



**Testimony of Mr. Glen M. Paine**  
**on March 22, 2006**  
**for the Senate Finance Committee on SB 996 and SB997**

My name is Glen M. Paine. I have been the Executive Director of the Maritime Institute of Technology and Graduate Studies (MITAGS) for the last eight years. The Institute is located on an eighty-acre campus in Linthicum Heights, Maryland. Its mission is to enhance the professionalism of mariners through advanced simulation training, education, and safety programs.

My goal today is to give you a brief overview of the types of training available in Maryland that help support the Liquefied Natural Gas (LNG) Marine Transportation Industry. My general testimony will be followed by Chief Engineer Charles Snyder, a United States Coast Guard approved instructor in the area of LNG. Engineer Snyder will detail the design and construction of LNG ships and the applicable safety features. He will also provide a general operations overview.

Before discussing the Maritime Institute of Technology and Graduate Studies, I would like to recommend that the Committee obtain two documents from the United States Coast Guard. The first is the Fall 2005 issue of The Coast Guard Journal of Safety at Sea Proceedings of the Marine Safety Council. The other is Navigation Vessel and Inspection Circular No. 05-05 "Guidance on Assessing the Suitability of a Waterway for LNG Marine Traffic," which can be found on the U.S. Coast Guard website at [www.uscg.mil/hq/g-m/nvic/index00.htm](http://www.uscg.mil/hq/g-m/nvic/index00.htm). After reviewing these documents, I believe the Committee members and the general public will gain a better understanding of the risks involved in LNG transports, the safety measures that are in place, and the process that the U.S. Coast Guard uses to determine whether a waterway is suitable for LNG vessels.

***School Background***

The Maritime Institute of Technology and Graduate Studies (or MITAGS) is a world renowned, non-profit, continuing education center for professional mariners. For over thirty years, the Institute has provided training for civilian and military mariners from around the globe.

The origin of MITAGS can be traced back to the establishment of the Maritime Advancement, Training, Education, and Safety (MATES) Program, a Trust that was established in 1968 between the major American Steamship Operators and the International Organization of Masters, Mates and Pilots (IOMM&P). In recent years, MITAGS' mission has been expanded to include all professional commercial and military mariners.

Since opening our doors to students, MITAGS' list of available programs has grown to more than one hundred programs, ranging in duration from several hours to thirty days. Highly qualified staff members work with advanced simulation technology to deliver courses that contain clear objectives and a focus on results.



### *Certifications*

Various government agencies and third-party auditors provide program oversight for our organization. MITAGS is certified by Det Norske Veritas (DNV) <sup>1</sup> as a maritime simulation and training center. The United States Coast Guard National Maritime Center (NMC) also provides approval for over forty MITAGS courses. Additionally, the Institute is authorized to teach courses that have been approved by the American Pilots' Association; the United States Navy; the Military Sealift Command; and a number of foreign states; including the Marshall Islands, Vanuatu, the Bahamas, and the Panama Maritime Authority.

### *Clients*

Although primarily a U.S. mariner training facility, the school has expanded to include mariners from around the world. Some of our current clients include:

- State Pilot groups throughout the United States.
- Containership Operators (such as Maersk, Horizon, Matson, and APL).
- Government Ships (such as the U.S. Coast Guard, the Military Sealift Command, the U.S. Army, and the U.S. Navy).
- Tankship Operators (such as ConocoPhillips, Chevron Texaco, and Valero).
- Cruise Ship Operators (such as Carnival, Princess, and Celebrity).
- Foreign Governments (such as Bermuda and Malaysia).

