Upstream **Engineering** Centre

Overview and the Oil Spill Response JIP

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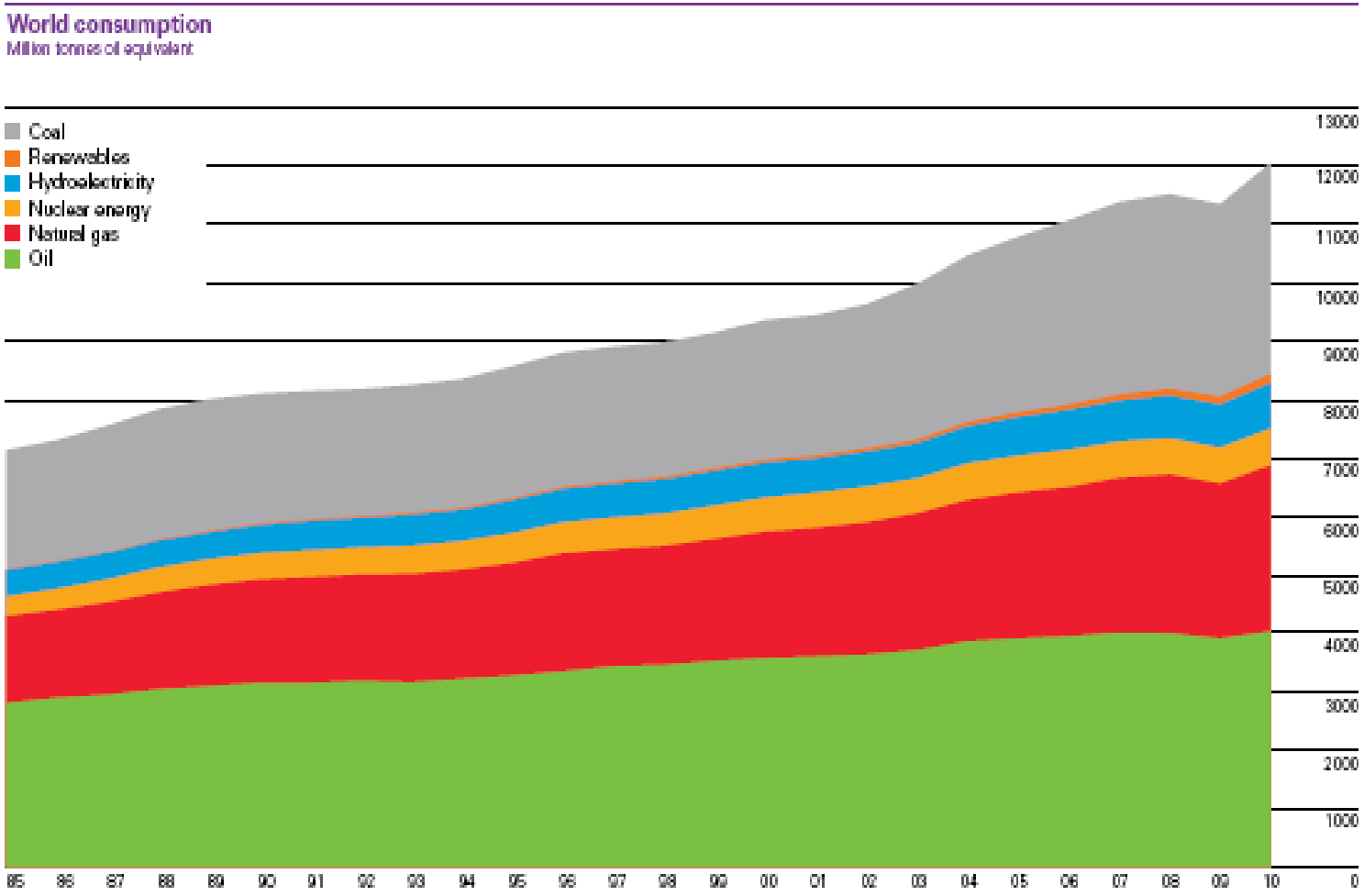
Talk Outline

- Introduction
  - ESA EO workshop September 2010 and OGEO
- The continued need for oil & gas
- New trends in the oil & gas industry
  - Deepwater and Arctic regions
- GIRG & the OGP / IPIECA Oil Spill Response (OSR) JIP
- OGEO and linkages to the OSR JIP
- Conclusions

