegrini, Director for offers and contracts, Defence Systems Division, Deputy Commercial Manager, CNIM, France

Gilles Bessero, Chief Executive Officer, SHOM, France

François Duthoit, R&T Innovation Director, DCNS, France

Willem P. J. Laros, Chairman COREDES and TAC (R&D res. Technical working groups), CESA Community of European Shipyards Associations, Belgium

Guglielmo Sessa, Technical Director, Westlogistics, Italy

This discussion about how to build safer – and cleaner – ships yielded few simple answers but a number of interesting proposals, examples and warnings. The stakes are high: commercial shipping carries some 90% of the world's consumer goods, transports 60% of annual oil supplies and is the single largest global emitter of CO₂.

Willem Laros came forward with a strong proposal to change the very basis on which ships are built as a way to incorporate safety from the outset. Noting that today shipbuilding was "class-based," meaning that the criteria required to receive classification approval were what determined how ships were built, he advocated a switch to design founded on safety.

As an example he cited tankers transporting liquefied gas. With the objective of guaranteeing safety while increasing capacity, his company had developed a ship with a new puncture-resistant skin. It had also been able to reduce the number of liquid gas tanks from 8 to 2, increasing the volume of gas transported. "The past has been the basis for future design until now, because of the classification system," he said. He supported changing the approval system to make it goal-based as a way to promoting safety. "With this we should be able to do much better," he said.

François Duthoit of French defense-sector shipbuilder DCNS drew a parallel with the automobile industry. "Like for cars, safer and cleaner means smarter," he stated. "This needs a significant R&D effort." For example DCNS' most recent class of submarine was designed to stock its own waste. While this alone did not confer any competitive advantage, he said, the research and development costs had been two to three times higher than for previous submarine types. "That's why we need R&D cooperation on this," he added.

Guglielmo Sessa of Westlogistics presented his company remarkable invention: a ship that is powered by burning solid waste, attacking not just the problem of lowering CO₂ emissions but also of waste disposal on land. Westlogistics has



traditionally built plants that converted waste into energy, and one day it decided to apply this to a ship, Sessa explained. His company's vessel is powered by compacted land waste and produces 90 percent less carbon dioxide than the average cargo ship. Its fuel is not only renewable (there will always be enough garbage), but free. He too called for adjustments to the classification approval system to take such innovations into account.

A very large percentage of maritime catastrophes like oil spills are due to human error and decrepit vessels. Moderator and journalist Ann Morrison pointed out that ship maintenance and crew training were two crucial aspects of accident prevention, and had the advantage of not depending on technological advances. "For that, we don't have to wait," she said.

One difficulty in ensuring regular maintenance was that over its 20-to-30-year life span a boat often changed owners many times, Laros noted. Dutoit agreed. Adding that "a ship's health depends on its history," he suggested requiring vessels to collect and analyze maintenance data. "Health monitoring of ships is paramount, and it is viable today," he said. "Wireless systems allowing remote analysis of data and even action are technically possible – that could be implemented right now."

This raised the prickly question of responsibility, he noted. "If a fault is detected, who is to take responsibility? We need to get together among shipbuilders, owners and insurers to define responsibility, which would allow us to be more effective," Dutoit argued. Today, he said, "in the event of an oil spill, is it the party responsible who bears the cost? I don't think so – otherwise insurance premiums would be a lot higher." The law would have to step in to define responsibilities and accountability. "This calls for international legislation," he said.

Gilles Bessero of the French Navy's oceanography department warned that human error was more and more likely to be a cause of accidents because of the race to transport ever-larger quantities of goods at ever-lower cost. "Over the past few years, the capacity of container ships has quadrupled, while their crews have been cut by two-thirds," he affirmed. Today, 400-metre long cargo ships carrying 11,000 containers were sailing the seas manned by fewer than 13 people, he added. What is more, capacity was due to increase to 18,000 containers, with further crew reductions planned. "Are we being reasonable here?"

It was a problem of favouring quantity over quality, he said. The risks inherent in smaller crews aside, crew training itself was "inadequate in relation to the scale and design of these ships," he warned. "This is when accidents happen."