### *MITAGS Campus – Facilities and Services*

The MITAGS campus encompasses over eighty-acres. The school has over 300,000 square feet of building space, with **100,000** square feet dedicated to the following activities:

- 232 overnight guestrooms, with both formal and informal dining arrangements.
- Fitness facility, game room, indoor swimming pool, sauna, and racquetball court.
- 55 meeting/classrooms.
- 350-seat auditorium with simultaneous language translation capabilities.
- 50-seat planetarium.
- Maritime museum.
- Eight-ship interactive blind pilotage simulator equipped with ARPA, Radar, ECDIS, bridge control, and DSC-VHF communications.
- Vessel traffic system training lab.
- Networked, multi-operating system computer lab.
- Two, full-mission ship bridge simulators.
- Interactive Global Maritime Distress and Safety Systems (GMDSS) and communications lab.
- *Cryogenic gas control room simulator (LNG, LPG).*
- Emergency medical training lab.
- Weather routing lab.
- Fire training, damage control, and small arms range (offsite).

The school is also home to the International Longshoremen's Association/United States Maritime Alliance (ILA/USMX) Crane Training Center. This crane simulator is one of only six in the world. The simulator provides realistic training for ship gantry, ship pedestal, dock gantry, twin lift, and mobile cranes.

---

<sup>1</sup> DNV is internationally recognized as a third party auditor and classification society.



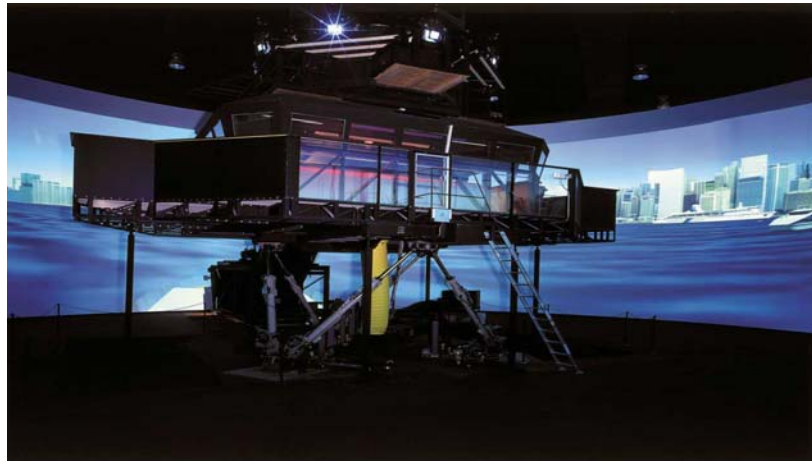
### ***MITAGS Standard Curriculum***

The current curriculum includes over one hundred courses and seminars. Major subject areas include:

- Marine Safety and Security.
- Ship Simulation and Research.
- Electronic Navigation and Vessel Traffic Systems.
- License Upgrade (Third Mate to Master Unlimited Tonnage, any Oceans).
- Emergency Medical Response.
- Tankship Operations, including LNG.
- Cargo/Container Operations.
- U.S. Navy and Military Sealift Command Specific Training.

### ***Ship Simulation Training and Research Programs***

The Institute has one of the most sophisticated shiphandling simulators in the United States. The equipment can realistically simulate any vessel or port in the world. It is backed-up by an experienced engineering staff and highly skilled instructors.



In this graphic; channel approaches, a pier, and a number of LNG vessels would be programmed into the simulator to provide training for terminal operators, Pilots, and tug Masters. It would also be available to run a wide range of emergency scenarios for both state and local first responders.

Currently, our simulation capabilities are being enhanced with a one and a half million dollar upgrade, which is in addition to a three million dollar upgrade that was completed 2001. These projects will help ensure that the students at MITAGS have access to the most advanced simulation facilities in the world.

### ***LNG Handling and Safety Training Programs***

MITAGS also offers Liquefied Natural Gas (LNG) training programs for terminal and shipboard personnel. These programs provide technical information relevant to the safe transport, loading, and discharge of LNG cargoes. In fact, MITAGS was one of the first in the nation to incorporate the use of advanced simulators into training. Some of the subject areas covered includes the following:

- 1-Day LNG Safety Training for State Pilots.
- 2-Day LNG Familiarization.
- 5-Day Terminal Operators.
- 10-Day Shipboard Personnel.
- 10-Day U.S. Coast Guard Inspector.



