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

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Executive Chairman
Chiyoda Corporation
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"Courtesy of Sakhalin Energy Investment Company"
1. Chiyoda in LNG plant projects

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28 FEED/PS projects
23 EPC projects *

* 38 trains, 146 million tons of LNG

* Plant capacity awarded since 2003

* 38 trains, 146 million tons of LNG

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 MTPA x 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

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

*By ExxonMobil Corporation
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