Oil & Gas and the Energy Mix



Source: BP Statistical Review of World Energy, 2011

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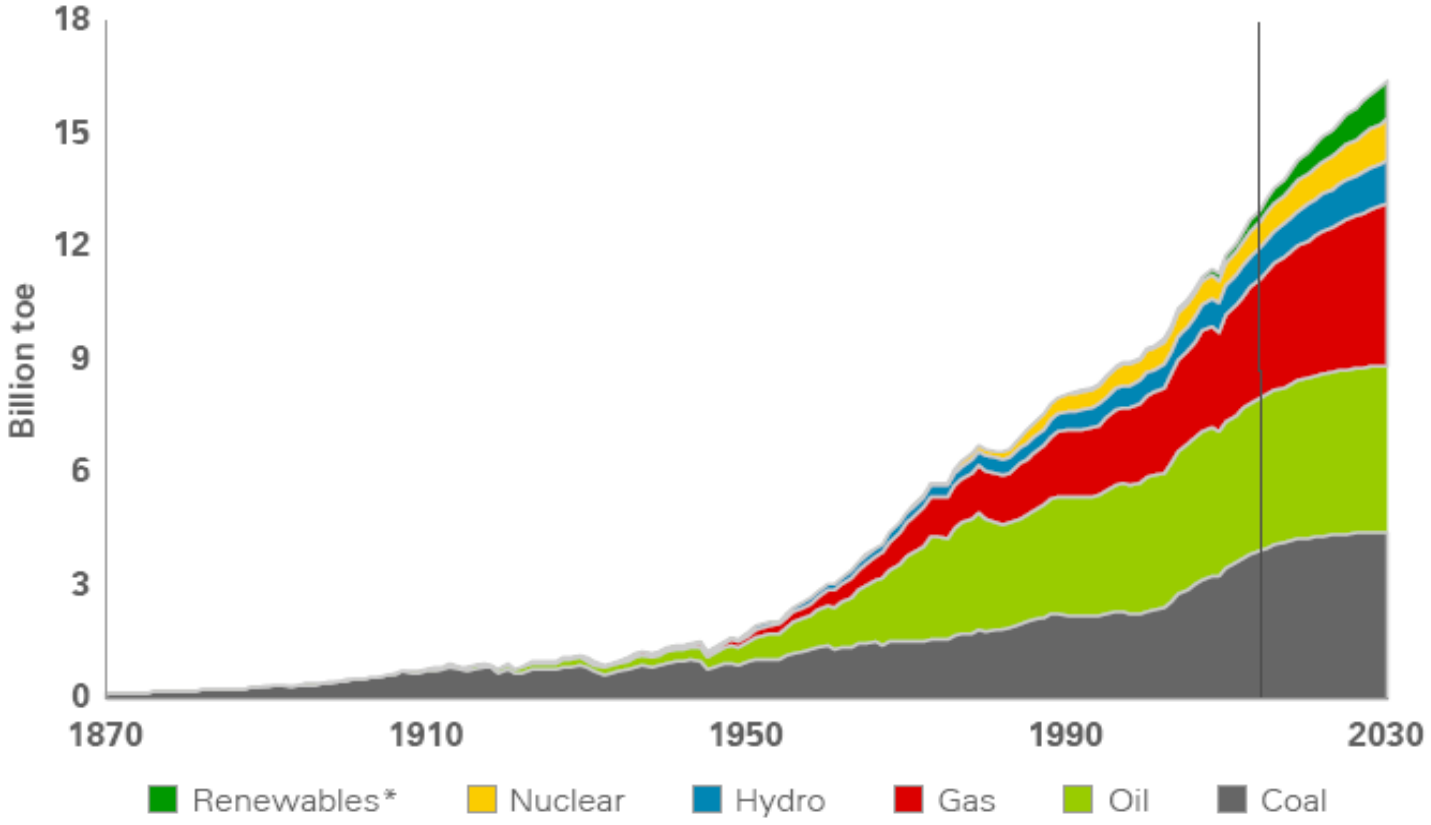
Oil & Gas and the Energy Mix to 2030