Engineer Snyder will now provide more information on these programs and our LNG simulation capabilities.

**Testimony of Chief Engineer Charles Snyder**  
**on March 22, 2006**  
**Before the Senate Finance Committee on SB 996 and SB997**

My name is Charles Snyder. I have been working in the LNG industry for twenty-eight years. In fact, twenty-two of those years were spent sailing onboard LNG ships. I sailed for five years as a Cargo Engineer, two years as a First Assistant Engineer, and fifteen years as Chief Engineer. In this time, I estimate my ship safely delivered over two hundred cargoes. While sailing on these ships, training was always of the utmost importance. I have been to three different fire fighting schools and numerous facilities for onboard systems and equipment. Additionally, while at sea, crew training was performed at least once per week. I believe it is fair to say that LNG ships have the best trained and safest crew members of any other ships sailing the seas. During my seagoing career, I transported LNG from Indonesia to Japan, Qatar to Korea, and Qatar to Lake Charles, Louisiana. The transit to Lake Charles is up a relatively narrow river that was shared with many pleasure boaters and fishermen. Other LNG ships transit the Suez Canal on a daily basis. If these ships were not considered safe, does anyone believe they would be allowed to transit one of the most crucial waterways in the world? Several other LNG vessels transit the Malacca Straits, past Singapore, each and every day, and this is one of the busiest straits in the world. To date, LNG ships have an unparalleled safety record, which they continually prove with thousands of mishap-free voyages.

Since retiring from the U.S. Merchant Marine in 2001, I have worked as an instructor in numerous Marine Engineering courses. I have also represented MITAGS at LNG Conferences around the world. I currently instruct LNG/LPG courses for shipboard personnel, U.S. Coast Guard Inspectors, terminal operators, marine chemists, and Pilot organizations. All classroom training is supported by a LNG simulator that is capable of duplicating all facets of cargo operations, including the discharging of LNG cargo, as would be the case at a LNG receiving terminal. It is important to note that MITAGS is currently in the process of installing a new state-of-the-art LNG simulator based upon advanced computer technology.

In the LNG shipping industry, safety is our primary concern. I would not have sailed for all those years' onboard LNG ships if I didn't think these ships were safe. Every system has at least one back-up, and in some cases, two or three back-ups. In fact, the double hull construction and cargo tank locations ensure hull and tank integrity. Prior to entering port, the U.S. Coast Guard would board the vessel and conduct inspections of the cargo, fire fighting, navigation, and machinery systems. These inspections are conducted by highly trained Coast Guard employees that are very thorough. Any discrepancy would prevent the ship from entering port. A second inspection involves the crew, where each member's credentials are thoroughly examined.

LNG ships have two basic designs: spherical and membrane. Both types have primary and secondary barriers, which prevent the leakage of cargo. Other than tank design, both types also have similar equipment. Gas detection systems continuously monitor all parts of the ship; including the space around the tanks, accommodations, engine room, bridge, and machinery rooms. Cargo levels, temperatures, and pressures are also constantly monitored.



A film, produced for profit by a California couple, compares LNG ships to floating bombs. I discussed the video with some of my shipmates and all we could do was point out numerous inaccuracies and exaggerations. In my opinion, I believe most people would prefer to sail on LNG ships then oil tankers, container ships, or chemical carriers.

**Summation from Testimony of Glen M. Paine and Chief Engineer Charles Snyder  
on March 22, 2006  
Before the Senate Finance Committee on SB 996 and SB997**

***Summation***

LNG is not new to the marine industry. Cargo has been safely transported for over forty years. There are schools in Maryland, and throughout the world, that have the expertise necessary to enhance the safety and operational training related to the transport of LNG. Additionally, there is a robust regulatory process already in place to assess the merits and risks of a specific project. I urge the Committee to base their collective decision on the facts, not media hype or sound bites.



