

## **CIP Congress**

Gaylord National Hotel & Conference Center  
30 November, 2010

Presentation of William H. Watson,  
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to the  
Geospatial Panel

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The world's oceans and even domestic waterways do not meet most of the traditional definitions for "infrastructure" but given that 95% of all cargo shipped to the USA arrives by ship, it must be acknowledged that sea lanes are a critical link in the global supply chain.

And in discussing the impact of Geospatial advancements on infrastructure and the supply chain, the advent of satellite based navigation and communications technology has clearly afforded a sea change to the commercial shipping industry that was akin to the shift from wooden sailing vessels to today's steel-hulled ships that are mechanically propelled.

For centuries, mariners guided their ships by marrying celestial observations with charts that were drafted through trial and error and that usually noted hazards that were discovered by ships running aground.

Vessel owners, operators, charterers and cargo consignees got the news that their "ships had come in" by waiting at vantage points near ports so they could use spyglasses to see ships as they approached. One such point was Edward Lloyd's Coffee House in London's Tower Street that became a 17<sup>th</sup> Century haunt for sailors, merchants, insurers, bankers and others involved in commercial shipping. Blackboards on the coffee house's walls carried the names of expected

vessels and those names were checked when the ships were spotted moving up the Thames toward London.

In deference to Mr. Lloyd, numerous companies linked their names to the establishment – Lloyd's of London and Lloyd's Register, chief among them.

Today, sailors still look to the heavens for navigational information. But instead of using a sextant to shoot the stars, today's mariners seek guidance from Global Positioning System satellites whose signals are integrated with onboard ECDIS (or Electronic Chart Display & Information Systems) and computerized auto-pilots and their positions are tracked by other birds that use Automatic Identification System (or AIS) and Long Range Identification & Tracking (or LRIT) technology. These systems have made commercial shipping safer and more efficient and for those reasons alone, the massive expense to launch and maintain those systems are justified.

Beyond their applications in facilitating seaborne commerce, another use was found for these systems in the days after 9/11 when the US Coast Guard and other governmental, military, law enforcement and intelligence entities with maritime authorities realized that ships laden with tons of cargo could also pose a new threat vector. The USCG established the priority of maintaining "Maritime Domain Awareness" as a top priority and set about to track ships on the high seas.

Today, Mr. Lloyd's chalk boards have given way to large screen monitors that adorn the walls of the National Maritime Intelligence Center, governmental targeting centers, Coast Guard operations centers, fusion centers among other facilities – including the Maritime ISAC, that allow for the tracking of oceangoing ships that will call at

US ports or pass through American waters . . . or that are suspected of criminal or terrorist activities.

These capabilities are largely due to the co-opting of a once shore-based navigation system that now has grown into the space age. AIS transponders were once installed in ships to allow them to identify other vessels that might pass nearby in the dark or fog or in narrow channels and allow them to afford each other a wide berth. Shore-based receivers were then installed to allow the Coast Guard, marine police, pilots and others to monitor vessel traffic to promote the safe transit of vessels and to be able to warn ship captains of impending dangers. Several years ago, the US Navy – along with other agencies – discovered that satellites in low earth orbit could also collect the VHF-based signals from AIS transponders. And now, thanks to the military and the private sector, the location of virtually every commercial vessel is available to the intelligence community and now, for a price, to those in the private sector with a “need to know.” One such private sector alliance was formed by IHS Fairplay (formerly Lloyd’s Register – Fairplay) through its AIS Live service and Orbcomm, which has a galaxy of satellites that host AIS receivers along with other technologies.

I am focusing my remarks on AIS today because this system is the most broadly used.

Even before AIS signals were tracked by satellite, LRIT systems were mandated by the International Maritime Organization to be installed aboard most seagoing commercial ships. It is used by owners, operators, flag states and ship security personnel to track their vessels. GMDSS (or Global Maritime Distress Safety Systems) and

SSAS (Ship Security Alert Systems) have become most helpful in recent years, especially with the increased threat of piracy. Even cargo shippers and recipients can use satellite based tracking technology to maintain with containers packed with high value merchandise. As we speak, companies like Wal-Mart are tracking large screen televisions, computers and, perhaps, even stuffed bears as they move aboard ship from factories in Asia to the US to fulfill holiday dreams.

Not only is AIS tracking available to the industry, government, the military and law enforcement, but to the general public as well. In fact, several free or low-cost apps exist today for PDAs that can provide vessel tracking within selected ports and on domestic waterways. These various technologies have improved cargo flow and make the US infrastructure safer. But they are only the start as other marine threat vectors exist and must be confronted. In fact, one fear is that bad guys like pirates, seagoing robbers and terrorists might secure vessel tracking information to improve the efficiency of their nefarious activities.

With that, I welcome your questions.