

the Energy to Lead

Training First Responders for Small Scale LNG



Margaret Kaigh Doyle
PHMSA LNG Workshop
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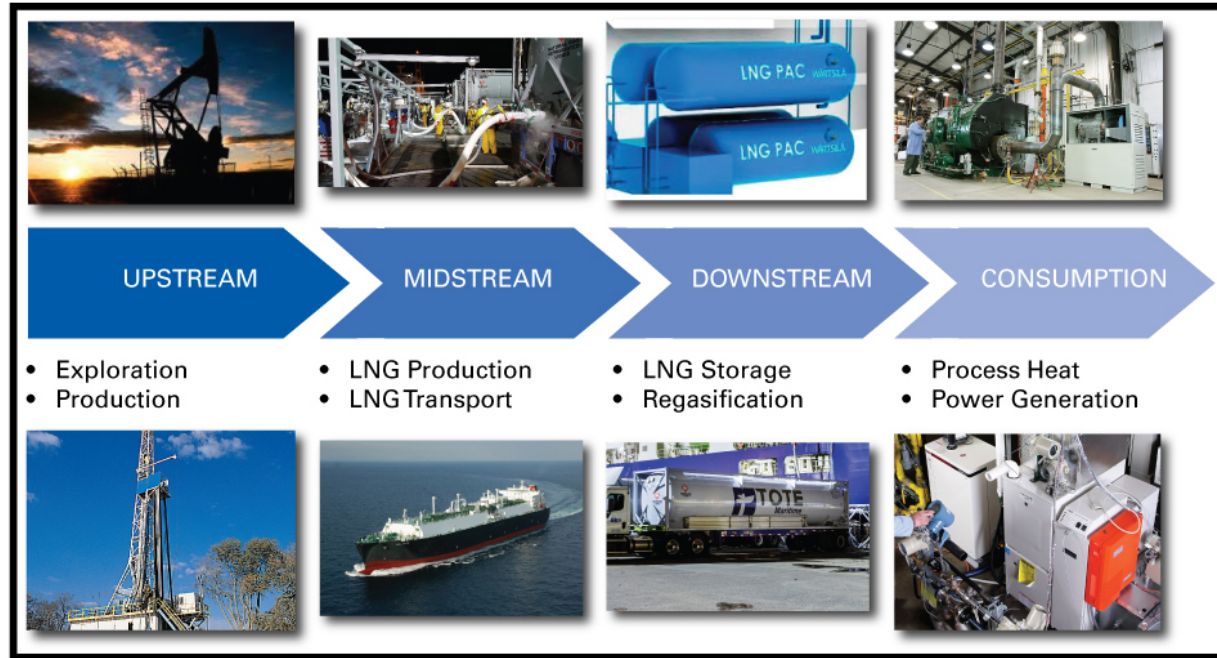
The LNG Value Chain



Move to Small Scale LNG

- In 2015 the global small-scale LNG (SSLNG) installed production capacity equaled 20 mtpa spread around more than hundred SSLNG facilities.
- This is on top of the installed capacity for conventional LNG plants of approximately 300 mtpa.
- The SSLNG market is developing rapidly, especially as a transportation fuel and to serve end users in remote areas or not connected to the main pipeline infrastructure.

Small Scale LNG Value Chain



Small Scale LNG Applications

- **Production – “Micro LNG” production plants can produce from 10,000-to 60,000 LNG gpd**
- **On Road - Truck and cryogenic trailer, each hauling approximately 9,300 gallons of LNG**
- **•Rail transport on the horizon - at ~30,000 gallons per rail car**
- **• LNG as Marine Fuel – Harvey Gulf & Tote Maritime use LNG as fuel**
- **Marine transport options also increasing with barges, small LNG transport ships and specialized ISO delivery vessels**



LNG Applications Vary in Size

SMALL-SCALE LNG

- Liquefaction capacity of <0.5 MMTA
- Provides regional supply directly to end-users in areas inaccessible by other means (pipelines, etc.) or consumers requiring liquid fuel
- Distribution via LNG tanker, feeder vessel, bunkering barge or truck
- Simplified storage requirements
- Allows adjustments to annual delivery contracts, minimizing take-or-pay risk



10,000 m³ Multigas Carrier



12,000 m³ Multigas Carrier

MID- AND LARGE-SCALE LNG

- Liquefaction capacity of >0.5 MMTA
- Provides Base Load LNG
- Intercontinental transport markets via transoceanic tankers
- LNG is regasified at distant import terminal



128,000 m³ Conventional (1976)



145,000 m³ Conventional (1995)



210,000 m³ Q-Flex (2007)



260,000 m³ Q-Max (2008)

Training ALL STAKEHOLDERS

GTI sees a need for a range of training specifically developed for small-scale LNG stakeholders (including first responders):



How? Regulatory Guidance?