## Appendix 1

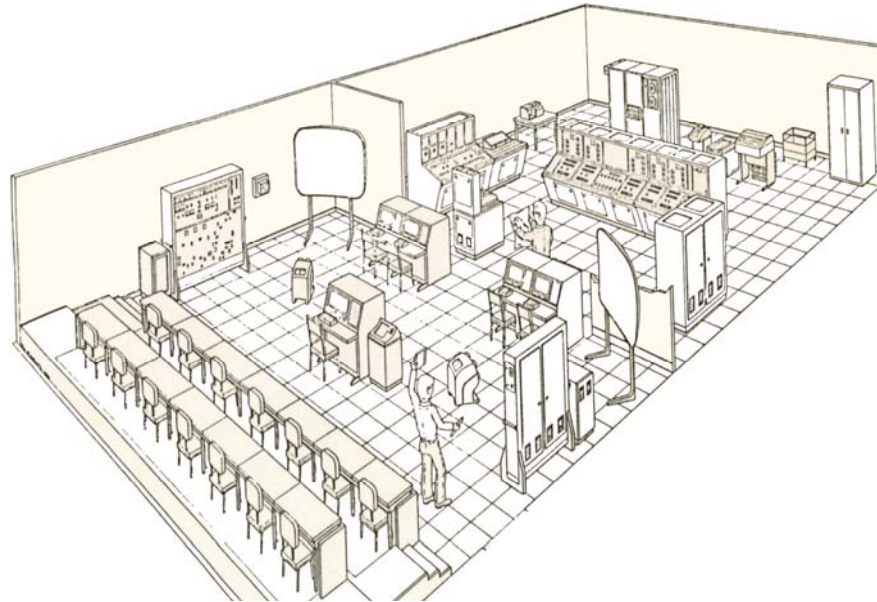
### ***LNG-LPG Cryogenic Cargo Handling Simulator General Information***

The MITAGS Cryogenic Simulator consists of two sections. The forward section contains a cargo control room console that would be found onboard a typical LNG or LPG vessel. The console consists of a ballast system, gas detection panel, sprinkler or fire fighting panel, custody transfer unit, and loadmax. The aft section contains the instructor station and plotter, four student stations, a portable gas/dew point analyzer, two advent screens and projectors, a LPG re-liquefaction plant part task trainer, and an observation area for up to sixteen individuals.

The four remote student stations have a computer and light pen. The system is designed to display the operation of valves, piping, spectacle flanges, compressors, and pumps by use of the light pen on the computer screens. Tank domes, crossovers, manifold connections, the compressor room, the re-liquefaction plant, the ballast pump room, and nitrogen tanks can also be displayed.

The use of the remote student station allows the student in the control room to communicate with other students, rather than just the instructor, so a group of students can be trained to act as a team. All monitors found on the student or instructor stations can be displayed on the large advent screens to allow observers the opportunity to follow the training exercise.

The two-part task trainers can be operated in the integrated or independent mode. In the integrated mode, the part task trainer interacts with the cargo console effecting the tank pressure, level, and other parameters programmed into the system. In the independent mode, the student can be instructed to properly operate the trainer without effecting tank or cargo parameters.



The portable gas/dew point analyzer enables the student to monitor the tank or cargo hold concentrations for oxygen, carbon dioxide, methane, ammonia, propane, or dew point temperatures. The student manages drying, inerting, gas purging, and aerating operations as they would in real-life LNG/LPG operations.



The instructor's station allows access to the student displays and all conditions; including malfunctions, replay, and trainee proficiency review (TPR). The simulator can be reset to any point of time in the training exercise and replayed for lessons learned. Additionally, a plot of up to ten parameters and all valve operations can be printed out for review.



Enclosures: (1) LNG Handling and Safety Training Program Descriptions  
(2) Glen Paine Resume  
(3) Charles Snyder Resume