* *Includes biofuels*
Source: BP Energy Outlook 2030

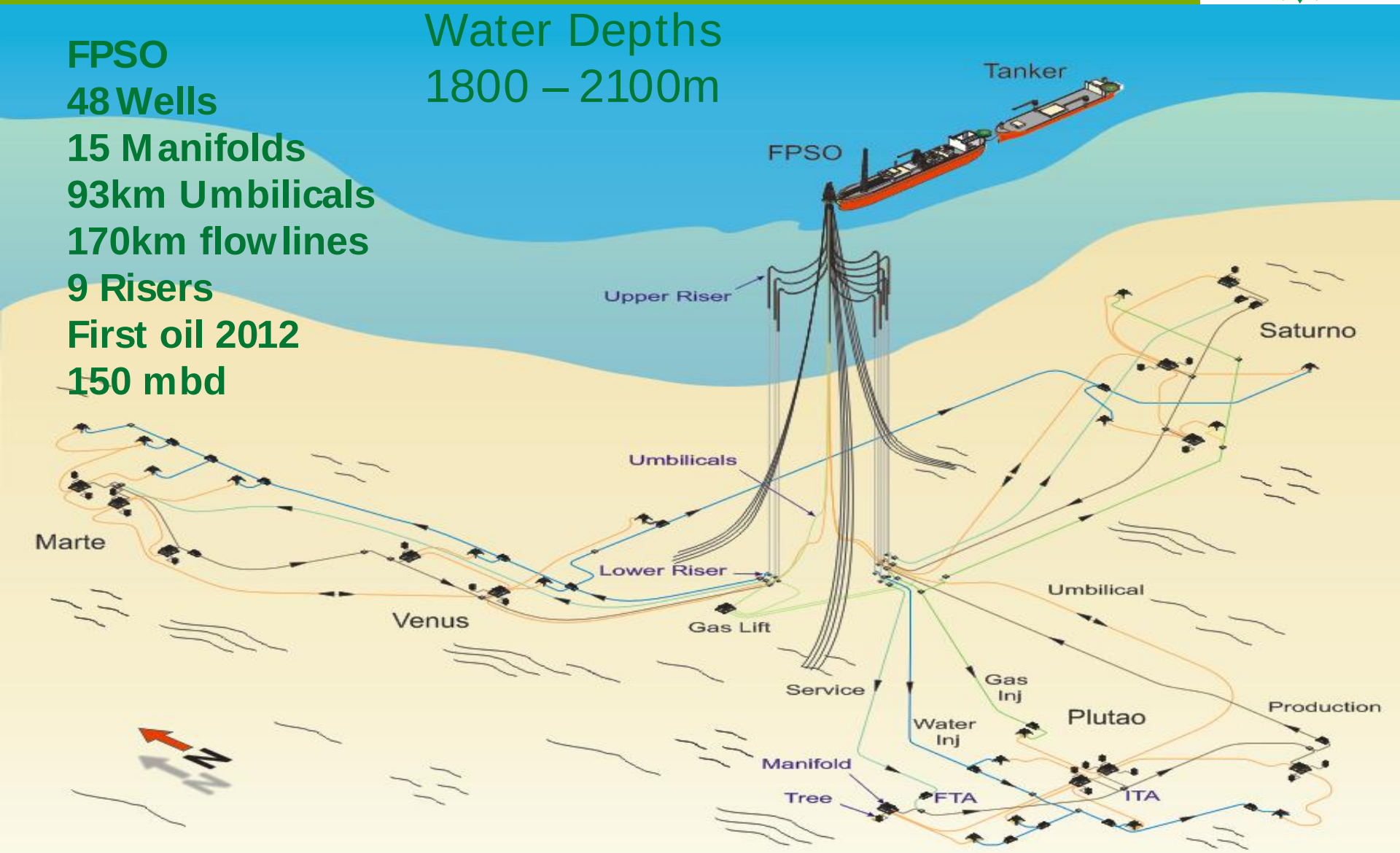
New trends in the oil & gas industry

- Increasingly the “easy to access and find” reserves have been discovered and exploited
- Move towards more challenging and harsher environments
- Deepwater (up to 3,000m). Examples:
  - GoM, West of Shetland, Brazil, West Africa, Mediterranean, Australia
- “Arctic” or cold regions. Examples:
  - Beaufort Sea, Barents Sea, West Greenland, Kara Sea, Sakhalin, North Caspian

Block 31 – Plutao, Saturno, Venus, Marte (PSVM)

FPSO
48 Wells
15 Manifolds
93km Umbilicals
170km flowlines
9 Risers
First oil 2012
150 mbd

