

LNG SAFETY WORKSHOP

**DELTA CENTRE-VILLE HOTEL
MONTREAL, JANUARY 6, 2005**

**A Workshop Summary Prepared for
The National Energy Board**

FINAL REPORT

**Prepared by
Nu-Trac Management Consulting Ltd. with the assistance of Workshop Participants**

This document does not necessarily represent the views of the regulators represented at the workshop. This report does not constitute either legal opinion or advice. It is intended solely as the summary of the workshop held on January 6, 2005.

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ATTACHMENTS (electronically attached to the final report)

A. PRESENTATIONS MADE AT THE WORKSHOP

1. Welcome to workshop delegates – Dr. Alan Murray, National Energy Board
2. Summary of February 2004 workshop – Sharing Regulatory Experiences Regarding LNG Facilities in North America – presentation to the workshop by Stephen Zwicker, Environment Canada
3. LNG Review Process, Strengths, Weaknesses and Challenges – presentation to the workshop by Richard Hoffman, Office of Energy Products, Federal Energy Regulatory Commission
4. Current Status of LNG Projects in Mexico: A Regulatory Perspective – presentation to the workshop by Dr. Alejandro Breña, CRE
5. Overview of CSA Standard Z276, Liquefied Natural Gas (LNG) - Production, Storage and Handling – presentation to the workshop by Norm Trusler on behalf of the Canadian Standards Association

B. WORKSHOP ATTENDANCE LIST

C. ORIGINAL AGENDA OUTLINE FOR THE WORKSHOP

LNG SAFETY WORKSHOP

Final Report

1.0 EXECUTIVE SUMMARY

Fifty one people attended the workshop and 96% represented a regulator with a direct interest in LNG projects. The discussion reflected cooperation and a keen interest in clarifying the requirements across Canada with regard to LNG facilities.

The highlights of the discussion, not necessarily in the order of importance, are as follows:

The attendees supported:

1. The concepts of getting the scope clear at the beginning of a project, and agreed to by the proponent and all of the regulators.
2. Not altering the scope/plan after it was agreed to, i.e. discouraging changes.
3. The need for project proponents and operators of LNG facilities to have management systems in place which would include the development of a third party audit process as part of an approval. A need was also identified for developing a list of management system models for attendees. See the reference list on page 22.
4. The on-going development of the CSA Z276 Standard and the importance of continuing to develop detailed list of references for that Standard, i.e. identifying all of the technical standards that would be required for use in a generic facility and would be adopted by various departments and agencies.
5. The development of a roadmap, by Province, to clarify the Cross-Canada regulatory requirements and roles of each jurisdiction. Such a roadmap would identify the site specific approvals and the sequence of approvals required across Canada. The NEB agreed to facilitate the formation of a Working Group to develop such a roadmap. Attendees acknowledged the need for a “lead” to manage such a Working Group and the need for regulators to develop partnerships in order to develop timelines for project specifics.
6. The need to receive feedback from industry and other interested agencies regarding the existing regulatory models and the regulatory framework.
7. The need to clarify the differences in requirements between “land and water” and the need for the aforementioned Working Group to assist with these clarifications, i.e. determine how a project proponent “gets from ship to shore”. (This is a reference to the lack of understanding with regard to the accountabilities and permits required at the transition between water and land.)

It should be noted that among projects subject to the environmental impact assessment and review procedure, there is the construction of a port or wharf, or a modification in the use of the wharf or port.

8. The identification of permits and approvals requiring periodic renewal and the need for the renewals to be identified to the proponents.
9. Worker, public safety and security issues receiving equal importance to environmental approvals.
10. The importance of the public's perception and the need for public education.
11. The need to identify expertise available with regard to scope and public interest issues.
12. Locating all available information on emergency preparedness between the ship and the storage tank(s). It was acknowledged that the CSA Z276 Standard includes operations and maintenance and the requirements for emergency procedures.
13. Identifying and focusing on the unique requirements of LNG facilities versus conventional oil and gas processing facilities. It was acknowledged that what is unique about a LNG facility is the large volume of cryogenic liquid.
14. The application of the CSA Z276 Standard (for LNG facilities) and CSA Z662 Standard (for pipelines) once "off of the ship".

2.0 INTRODUCTION AND BACKGROUND

The potential for continued expansion of the LNG industry in North America, and the increasing number of applications for LNG facilities in Canada, prompted this workshop. The workshop was sponsored by the National Energy Board in cooperation with the Nova Scotia Department of Energy.

