

Liquefied Natural Gas (LNG) Producer-Consumer Conference 2014

LNG plant construction in cold harsh condition -- Chiyoda's experience in Sakhalin LNG project -

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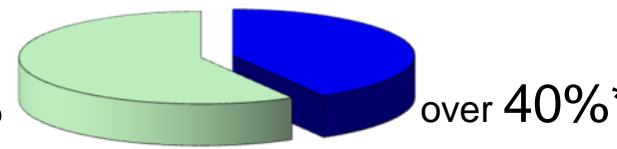


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"Courtesy of Sakhalin Energy Investment Company"

1. Chiyoda in LNG plant projects



* : Plant capacity awarded since 2003

Ras Laffan, Qatar

- RasGas LNG Project Train 1&2
RasGas FEED 1995
- Qatargas LNG Project Train 1&2
Qatargas EPC 1996
- Qatargas LNG Project Train 3
Qatargas EPC 1998
- RasGas LNG Expansion Project Train 3/4
RasGas (II) FEED 2000, EPC 2003, 2005
- Qatargas Debottlenecking Project Train 1/2/3
Qatargas EPC 2003, 2004, 2005
- RasGas LNG Expansion Project Train 5
RasGas (II) FEED 2004, EPC 2006
- Qatargas II Train 4&5 LNG Project
Qatargas (II) FEED 2004, EPC 2008, 2009
- RasGas LNG Expansion Project Train 6/7
RasGas (3) FEED 2004, EPC 2009
- Qatargas 3/4 Train 6&7 LNG Project
Qatar Petroleum & ConocoPhillips Qatar Ltd.
FEED 2005 Qatargas EPC 2010
- Qatargas Plateau Maintenance Project
Qatargas EPC

Das Island, U.A.E.

- ADGAS LNG Project Train 1&2
ADGAS FEED 1972, EPC 1976
- ADGAS LNG Plant Expansion Project Tr 3
ADGAS FEED 1991, EPC 1994

Sabetta, Russia

- Yamal LNG Project FEED 2013

Sakhalin Island, Russia

- Sakhalin LNG Project Train 1&2
Shell Global Solutions International B.V. PS 2001
Sakhalin Energy EPC 2008

Qalhat, Oman

- Oman LNG 3rd Train Expansion Project
Shell Global Solutions International B.V. PS 2001
PS Update 2002
- Oman LNG Project Train 1&2
Oman LNG EPC 2000
- Qalhat LNG Project
Qalhat LNG EPC 2005

Port Moresby, Papua New Guinea

- PNG LNG Project Train 1 & 2
ExxonMobil FEED 2009
Esso Highlands Limited EPC

Tangguh, Indonesia

- Tangguh LNG Project
PERTAMINA FEED 2001

Masela, Indonesia

- Abadi Floating LNG Project
INPEX Masela FEED

Gladstone, Australia

- Arrow Energy PS 2012

Darwin, Australia

- Ichthys LNG Project Train 1&2
INPEX Browse, LTD. FEED 2011
INPEX Operations EPC

Arun, Indonesia

- Arun LNG Project Train 4&5
PERTAMINA EPC 1983

Bontang, Indonesia

- Bontang LNG Train-E Project
PERTAMINA EPC 1989
- Bontang LNG Train-F Project
PERTAMINA EPC 1993
- Bontang LNG Train-G Project
PERTAMINA EPC 1997
- Bontang LNG Train-I Project
PERTAMINA FEED 2001

James Price Point, Australia

- Browse LNG Project
Woodside Energy Ltd. FEED 2013

Hackberry, USA

- Cameron LNG Project
Cameron LNG EPC

Arzew, Algeria

- Gassi Touil LNG Project
Sonatrach EPC

Sabine Pass, USA

- Golden Pass LNG
Golden Pass Products FEED

Damietta, Egypt

- Egypt LNG Project
Union Fenosa FEED 2001

Bonny Island, Nigeria

- Nigeria LNG Project Train 1
Nigeria LNG PS 1994
- Nigeria LNG Project Train 7
Nigeria LNG PS 2006