Water Depths
1800 – 2100m

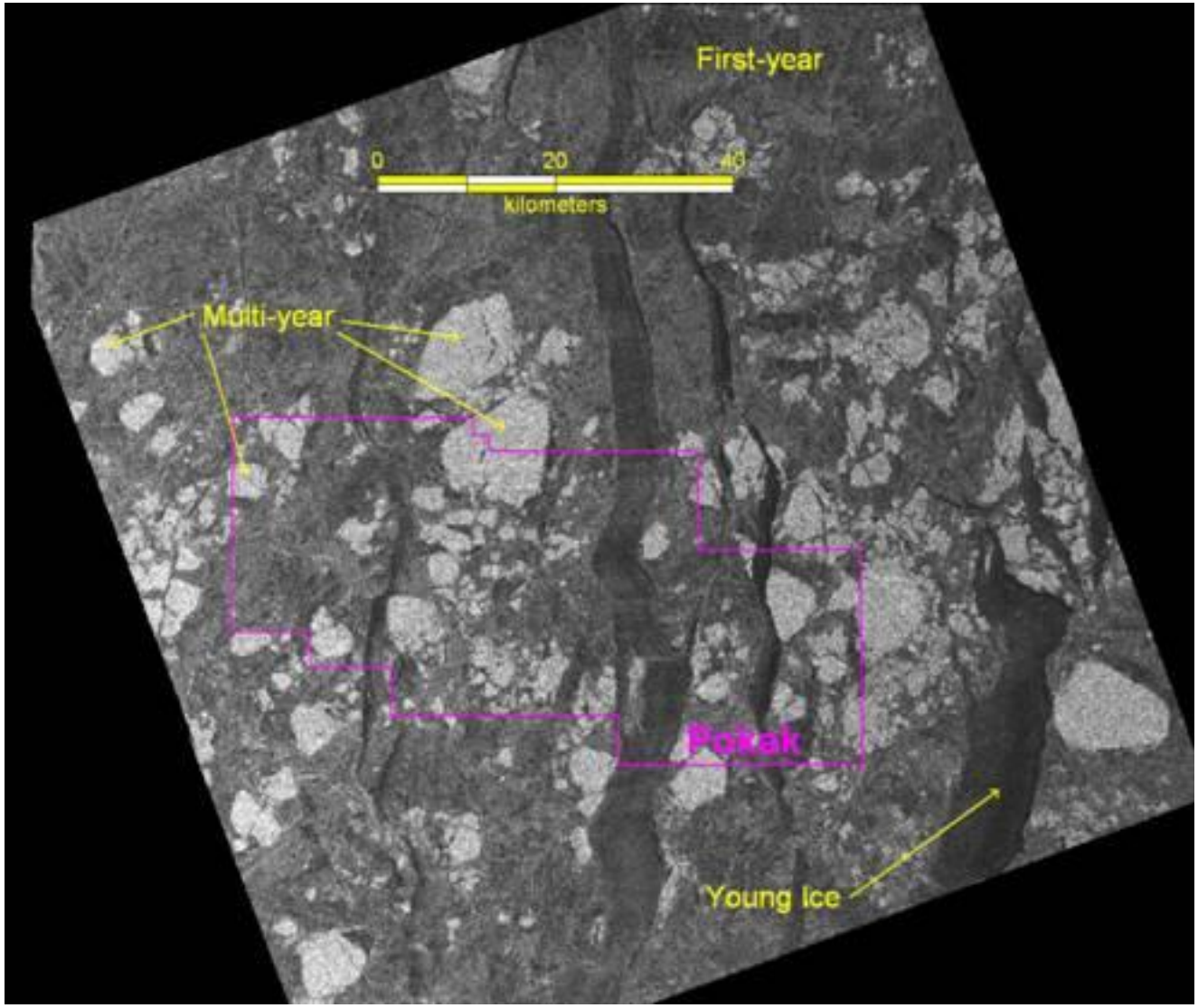


Deepwater Issues

- Risers and Moorings
- Seabed infrastructure
- Potential oil spills
- Parameters of interest
  - Winds
  - Waves – directional spectra
  - Currents – profiles
  - Temperatures – air and sea
  - Atmospheric pressures
  - Cloud and visibility

Arctic operations

EO imagery for sea ice & iceberg detection



Arctic Issues

- Seasonal operability
- Sea ice and icebergs
- Seabed infrastructure – “glory holes”
- Potential oil spills
- Parameters of interest
  - Winds
  - Waves – directional spectra
  - Currents – profiles
  - Temperatures – air and sea
  - Sea ice
  - Icebergs
  - Atmospheric pressure
  - Cloud and visibility

Global Industry Response Group (GIRG)

- OGP established the GIRG (Global Industry Response Group) on 14 July 2010.
- GIRG working in three areas. Individual working groups are focusing on:
  - Prevention – improving well engineering design and equipment as well as developing better operating procedures
  - Intervention – helping to identify the best ways to handle deepwater blowouts, with emphasis on local conditions and regional requirements
  - Response – ensuring that all the necessary equipment, expertise and resources are available if, despite improved prevention and intervention efforts, an oil spill still occurs
- Reports issued in May 2011 (on OGP web site)