3.0 PURPOSE OF THE WORKSHOP

To provide a forum for dialogue among departments and agencies to:

- develop a common understanding of what regulators need to know when dealing with an LNG project in Canada and;
- examine the safety and technical components related to the construction and operation of LNG receiving terminals (including shipping, jetty, receiving lines, storage facilities, re-gasification facilities, etc.) and to identify any gaps in the current regulatory environment.

4.0 PROPOSED OUTCOMES OF THE WORKSHOP

An understanding of:

- how LNG projects have been regulated by others (in Canada, the U.S. and Mexico);
- the construction and operational issues related to the safe operation of an LNG facility;
- what is needed to be able to effectively and efficiently deal with a project application in Canada (or what would an effective regulatory model look like?)

5.0 WORKSHOP STRUCTURE

The original detailed agenda outline is included under the attachments heading. Briefly, the structure of the workshop was as follows:

Attendees were welcomed by Alan Murray of the National Energy Board. It was agreed that no specific LNG facility or regulator was to be the focus of the workshop.

As a starting point for this workshop, Stephen Zwicker, of Environment Canada, summarized a workshop held in Halifax in February 2004 and the conclusions drawn at that workshop.

Three simultaneous group discussions were held asking questions specific to LNG facilities. Each group presented a brief summary report which was followed by further discussion.

The above was followed by presentations by Discussion Leaders representing the U.S. Federal Energy Regulatory Commission (FERC), the Mexican Comisión Reguladora de Energía (CRE) and the Canadian Standards Association (CSA), emphasizing the following:

- “Strengths and weaknesses” of previously completed and assessed LNG projects, and the challenges for future projects, focusing on best practices, standards and effective regulatory models.
- Contents of the CSA Standard, other standards referenced, plans for additions to the Standard, membership invited.

In the afternoon the following was the agenda:

- confirm outline of workshop report.
- presentation on security issues (Hassan Eltaher – Transport Canada)
- discussion of LNG facility scope diagram emphasizing:
 - scope of a typical installation
 - accountabilities and authorizations required
 - which agencies have a clear interest/responsibility for each component at present?
- status of current projects
- confirmation of gaps identified and learnings of the day
- how should these gaps be addressed?
- discussion of possible next steps and wrap-up

6.0 SUMMARIZATION OF A WORKSHOP HELD IN HALIFAX, FEBRUARY 2004, AND CONCLUSIONS DRAWN

Stephen Zwicker of Environment Canada described the outcomes of the February 2004 workshop which focused on environmental issues, and was driven by two concurrent environmental assessments for proposed LNG projects in New Brunswick and Nova Scotia. Please refer to the attachments for the details of this presentation.

7.0 OUTCOME of the GROUP DISCUSSIONS

7.1 GROUP 1: BREAKOUT NOTES AND FEEDBACK

What are the minimum *construction and operational safety components* of an LNG facility, from an Owner's perspective?

- Use the FERC approach (clear jurisdiction, a clear appeal court process, one federal record and clear prompt timing).
(Note: a federal record is all the evidence filed in respect of a particular case, e.g. all documents filed at a proceeding that form the "record", used to support a decision of the regulator.)
- Examine closely all available industry standards and reference them when appropriate (e.g. CSA Z276).
- Look for and identify the differences between an LNG project and other hydrocarbon projects and facilities. Identify what is unique about an LNG facility over and above a typical process plant.
- Look for best practices from the engineering community.
- Construction aspects should be little different from a typical process plant.
- Ensure a training component for specialized operating functions, for example:
 - emergency response
 - community training for local emergency response units.
- Address the skill gaps in local geographic areas in gas plant operations. For example, there is only one gas plant in Atlantic Canada but considerable expertise "out west".
- Standardize operating procedures.
- Establish an integrity plan for the frequency and nature of inspections.
- Establish an emergency response plan, to include first responders.
- Think in terms of the life-cycle of a facility from the outset.
- Prepare a decommissioning plan as part of the new project.
- Address gas quality issues, impacts of the pipeline gas specification and user requirements, (e.g. for large industrial users).
- It was noted that the LNG Projects' relationship to the pipeline is generally satisfactory and the CSA Z662 Standard is adequate for the pipeline facility delivering the gas to users.