La Brea, Trinidad Tobago

- Trinidad LNG Plant Project
Atlantic LNG FEED 1995

Santos Basin, Brazil

- Petrobras FLNG Project
Petrobras FEED 2010

Cabo Delgado, Mozambique

- Mozambique LNG
Anadarko FEED

Kitimat, Canada

- LNG Canada Project
LNG Canada FEED

Freeport, USA

- Freeport LNG Project
FLNG Liquefaction
FLNG Liquefaction2
(through CB&I) EPC

28 FEED/PS projects

23 EPC projects *

*** 38 trains, 146 million tons of LNG**

as of October 2014

Chiyoda in LNG plant projects: Qatar



RasGas

Train 1,2 (FEED), 1995
Offshore Facility, 1998

RasGas II

Train 3,4 (FEED), 2000
Train 5 (FEED), 2004
NGL Project (FEED), 2002
Train 3 (EPC), 2003
Train 4 (EPC), 2005
Train 5 (EPC), 2006
4.7 MTPA x 3 Trains

RasGas3

Train 6&7(FEED), 2005
Train 6 (EPC), 2009
Train 7 (EPC), 2009
7.8 MTPAx 2 Trains

ExxonMobil Middle East Gas Marketing Limited

AKG-1 (FEED), 2003
AKG-1 (EPC), 2005
AKG-2 (FEED), 2006
AKG-2 (EPC), 2009

Chiyoda in LNG plant projects: Russia

Construction work in Sakhalin, Russia
under cold harsh condition



Courtesy of Sakhalin Energy Investment Company

Chiyoda in LNG plant projects: PNG LNG Project, Papua New Guinea



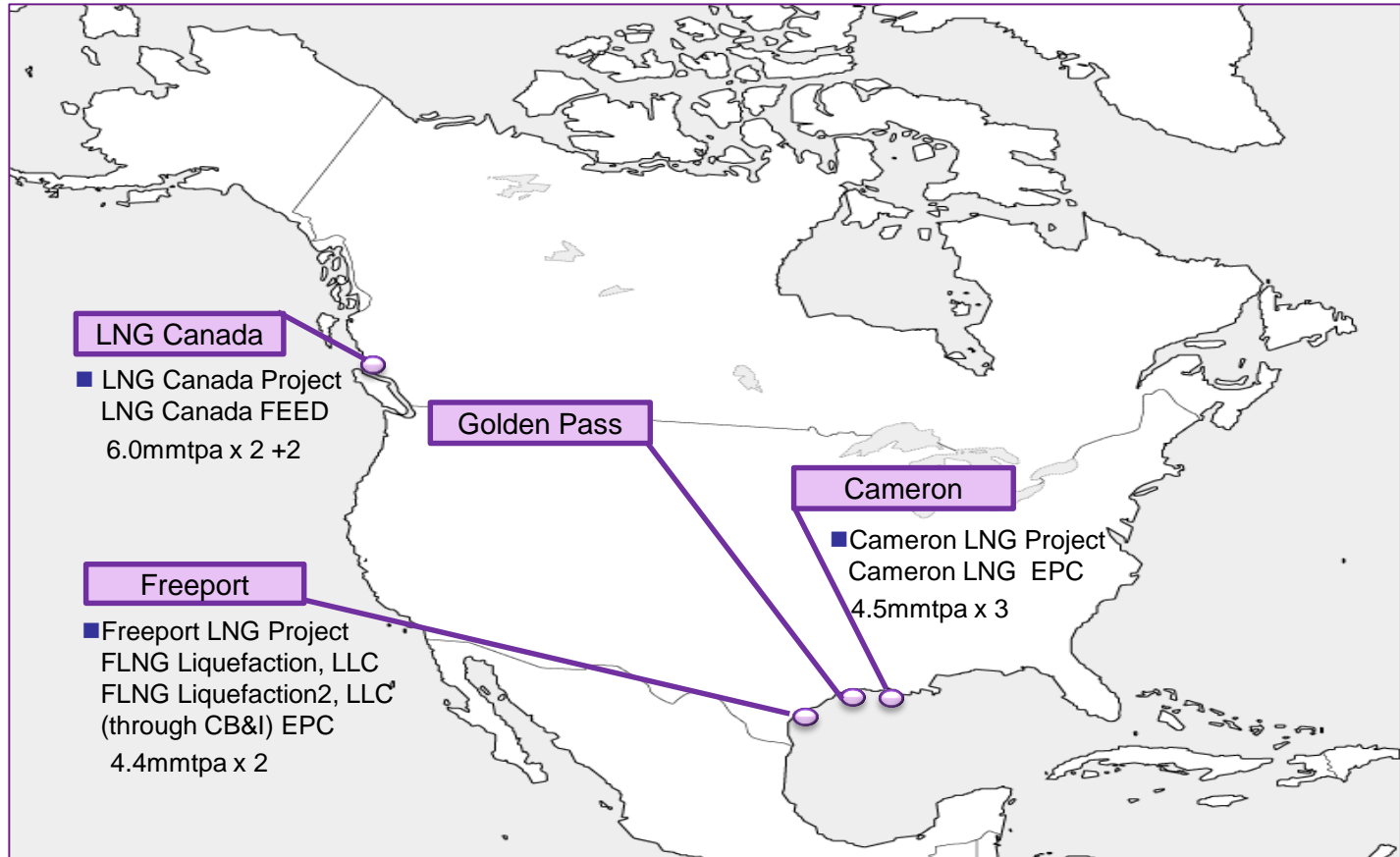
Courtesy of ExxonMobil Corporation

- Early production by 5 months ahead
- Non-Lost Time Incident: 72 million man-hours*

*By ExxonMobil

Chiyoda in LNG plant projects:

North America



- 2 FEED, 2 EPC Projects

as of October 2014

2. Introduction of Sakhalin II LNG Project

First and Only working LNG Plant in Russia

- **10,000 Construction Staff at Peak**
- **Area: 240ha**
(equiv. to 340 x Football Pitch)
- **72,000t. of Steel**