Global Industry Response Group (GIRG)

UEC

Oil Spill Response – Recommendations (1)

- 19 Recommendations made in the Oil Spill Response report
- A joint OGP / IPIECA Joint Industry Project (JIP) formed to take the recommendations forward
- Fourteen OGP and IPIECA members have agreed in principle to join the JIP:

- A further four have expressed interest
- 3 year program envisaged
- The structure of the JIP and the reporting lines back to the OGP Management Committee and IPIECA Executive Committee have been agreed.
- Nineteen work items will be arranged into eight work streams

Oil Spill Response – Recommendations (2)

- JIP Project Manager is IPIECA Technical Director - Rob Cox
- 3 work streams of potential interest to OGEO
  - Surveillance of Oil Spills
  - Oil spill trajectory and subsurface plume modelling
  - Communications – forming a " Common Operating Picture"
- OGP committee input to these work streams from Geomatics, Environment and Metocean Committees
- Focused through the OGP Geo-information Sub-Committee (under Geomatics)
- Roger Abel is Chair (and OGEO Member)

Surveillance of Oil Spills

Development of a Recommended Practice with the following core components:

- The engagement, deployment and integration of critical surveillance resources
- The collection, mapping, processing and use of surveillance derived information in near real time
- The capturing of feedback and implementation of process improvements across the entire response lifecycle.
- The storage, management and dissemination of information as well as raw data as part of the normal delivery cycle for projected longer term needs

Terms of Reference under discussion at this time

IPIECA

- Global oil and gas association for environmental and social issues
- Formed in 1974 following the launch of UNEP
- The only global association involving both the upstream and downstream oil and gas industry
- Membership covers over half of the world's oil production

- Current focus areas
  - Biodiversity
  - Climate change
  - Health
  - Oil spill preparedness
  - Operations, fuels and product issues
  - Social responsibility
  - Sustainability reporting
  - Water
  - Supply chain

www.ipieca.org

IPIECA Members

API (American Petroleum Industry)

- Joint Industry Oil Spill Preparedness & Response (OSPR) Task Force (JITF)
- Convened in June 2010
- Evaluate procedures and lessons learned from the Macondo spill response
- Identify potential opportunities for improvement to oil spill response system in areas such as:
  - Planning & coordination
  - Optimization of response tools
  - R&D and technology advancement
  - Training and education
- September 2010 issued preliminary recommendations

JIP and API (American Petroleum Institute)

Industry and government should conduct a workshop focused on developing a path forward on evaluating and developing current or new technology related to Oil Sensing & Tracking. Areas of focus in this workshop will include, but are not limited to, the following:

- Sensing & Tracking Recommendations
  - Remote Sensing – Surface and Subsea
  - Tracking – Surface and Subsea
  - Improved mapping/graphic tools to portray oil plume locations and trajectories
- Science & Technology Recommendations Satellite Use – including suitability for response direction at tactical level
  - Use of various image analysis tools singly or in combination
- Infrared Cameras
- Underwater Acoustics
- Hyperspectral satellite-based imagery
- Others
  - Applicability of fluorometric water sampling to determine dispersant effectiveness
  - Improvements in logistical and operational management of aircraft platforms for sensing, tracking and control
  - Buoy mounted oil sensing equipment

JIP and API (American Petroleum Institute)

- Hold workshops to identify and develop a matrix of all current and emerging remote oil sensing technologies for surface and sub-surface interface.
- Research detection capabilities to determine reliability and performance.
- Identify technologies most reliable for indicating greatest concentrations of oil on the water's surface to direct response operations and maximize collection.
- Develop a guidance document that provides an evaluation of sensing and tracking recommendations as well as science and technology recommendations. Once complete, the project team will determine whether a formal recommended practice is needed for inclusion into emergency response plans.
- Recommend a guidance protocol for determining the presence of hydrocarbons in the water column as in the case of dispersed oil.

JIP and OGEO

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Conclusions

- Oil & Gas industry is, and will continue to be, a major user of EO services
- Increasing importance of EO in oil spill surveillance (JIP)
- EO - coupled to atmospheric and ocean models - provides input conditions to oil spill, sea ice and iceberg drift models to facilitate operations in deepwater and Arctic regions
- Industry is an end-user seeking appropriate products and services to meet business needs – typically provided by value adding EO companies and organisations
- Interaction of the EO and Oil & Gas communities begun in OGEO needs to maintained and enhanced
  - Web portal
  - Oil Spill JIP
  - Others?

Questions