- Conduct risk assessments (high level at the beginning of a project and formal detailed assessments as a project proceeds).
 - Note that there are micro and macro risk assessments. Do not entirely focus on the potential high consequence incidents and concerns – focus on lower risks, and the higher risks will be identified as a result of the process.
- A mandated management system that would include:
 - QA/QC
 - life cycle
 - ISO
 - siting
 - all components
 - operations and maintenance
 - training for operators.
 - regulators to define the scope of a typical project
- The designer identifies the scope and requirements of “his” project; accommodates and presents to the regulator.
- Safety – approved by applicable public safety departments, e.g. OH&S, Boilers Branch, Marine Safety, and Coast Guard.
- Training required for the regulators.
- Determine if standards should be goal oriented or prescriptive, (see referenced CSA document under the heading of “other useful references”)

7.2 GROUP 2: BREAKOUT NOTES AND FEEDBACK

What are the characteristics of an *effective regulatory model* for siting, construction and operation of an LNG facility, from the regulator’s perspective?

- Identify the regulators and each regulator’s role and responsibilities.
- Identify the phases of a project, such as:
 - scoping
 - environmental assessment
 - design and construction
 - operations and maintenance
 - abandonment.
- Identify all legislation, regulations and industry standards, codes of practice and guidelines.
- Recognize the importance of correct timing.
- Ensure clear jurisdictional responsibility.
- Create parallel and coordinated timing with all jurisdictions.
- Get all regulators working together (in the U.S.: State, Federal, FERC; in Canada: Provincial, Federal, NEB).

This group identified the following coordination gaps:

- There are no timing restrictions, i.e. approval deadlines, for some agencies, (e.g. for permits).
- There is a lack of coordination between all agencies versus all phases.
- There is a need to identify all timing obligations.
- The NEB is not always present as the regulator.
- There is a need to determine early what coordinated efforts are needed and the timing of same.
- There is a need of a focal point (a lead coordinating agency) or an arrangement (memorandum of understanding) between regulatory bodies.
- There is a need to facilitate federal and provincial (or state/federal) coordination.
- There is a need to develop partnerships; if not there will be a duplication of effort between regulators and proponents.

A conclusion reached with regard to key points: - there is a need for timing, coordination and partnerships.

There is a need to receive feedback from industry and other interested agencies regarding the existing regulatory models and the regulatory framework.

7.3 GROUP 3: BREAKOUT NOTES AND FEEDBACK

What are the characteristics of a *well designed project proposal from the Project Manager's perspective*? Provide examples not limited to LNG projects. Define the steps and processes a responsible project manager would insist on.

- A well-defined project description and scope at the time of the initial application to avoid changes to a project that consume time and energy.
- Obtaining municipal and local support.
- Providing a detailed technical design that identifies:
 - regulatory requirements
 - safety and environmental issues, responsibilities and challenges
 - the required infrastructure.
- Obtaining regulatory approvals, conducting the numerous studies required.
- A documented Project Execution Plan (PEP)
- Construction must include:
 - cost control
 - Safety Management Plan (SMP)
 - Quality Control Plan (QCP)
 - a realistic and attainable schedule
 - efforts, programs and processes that will ensure minimal changes
- a start-up plan and start-up team
- operational plan and manual
- adequate underwriters review and insurance
- identification of the regulatory framework (who, what and when)

- development of a communication plan with regulators defining:
 - exact positioning of works (equipment) in the water relative to navigation
 - identification of other water-way users
 - up-front public consultation
 - Vapour Emission Cloud (VEC) identification pathways dealing with evacuation routes and contingency plans in the event of a significant leak
 - First Nations consulting
 - a visual assessment
 - an operational plan, i.e. for tanker movement and required safety zones
 - terrestrial security (Note: Terrestrial security applies to the land facilities beyond the gate of the marine terminal and is not subject to the *Marine Transportation Security Act and Regulations*.)
 - emergency preparedness and response plan
 - risk assessments
 - a marine security plan and port security plan
 - a seismic analysis.

8.0 PRESENTATIONS BY DISCUSSION LEADERS FROM FERC, CRE AND CSA

These presentations emphasized the following:

- “Strengths and Weaknesses” of previously completed and assessed LNG projects, and the challenges for future projects, focusing on best practices, standards and effective regulatory models.
- Contents of the CSA Z276 Standard, other standards referenced, plans for additions to the Standard, membership invited.

