BIOGRAPHY

Edward Koshka

Ivanhoe Energy Inc.

Ed Koshka joined Ivanhoe Energy Inc. as Vice President, Business Development in 2007, responsible for creating partnerships and opportunities for heavy oil production using Ivanhoe’s HTL Upgrading technology. His duties now include leading the development of engineering, infrastructure and marketing initiatives for Ivanhoe’s heavy oil project.

Mr. Koshka has over 20 years of industry related experience. Prior to joining Ivanhoe, Mr. Koshka worked at Synenco Energy where he was responsible for business development, marketing and strategic planning activities. Prior to joining Synenco, Mr. Koshka worked at Purvin & Gertz’s Calgary office, assisting clients in areas of crude oil market assessment, project economic analysis and oil sands strategy development. Mr. Koshka’s industry experience began at Petro-Canada in areas of refining, operations and planning, crude oil marketing and corporate risk management. Mr. Koshka holds a Bachelor degree in Chemical Engineering from the University of Alberta and an MBA from the University of Calgary.

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Maximizing Heavy Oil Value While Minimizing Environmental Impact with HTL Upgrading of Heavy to Light Oil

Edward Koshka
Ivanhoe Energy Inc.

Ivanhoe Energy Inc.’s proprietary HTL upgrading technology is designed to cost effectively process heavy oil in the field and produce a stable, significantly upgraded synthetic oil that meets pipeline requirements. By-product energy from the process can be used to generate steam or electricity. In developed markets, HTL improves the economics of heavy oil production by reducing or eliminating the need for natural gas and diluent, and by capturing the majority of the heavy to light oil price differential. In remote areas, integrated HTL production frees otherwise stranded resources. HTL accomplishes all of this at a much smaller scale and at lower per barrel capital costs compared with conventional technologies.

In addition to the foregoing, integrated HTL heavy oil production provides significant environmental benefits, particularly related to greenhouse gas emissions (GHG). This value-add element of HTL integration has taken on significant importance given the dramatic increase in heavy oil production worldwide and the growing pressures related to GHG.

After years of piloting, development and commercial demonstration, the HTL upgrading process is ready for full scale application. This paper provides a description of the HTL Upgrading Process along with its economic benefits to the producer, and a detailed analysis of HTL GHG advantages.
Ivanhoe Energy Integrated Upgrading

Ed Koshka - VP Engineering, Marketing & Infrastructure
FORWARD-LOOKING STATEMENTS

This document includes forward-looking statements, including forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. Forward-looking statements include, but are not limited to, statements concerning Ivanhoe Energy's ability to obtain the financing necessary to pay the balance of the purchase price for the working interest in two oil sand leases acquired from Talisman and financed by Talisman, Ivanhoe Energy's plan to establish integrated HTL heavy-oil projects on Lease 10 in Alberta and Block 20 in Ecuador, the anticipated production capacity of the proposed HTL plants, the anticipated quantities of recoverable barrels of bitumen from lease 10 and heavy oil from Block 20 in Ecuador and other statements which are not historical facts. When use in this document, the words such as "could", "plan", "estimate", "anticipate", "intend", "may", "potential", "should", and similar expressions relating to matters that are not historical facts are forward-looking statements. Although Ivanhoe Energy believes that its expectations reflected in these forward-looking statements are reasonable, such statements involve risks and uncertainties and no assurance can be given that actual results will be consistent with these forward-looking statements. Important factors that could cause actual results to differ from these forward-looking statements include the possibility that the company will be unable to raise financing for the Talisman leases and Block 20 in Ecuador, the potential that the company's projects will experience technological and mechanical problems, new product development will not proceed as planned, the HTL technology to upgrade bitumen and heavy oil may not be commercially viable, samples from the Athabasca bitumen test may not have the product qualities anticipated, market acceptance of the HTL technology may not be as anticipated, Ivanhoe Energy's lack of history in developing commercial HTL opportunities, geological conditions in reservoirs may not result in commercial levels of oil and gas production, the availability of drilling rigs and other support services, uncertainties about the estimates of the reserves, the risk associated with doing business in foreign countries, environmental risks, changes in product prices, our availability to generate cash flow and raise capital as and when required, competition and other risks disclosed in Ivanhoe Energy's Annual Report on Form 10-K files with the U.S. Securities and Exchange Commission on EDGAR and the Canadian Securities Commissions on SEDAR.
Outline

• HTL Upgrading Technology Overview
• Ivanhoe Project Development
  – Canada (Tamarack)
  – Ecuador (Pungarayacu)
• Integrated Economics
• GHG Life Cycle Advantages of Field Upgrading
Ivanhoe Energy Snapshot

Tamarack HTL Project
Canada

Pungarayacu HTL Project
Ecuador

Sunwing Energy
China

Additional HTL Opportunities Available Worldwide

NCUT Conference 2009
The HTL Advantage

• Small scale, field-located, integrated upgrading
• Avoids need for natural gas, diluent, captures differential
• Incremental economics, reduced volatility/risk
  – developed areas: Tamarack
• Frees stranded assets
  – remote areas: Pungarayacu
• Monetize resources in province or country
HTL Technology