- **US Coast Guard policy letters 01-15 & 02-15 (and updates)**
- **Other US Coast Guard Efforts**
- **Regulatory Change to 49 CFR Part 193, Liquefied Natural Gas Facilities**
- **NFPA 59A Update**
- **LNG Stakeholder Training Development**

USCG (CG-OES) Policy Letter No. 01-15

- Policy Letter 01-15 - *GUIDELINES FOR LIQUEFIED NATURAL GAS FUEL TRANSFER OPERATIONS AND **TRAINING** OF PERSONNEL ON VESSELS USING NATURAL GAS AS FUEL*
- *This document was published last February with a few editorial changes added later.*



USCG (CG-OES) Policy Letter No. 02-15

- Policy Letter 02-15 - *GUIDANCE RELATED TO VESSELS AND WATERFRONT FACILITIES CONDUCTING LIQUEFIED NATURAL GAS (LNG) MARINE FUEL TRANSFER BUNKERING OPERATIONS*



Updates NFPA 59A- Chapter 12 – Fire Protection, Safety, and Security

- > Covers the equipment and procedures designed to minimize consequences of releases
- > Also provides basic plant security provisions
- > Fire protection must be provided – extent determined by evaluation of individual facilities
- > Emergency Shutdown (ESD) System required for each LNG Facility
- > Includes requirements for gas, fire, and leak detection, fire protection water equipment, and fire extinguishing equipment IF the engineering analysis determines these are necessary
- > Also includes requirements for personnel safety and security

Emergency Response Training

LNG Collaborative Trains Jacksonville First Responders

[9/1/15 Des Plaines, IL](#)

Last week Gas Technology Institute (GTI), in conjunction with the Florida State College at Jacksonville Fire Academy of the South (FAS), trained more than 150 stakeholders and first responders in liquefied natural gas (LNG) awareness. The training was developed specifically for Port of Jacksonville area stakeholders, especially local first responders, and included firefighters from the Jacksonville Fire Rescue Departments, the U.S. Coast Guard Sector Jacksonville, and area law enforcement.

The training program was funded by a collaboration of companies currently participating in LNG projects, including TOTE's Sea Star Line, JaxLNG, (a partnership of WesPac Midstream LLC and Pivotal LNG), the Florida East Coast Railway, the Crowley Maritime Corporation, and Eagle LNG Partners.



GTI - Addressing Key Issues Across the Energy Value Chain



REDUCING CARBON EMISSIONS TO THE ENVIRONMENT

SUPPORTING SUSTAINABLE ECONOMIC GROWTH

SUPPLY



Expanding the supply of clean, abundant, and affordable natural gas

CONVERSION



Transforming natural resources into clean fuels, power, and chemicals

DELIVERY



Ensuring a safe and reliable energy delivery infrastructure

UTILIZATION



Promoting the clean and efficient use of energy resources

GTI LNG Training Approach

- > GTI recognizes a need in developing and delivering energy training materials for both short courses and longer term curricula
 - We have presented training programs throughout the world, from a series of one-day or one-week short courses through multi-year curricula
- > Today, GTI's training programs are designed to transfer technology through education using a variety of delivery options:
 - Traditional classroom/instructor led courses
 - Self-paced hard copy and CD-based courses for individual and company training
 - Internet and webinar-based courses
 - Print and electronic manuals
 - Remote learning platforms (e.g., tablets)