8.1 RICHARD HOFFMAN – DIVISION DIRECTOR, GAS – ENVIRONMENT AND ENGINEERING, U.S. FEDERAL ENERGY REGULATORY COMMISSION (FERC)

8.1.1 Key Points from Mr. Hoffman’s Overheads

a) Strengths of the FERC LNG Review Process

- specific regulations
- staff with experience
- culture of cooperation with Department of Transport (DOT) and the U.S. Coast Guard (USCG)
- cryogenic review program
- biennial inspection program
- shared safety-related practices and issues

b) Perceived Weaknesses of the FERC LNG Review Process

- regulations
- adoption of industry consensus standards
- conflicting agency policies
- coastal management issues
- FERC certificate versus Agency permits
- succession planning

c) FERC Challenges

- clear (non-controversial) regulations
- siting requirements
- technical regulations and standards
- filing requirements
- training
- field office cooperation
- public education
- security and exclusion zone issues
- models and spill containment issues
- emergency response

8.1.2 From the Facilitator's Notes and the Discussion

- We do not conduct our work fast enough (15 months is required).
- We should do more work up to the pre-application stage and reduce the time from 480 days to 300 days (10 months).
- Determine if standards and requirements should be performance or prescriptive-based.
- Review draft applications.
- Emphasize detection and control systems.
- Conduct inspections and operational reviews.
- Publish all reviews required.
- Coordination is required – levels of detail are important – give that required detail to the proponents.
- Levels of detail are taken out of the standards.
- There are conflicting agency policies – we need everyone on the same time frame.
- FERC does not have exclusive authority. They require one “federal record”.
- Clarity is required.
- Training for staff is required – LNG is a specialized area.
- Public education is required – describe the process to people, (a FERC and industry responsibility).
- Pre-filing a draft application should include public participation.
- Issues:
 - Fear
 - NIMBY
- Require peer reviews and models.
- See the DOE website regarding tanker spills.
- There are threats to tankers – determine what it will take to protect them.
- See the LNG website.

8.2 ALEJANDRO BREÑA – DIRECTOR GENERAL, NATURAL GAS, COMISIÓN REGULADORA DE ENERGÍA (CRE - MEXICO)

8.2.1 Key Points from Mr. Breña's Overheads

- There is a new natural gas industry in Mexico with dynamic growth.
- There are regulated services and an open access to pipelines.
- There has been a significant expansion of the infrastructure.
- Projected demand for natural gas for 2012 is 6.8%/year versus domestic supply growth of 5%/year.
- Gas imports could exceed 1.2 BCFD between 2004 and 2005 and could climb to 2.5 BCFD in 2012.
- LNG projects represent a viable alternative to cover the increasing demand for natural gas in Mexico.
- The National Committee on Natural Gas Standards approved, on September 21, 2004, the final version of the new Mexican Standard on LNG.

8.2.2 From the Facilitator's Notes and the Discussion

- CRE approves cross-border pipelines.
- They approve LNG facilities.
- There are long term contracts to supply power plants – the demand for electricity will grow in the next few years.
- Five applications have been submitted and four permits granted.
- They have a transparent regulatory framework.
- They spend considerable time explaining the regulations and relationships to other regulatory agencies.
- Regarding the time frame for federal permits – environment takes longer than CRE, (on the marine aspects).
- In one case, the local government cancelled a land use permit since it was felt the plume would extend into the city for 3 miles.
- Mexico had no LNG Standard - they chose the U.S. NFPA 59A Standard and merged it with European Standards (BS EN 1473) and created NOM 013 SECRE 2004 which has four parts and includes audit requirements.
- The Standard considers the design of onshore as well as offshore regasification terminals.
- For offshore terminals, the standard also includes the design of the submarine pipeline that connects the concrete structure (GBS) to the onshore pipeline system.
- The section of the Standard on submarine pipelines incorporates several aspects of the Det Norske Veritas DNV-OS-F101 Offshore Standard.
- The audit requirements are met by third party auditors (not CRE) and are conducted annually (and the company pays).
- CRE confirms the auditor's qualifications and gets annual feedback reports.
- The European standards were preferred by European companies specifically with regard to the topic of risk.
- The CRE Standard includes design, construction, operation, maintenance and risk analysis and is included in the regulations.

- CRE reviews all materials standards.
- In CRE’s definition – “Best International Practices” means any standard or norm that has been issued by a specific country and accepted by several other countries other than the country that issued it.
- Do not change the rules along the way.
- Some projects, such as offshore LNG terminals, incorporate new technologies which have not been fully tested in actual conditions.