(equiv. to 2 x Tokyo Sky Tree Tower)
- **4.8MTPA x 2Trains**
(app. 10% of Japan's LNG Import, year 2013)



Source: Tokyo Skytree Official Website

Key Success Factors

① Timely acquisition of Licenses/Permits

- Interfacing with Federal/Local/Regional Legislative bodies on Russian Codes and Standards, Approval Conditions

② Contribution to Local Community for Sustainable Development

- Building Good Relationships with Local Community
- Collaboration with Russian Partners and Authorities
- Technology Transfer

③ Preservation of Environment with High Sensitivity

- To comply with Environmental Regulations
- To minimize negative impact on Natural Resources

④ Enhancing Health and Safety for Maintaining Work Efficiency

- Consideration on Health and Safety under Sub-Arctic Conditions
- Compliance with Sanitary Requirements

3. Way forward for LNG projects in Cold Regions

- Gas field development is shifting to Deep, Distant, and Difficult areas .
- Consequently, LNG plant sites are moving from the Middle East, Asia and Oceania regions, to Arctic regions such as Canada, Alaska and Russia.
- Chiyoda has an experience of successfully completing LNG plant construction in Sakhalin, Russia.
- Chiyoda will perform LNG projects in various areas including cold harsh conditions, with special attention to:
 - Logistics for equipment, materials and mobilization of project staffs and labors
 - Use of Module Construction and/or Pre-fabrication to the maximum extent practically and economically
 - Synchronizing local government/community
 - Implementation of HSE considering local requirements



Commitment to schedule/performance guarantee

Thank You