- Commercial Biomass
  1989 - ongoing

- Commercial Demo
  California 2005 - 2007

- Feedstock Test Facility
  Texas 2009

- 20,000 BPD Tamarack / AMEC
  Canada

Ivanhoe Energy

NCUT Conference 2009
HTL Technology

- Application of heat at very short residence time
  - improved yields & product quality
  - lower Capex/Opex
  - easy to modularize
  - low minimum scale of 10,000 bpd

- Transport bed of solid inert heat carrier (sand)
- No catalyst, moderate temperature, low pressure
- No hydrogen required
- FCC Analogue
- Broad protection of IP
Simplified Process Flow – HTL Upgrader
Commercial Demonstration Facility (CDF)
FTF at Southwest Research Institute
HTL Feedstock Test Facility-
Accomplishments

• Basic construction at Zeton. Construction completed at SwRI.
• Third party contract operation at Southwest Research Institute, SwRI.
• Developed, and operated in accordance with, ISO9001 procedures.
• Run Summary:
  – Hot sand circulation & oil in unit in December 2008.
  – Feed and product, atmospheric and vacuum, distillation successful.
  – Shakedown run on Belridge in January 2009 successful
  – Shakedown run on Athabasca bitumen in February 2009 successful
  – Shakedown run on whole Athabasca bitumen in March 2009 successful with bottoms recycle.
  – Validated pilot plant and CDF yield data. Increased performance proven.
  – On-going testing of feedstocks, operating parameters, and configurations.
Tamarack Project

- Integrated SAGD / HTL Project
- 10 miles NE of Ft. McMurray
- 11 Sections
- 440 MM barrels best estimate
- Top-tier McMurray sands
- Well delineated – 4 wells/section
- 100% Ivanhoe Energy
- Phased 50,000 bpd
Tamarack: Top-Tier Resource

Strong Analogue to Petro-Canada’s Mackay River

- net pay
- porosity
- Permeability
- oil saturation
- depth, cap rock
- well productivity
- steam-oil-ratio
Tamarack Phase 1 – 20,000 bpd

• Engineering
  – Upstream Design Basis completed
  – Downstream HTL Basic Engineering Design: Completed July 2009
  – Integrated Capex estimate completed (Q409)
  – Value Improvement Study
  – Resource report completed

• Environmental/Regulatory
  – Application submission June 2010*

• Phase I*
  – First Oil: 4th Qtr 2013
  – First SCO: 2nd Qtr 2014

* Contingent on financing
HTL Engineering Status

• AMEC: Ivanhoe’s Tier 1 Engineering Contractor
  – provides support for FEED, EPCm, feasibility, conceptual

• Tamarack Phase I
  – HTL Basic Engineering Design – Completed
  – Front End Engineering and Design – Q4 2009
  – Updated Capex estimate (+20/-15%) – Q1 2010
Phase 1 HTL/SAGD Capex

- Current estimate based on:
  - 4\textsuperscript{th} quarter 2008 AMEC estimate (top of the market)
  - less 7% adjustment for capital costs declines

- Total initial Capex Phase I: C$ 1,253 MM = C$ 62.6 M / bpd
Economic model assumptions:
• WTI – forward strip (6/4/09)
• Oil to gas price ratio – 10:1
• Diluent premium – 106% of WTI
• Heavy oil differential – 30%
• HTL SCO discount to WTI – 12%
• Capital adjustment – tied to WTI
• Foreign exchange – tied to WTI
### Tamarack – Phased Economics

#### Phase I

**BEFORE TAX ECONOMICS**

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**AFTER TAX ECONOMICS**

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#### Phase I & II

**BEFORE TAX ECONOMICS**

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**AFTER TAX ECONOMICS**

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<td>IRR</td>
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Greenhouse Gas Management
A wells-to-wheels comparison

Resource Recovery
- Use NG for steam generation
- Produce, transport & store NG
- Import power

Pipeline Transportation
- Ship diluted bitumen to PADD II refinery

Refinery Processing
- Recover diluent from dilbit and return to field
- Convert bitumen into end products
- Consume NG for H2 generation
- Operate FGD

Product End Use
- Ship products to local network
- Consume products
- Ship coke from PADD II to Far East
- Combust coke for power generation

Standalone SAGD
- Use coke and HTL gas for steam generation and HTL process
- Import power
- Ship solids to/from site
- Operate FGD

SAGD Integrated with HTL
- Ship HTL SCO to PADD II refinery
- Convert HTL SCO into end products
- Consume NG for H2 generation

Ivanhoe Energy

NCUT Conference 2009
HTL Integration reduces Greenhouse Gas—
14.5% advantage on a m³ of bitumen production basis*

*Source: LENEF Consulting (1994) – March 2009
Thank You
Frank D. Guffey

Western Research Institute

Dr. Guffey received his Ph.D. in chemistry from the University of Wyoming in 1977. He is a Principal Scientist at Western Research Institute where he has been employed since it was established in 1983. Dr. Guffey’s research interests include recovery and processing of unconventional hydrocarbon resources. He is currently WRI’s lead for development and commercialization of the WRITE Process.

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