8.3 NORM TRUSLER – CHAIR, CSA Z276 TECHNICAL COMMITTEE FOR LNG, PRODUCTION STORAGE AND HANDLING

8.3.1 Key Points from Mr. Trusler’s Overheads

This presentation covered:

- evolution of the Z276 CSA Standard
- the current membership of the Canadian Z276 Standard
- the scope and preface of the Z276 Standard
- clauses related to marine shipping and receiving.
- Key activities of the CSA Z276 Technical Committee were discussed:
 - The work of the Seismic Work Group where the definition of SSE is being addressed.
 - The work of the Risk Assessment and Management Systems Work Group which is monitoring the development of similar activities on the Technical Committee of the Z662 Pipeline Standard.
 - The work of the Import Terminal Work Group which will be reviewing the adequacy of the Z276 Standard with regard to import terminals.

It was stressed that the Z276 Technical Committee requires new additional members, particularly from the regulatory area. It was noted the harmonization of this Standard with other international standards is on hold for now. There has been some success in harmonizing with the U.S. NFPA Standard.

8.3.2 From the Facilitator’s Notes and the Discussion

- It appears the majority of the Canadian regulators are referencing the CSA Z276 Standard.
- There are opportunities to clarify the Z276 Standard relative to facilities between the wharf or pier, and the storage facilities.
- There may be a future need to clarify the requirements for offshore facilities.
- In the Canadian Z276 Standard there are thermal radiation limits and prescriptive thermal radiation zones.
- Thermal radiation zones (BTU thermal radiation level) is limited by the types of assemblies outside of the facility.
- Risk based “exclusion zones” regarding shipping are under consideration (security zones), port by port (this is not in the scope of Z276).
- A definition of “Exclusion Zone” is required. There is confusion in the U.S., Mexico and Canada with the use of the term “Exclusion Zone”.

- Transport Canada requires the development of a “Security Plan”, (see the security heading below).

9.0 PRESENTATION ON SECURITY ISSUES

Mr. Hassan Eltaher, representing Transport Canada, Marine Security, informed the workshop attendees about the new Canadian Marine Transportation Security Regulations (MTSR) that came into force in 2004 as part of Canada's international obligations under the International Ship and Port Facility Security Code (ISPS).

The MTSR would apply to any LNG facility built along the waterside or within a port. The regulations would also apply to any ship of more than 100 tons gross tonnage engaged on a voyage from a port in one country to a port in another country.

The new security regulations require ports, facilities and ships to have a security officer and a security plan approved by Transport Canada, which issues a Certificate of Compliance once the security plan is approved. Failure to comply with the new security measures will result in Canadian ships refused access by international ports, and ships engaged in international voyage would not serve non-compliant Canadian facilities.

To avoid delays in implementing future LNG projects, it was strongly recommended that Transport Canada regional marine security inspectors be contacted during the early phases of project planning to ensure a smooth implementation.

10.00 OUTCOME OF THE DISCUSSION WITH REGARD TO THE SCOPE DIAGRAM

10.1 REGULATORY ACCOUNTABILITIES

In an effort to identify the regulatory accountabilities for the various components of an LNG receiving terminal, the following elements were identified when referencing a typical scope diagram for a receiving terminal:

Overall – the Environmental Assessment Regulations Apply

Accountabilities - Ship to Shore

For Security

- Transport Canada
- Coast Guard
- RCMP
- Canadian Navy
- Regional and local police

Marine Safety – Transport Canada

- there are requirements to meet international standards
- an assessment of navigational safety is required

All Physical Structures in the Water – Transport Canada is responsible

- Navigable Waters Protection Act
- Approval of all physical structures
- Includes oversight of:
 - jettys
 - booms
 - navigational aids

Technical Review Process of Marine Terminal Systems and Transshipment Sites (TERMPOL)

An interdepartmental committee reviewing marine pollution issues identified the need for a means of precisely and reliably measuring the risks associated with the location and operation of marine terminals for large oil tankers. The objectives set by that Committee led to the publication, in 1977, of the first edition of the TERMPOL Code. The publication was made possible with the cooperation, expertise and assistance of, for example, representatives from Departments of the Environment, Fisheries and Oceans, Transport, and Public Works.

In 1982 the need for a second edition of the TERMPOL code was identified to include, on a voluntary basis, proposals for marine terminals designed to handle bulk shipments of LNG, LPG and chemicals.

After considering different avenues Transport Canada Marine Safety has decided to issue a third edition for the guidance of proponents, covering operational safety aspects of dedicated ships transporting pollutants or hazardous cargoes in bulk.