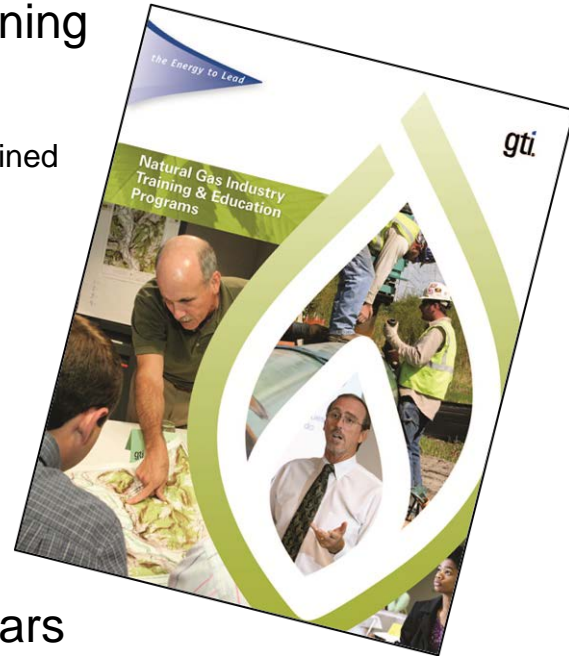
GTI and LNG

- ▶ GTI has been involved in LNG research, information and training since the 1960s
 - ▶ Held world's first LNG course and first LNG conference in Chicago in 1968 (Now LNG 17 – Houston, April 2013)
- ▶ Education and Training
 - ▶ LNG Markets and Technology Overview
 - ▶ Terminal Design and Operation
- ▶ R&D/Technology
 - ▶ Vapor dispersion and fire models
 - ▶ LNG interchangeability studies
 - ▶ Vehicle systems and infrastructure



GTI - Training more than the Mariner

- > GTI programs in gas industry training
 - Offered since 1941
 - Over 50 courses offered annually
 - Over 70,000 gas industry professionals trained
- > Broad array of topic areas
 - Gas Supply: LNG, Shale Development
 - Gas Distribution and Transmission
 - Gas Utilization and Marketing
- > Delivery Options
 - Open enrollment classroom courses
 - Onsite for energy industry customers
 - Online and self-guided programs
- > Conferences; Workshops; Webinars



ILT GTI LNG Offerings

LNG Instructor-Led Training (Classroom) Courses

- Understanding the Global LNG Value Chain LNG: Markets, Technology, Economics
- Understanding LNG Terminals and Terminal Operations: A Critical Link in the LNG Chain
- Small Scale LNG Three Day
- Introduction to LNG as a Marine Fuel
- LNG Bunkering Person in Charge (PIC)
- Understanding LNG Peakshaving Plants and Operations



LNG Training

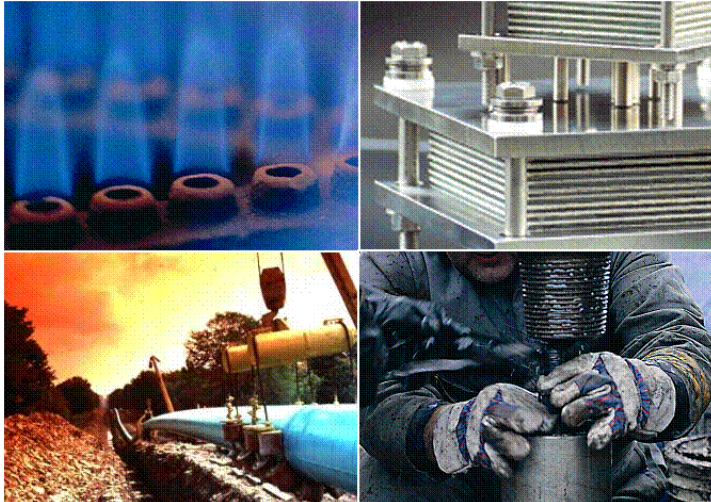


LNG Online/Self-Study Courses

- LNG Plant Safety (online)
- How an LNG Plant Operates: Import, Storage, and Vaporization (online)
- LNG Plant Operator Training and Certification (online)
- LNG Shipping and Cargo Handling (online)
- LNG for the First Responder/LNG Awareness (online)



Thank You!



Contact information:

Margaret Kaigh Doyle

Gas Technology Institute

847-477-8908

margaret.doyle@gastechnology.org