Port Authority

- jetty and booms (including security)
- pilotage and tug boats

Offshore Accord Boards (sharing of security with Transport Canada)

Environment Canada

- requires permits for disposal at sea
- responsible for the application of the Migratory Bird Convention Act
- responsible for the Environmental Emergencies (EE) Regulation under the Canadian Environmental Protection Act. LNG is a substance for which an EE plan is required.

DFO – application of the Fisheries Act

- Fish habitat

Natural Resources

- The Provinces are responsible for natural resources, for example:
 - New Brunswick
 - Nova Scotia

The Provinces – are responsible for all submerged crown land.

Unloading lines via a pier or a submerged pipeline

- Provincial responsibility for environmental aspects of such a pipeline.
- HRSDC (federal) and OH&S (provincial) – for safety requirements.
- There may be some dual responsibility for the safety aspects of swing booms.

Storage Tank and Facility Components – Onshore

Provincial Boiler and Pressure Vessel Authority and provincial authority responsible for electrical, pressure piping, welding, etc.

The discussion noted the confusion about the Federal/Provincial division point on the dock for regulatory management. The discussion had the tone that there is some dependence on the individual regulatory programs, i.e. HRDC, VS, OH&S, etc.

Terrestrial Security and Marine Facility

The following clarifications with regard to the terms “terrestrial security” and “marine facility” were provided by Richard Cobanli, of Transport Canada, after the workshop.

In terms of security for marine terminals, the new Canadian legislation and regulations implemented on July 1, 2004 address marine terminals and ships. This regime is inline with the new International Ship and Port Security Code (ISPS) adopted by the IMO. Terrestrial security applies to the land facilities beyond the gate of the marine terminal and is not subject to the *Marine Transportation Security Act and Regulations*. It is believed security land side or "terrestrial" falls to the province such as EMO or similar. The term “*terrestrial security*” was used at the workshop to describe all that does not fall under the Marine Security Act.

The definition of “*marine facility*” and the application of the Act, taken directly from the Marine Transportation Security Act, are as follows:

"marine facility" includes:

- (a) an area of land, water, ice or other supporting surface used, designed, prepared, equipped or set apart for use, either in whole or in part, for the arrival, departure, movement or servicing of vessels,*
- (b) buildings, installations and equipment on the area, associated with it or used or set apart for handling or storing goods that have been or are destined to be transported on a vessel,*
- (c) equipment and facilities used to provide services relating to marine transportation, and*
- (d) marine installations and structures, as defined in section 2 of the Canadian Laws Offshore Application Act.*

Given the complexity of the regulatory accountabilities the attendees decided to refer this topic to a Work Group to prepare a more detailed regulatory roadmap of these accountabilities.

10.2 ESTABLISHMENT OF A WORKING GROUP

It was decided to establish a Working Group to follow up on the discussions related to a typical project scope diagram, to identify the regulatory accountabilities for the various components of an LNG receiving terminal. Representatives from both provincial and federal agencies were identified to serve on that Group. The Working Group will meet to develop a regulatory roadmap (matrix) identifying the regulatory accountabilities, approvals and permits that would be required at different government levels for approval of an LNG project in Canada.

Sandy Harrison of the National Energy Board agreed to facilitate the formation of this Working Group.

10.2.1 Working Group Volunteers

The following people volunteered to participate in the Working Group described above.

- Germaine Pataki-Thériault, New Brunswick
- Bob Cormier, Nova Scotia
- Gilles Boulianne, Quebec
- Michael d'Antoni, British Columbia
- Paul Bourgeois, NEB
- Richard Cobanli, Transport Canada
- Michael Donald, Transport Canada
- Steve Zwicker, Environment Canada
- To be named, DFO

11.0 UPDATES ON STATUS OF CURRENT LNG PROJECTS IN CANADA (provided by participants)

11.1 IRVING CANAPORT LNG (NEW BRUNSWICK)

- The EA was completed and approved August 6, 2004, subject to 24 conditions, including safety and mechanisms to ensure Irving undertakes all the mitigation measures committed to in the environmental impact statement (EIS).
- A disposal at sea permit was issued September 4, 2004.
- Worker safety is covered by the EA approval.
- The province will adopt the CSA Z276 Standard.
- The province feels it has, or will have, the necessary regulatory regime to ensure all aspects of project are subject to approval and follow-up.

11.2 ANADARKO BEARHEAD LNG (NOVA SCOTIA)

- Provincial Environment has signed off on the earthworks project. Anadarko has some homework to do for that.
- The design work is expected to be done in 2005-01-24. Nova Scotia has drafted amendments to its Gas Plan Regulations to tailor them to LNG facilities based on CSA Z276.
- NSUARB will be issuing authorization at some point.
- The Department of Environment and Labour also has permits to issue.
- New regulations are expected in about eight weeks. A draft will be posted on the Department of Energy website.

11.3 KELTIC PETROCHEMICAL LNG (NOVA SCOTIA)

- The EA has been registered.
- New land is required and Keltic is running into some problems there.
- The project is currently in the scoping stage.

11.4 GAZ METRO ET AL RABASKA (LEVIS/BEAUMONT, QUEBEC)

- The EA process planning is underway.
- No EA has been filed to date.
- No application has been filed yet.
- On January 20, 2005, the Minister of Environment referred the project to an assessment by a review panel within the framework of the *Canada-Quebec Agreement on Environmental Assessment Cooperation*.
- Quebec Environment transmitted their directive concerning requirements for the assessment report to the Rabaska project proponent on May 14, 2004.

11.5 TRANSCANADA - PETRO-CANADA GROS CACOUNA (QUEBEC)

- A project description has been filed with CEAA.
- Regulatory Authorities have been identified.
- Some discussions have been held with Transport Canada over TERMPOL application layout.
- Some First Nations consultations are underway.
- Quebec Environment transmitted their directive concerning requirements for the assessment report to Energy Cacouna on October 13, 2004.

11.6 WESTPAC LNG TERMINAL (PRINCE RUPERT, B.C.)

- The project is in the planning phase.

11.7 GALVESTON LNG (KITIMAT, B.C.)

- The project is in the planning phase.

11.8 OTHER B.C. FACILITIES

- Two small LNG peak shaving facilities (one on Vancouver Island and one is already in operation in the lower mainland).
- A Vancouver Island facility is proposed by Terasen. This project was recently approved by the B.C. Utilities Commission subject to:
 - a long-term transportation agreement with BC Hydro
 - construction starting by December 15, 2005.

12.0 LEARNINGS RECORDED AT THE END OF THE WORKSHOP

The following records the learnings stated in response to the question “what are the gaps identified and the learnings of the day”?

1. CRE issues approvals, providing the proponent obtains all required permits.
2. FERC – the U.S. Federal authority often “over-rides” the individual State(s).
3. We liked the idea of developing a third party audit process as part of an approval, (making reference again to the need of a “management system”).
4. It is important to support the on-going development of the CSA Z276 Standard.
5. The CSA Z276 Standard currently references 88 other standards and recommended practices, etc. The “Import Terminal Work Group” is reviewing references and will welcome suggestions in this regard.
6. It is important for all jurisdictions to clarify their role.
7. The “Regulatory Maze” should be developed into a “matrix” thereby clarifying the roadmap by Province. The next steps are to be facilitated (arranged) by the NEB before the end of January?
8. We may need a “lead”, (meaning we need a Regulatory Leader).
9. Develop a “partnership” to develop timelines for project specifics.
10. Place the draft regulations on a website for comment (Nova Scotia).
11. Develop a list of contacts across the country, i.e. publish the addresses of the attendees at this workshop.
12. There is a need to resolve the differences in requirements between “land and water”.
13. It was noted that some permits and approvals require periodic renewal and they should be identified to the proponent.
14. This workshop had lots of discussion on environmental approvals versus worker/public safety and security issues, which are also equally important.
15. This workshop noted the importance of the public’s perception and the need for public education.
16. We need more information on emergency preparedness between the ship and the storage tank(s). Note that the CSA Z276 Standard includes operations and maintenance and the requirements for emergency procedures.
17. A small leak of LNG in the cryogenic material (piping/tank) is critical.
18. What is unique about a LNG facility is the large volume of cryogenic liquid. Existing processing facilities with cryogenic materials are common, e.g. liquid nitrogen and oxygen plants, and pipeline stripping plants.

19. The Environmental Emergency Regulations under part eight of the Canadian Environmental Protection Act have four requirements regarding environmental emergency plans (see useful references list).
20. Once off the ship the CSA Z276 Standard (for LNG facilities) and the CSA Z662 Standard (for pipelines) apply.
21. Get the scope clear at the beginning and agreed to by all authorities. Get the scope clear between the proponent and the regulators. Do not alter the scope/plan, i.e. discourage changes.
22. Identify all of the technical standards that would be required for use in a generic facility and are adopted by various departments and agencies.
23. Identify expertise available with regard to scope and public interest.

13.0 PARKING LOT ITEMS/GAPS IDENTIFIED

1. List the site specific approvals required across Canada.
2. Document the sequence of approvals required.
3. Determine when the next workshop session will be held.
4. Develop a list of management system models.
5. Determine if the NEB can be accessed for “expert advice”.
6. Would the NEB consider translating this workshop report into French?
7. Would the NEB or CSA consider translating the (Spanish) Mexican LNG Standard into English and/or French?
8. Determine how a project proponent “gets from ship to shore”, (a reference to the lack of understanding with regard to the accountabilities and permits required at the transition between water and land).

14.0 NEXT STEPS

The agreed next steps are:

1. Publish a report covering the presentations and discussions at this workshop.
2. Form a Working Group to further identify the regulatory accountabilities for the various components of an LNG receiving terminal. The results produced by the Working Group will be sent to all participants of this workshop by the NEB.

15.0 REFERENCES REGARDING MANAGEMENT SYSTEMS AND/OR OPERATIONS INTEGRITY

The following are useful references specifically with regard to management systems or management of operations integrity:

1. Proposed Annex N – to CSA Standard Z662 (Pipelines) – Guidelines for Integrity Management of Pipelines
2. Proposed Annex X – to CSA Standard Z662 (Pipelines) – Pipeline Management System
3. ASME B31.8S – 2001, Managing System Integrity for Gas Pipelines (Supplement to ASME B31.8)
4. API 1160 – Managing System Integrity for Hazardous Liquid Pipelines, First Edition, November 2001
5. ISO 9001
6. U.S. Office of Pipeline Safety (OPS) IMP Rule for Liquid Pipelines
7. U.S. Office of Pipeline Safety (OPS) HCA Definition and Gas Rule
8. Alberta Energy and Utilities Board Documentation such as:
 - a) Guide 66
 - b) existing and draft pipeline regulations
9. British Columbia Oil and Gas Commission documentation
10. NEB Onshore Pipeline Regulations (OPR-99) and Guidance Notes
11. NEB Processing Plant Regulations (SOR/2003-39) and Guidance Notes

16.0 ADDITIONAL DOCUMENTS MADE AVAILABLE AT THE WORKSHOP

1. Getting Naturally High on Gas in Nova Scotia – the Halifax Herald Limited, January 4, 2005
2. Approval to the Irving Oil Limited Liquefied Natural Gas Marine Terminal and Multi-Purpose Pier Project – New Brunswick Environmental Impact Assessment Regulation
3. Process Safety Management – presentation by Jean-Paul Lacoursière, University of Sherbrooke
4. The New Brunswick EIA Process for the Irving Oil LNG Project – Germaine Pataki-Thériault

17.0 OTHER USEFUL REFERENCES

The following are other useful references for additional information

1. The Sandia Report, Guidance on Risk Analysis and Safety Implications of a Large Liquefied Natural Gas (LNG) Spill Over Water – Sandia National Laboratories
2. Environmental Emergency Regulations, Canadian Environmental Protection Act (referenced at the workshop)
3. Catalogue of CSA Standards detailing list of available CSA Canadian Standards
4. Performance Standards and their Application to CSA Requirements, CSA, October 17, 1974
5. CSA Standard Z276-01, Liquefied Natural Gas (LNG) – Production, Storage and Handling
6. CAN/CSA Standard-Q850 – Risk Management Guideline for Decision Makers
7. CSA Standard Z764 – A Guide to Public Involvement (and the related stakeholder engagement process available from CSA to engage diverse groups)
8. The Environmental Emergency Regulations under part eight of the Canadian Environmental Protection Act

18.0 USEFUL WEB SITES

1. University of Houston, Institute for Energy, www.energy.uh.edu
2. Transport Canada, Acts and Regulations, www.tc.gc.ca
3. Technical Review Process of Marine Terminal Systems and Transshipment Sites (TERMPOL), Review Document, <http://www.tc.gc.ca/MarineSafety/TP/TP743/menu.htm>
4. Federal Energy Regulatory Commission, <http://ferris.ferc.gov>
5. Comisión Reguladora de Energía, <http://www.cre.gob.mx>
6. Mexican LNG Standard, http://www.cre.gob.mx/diario_oficial/avisos04/060-0804.pdf