Energy and Resources Exploration and Extraction Implications for Marine Transportation Arctic Marine Operations

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FOSS MARINE HOLDINGS

2012 JOINT CONFERENCE:
HARBOR SAFETY COMMITTEES
AND
AREA MARITIME SECURITY COMMITTEES

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Panel 6A-Safety

Outline of Presentation

1. Background of Foss Marine Holdings (FMH), Foss Maritime Company, and Cook Inlet Tug and Barge
2. FMH/Foss experience in the Arctic and Alaska
3. Challenges in a changing Arctic environment
4. Arctic implications for industry shareholders (Focus on Safe Marine Transportation and Support Services)
5. Questions and Answers

Foss Marine Holdings

- Consolidation in 2004 to develop Saltchuk's Green Water Assets
- 1650 Employees worldwide
- 90 Tugs
- 70 Barges
- FMH Mission
  - Safe/ Quality Operation
  - Brand Integrity
  - Profitability and Return on Investment
  - Growth Initiatives

REGISTERED COMPANY ISO 9001: 2008

ISO 14000

RESPONSIBLE CARRIER PROGRAM

ISM
International Safety Management

FMH Global Operations

Updated: 07-25-12

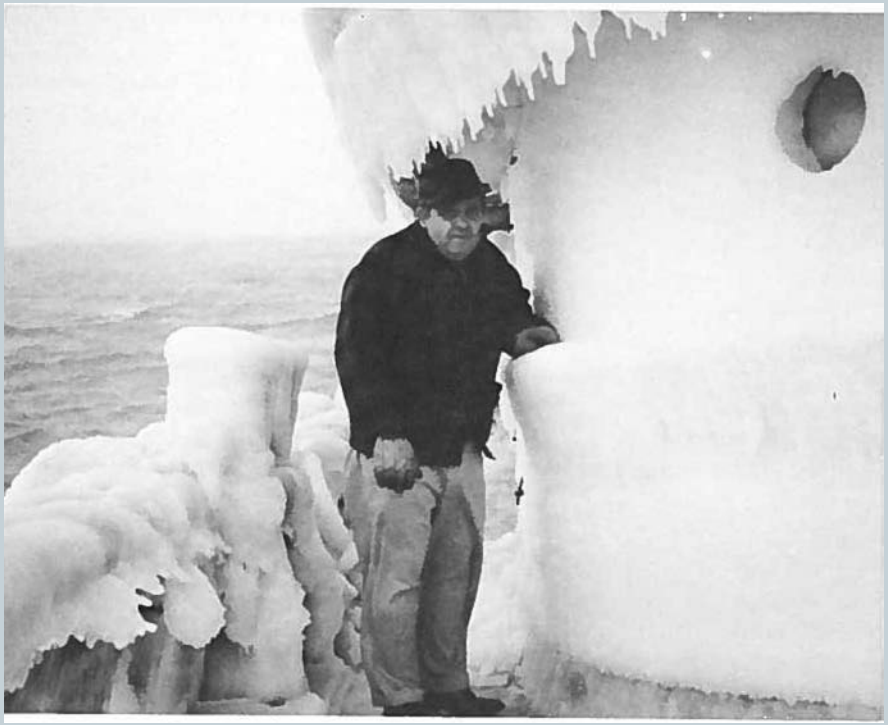
Foss Maritime Company

- Founded in 1889
- Foss Maritime Company offers a complete range of maritime transportation and logistics services to customers on the U.S. West, Gulf and East coasts, Alaska, across the Pacific Rim,, South America and around the globe.

The first Foss office in the late 1890's

FMH/Foss in Northern Alaska and the Arctic

- **1941- ~1990**
  - Standard Oil Contract
- **1957-1964:**
  - Dew Line Assist Contract
- **1967-1971**
  - Amchitka Island, Holmes and Narver Contract
- **1975-1978**
  - Prudhoe Bay Sealift
- **1978-1983**
  - Military Sealift Contract
- **1988-present**
  - Teck Cominco Contract
- **2004, 2006-2007**
  - Sakhalin Islands
- **2010-present**
  - Cook Inlet Tug & Barge



Captain Jug Nolze, weather bound on a mid-winter voyage to S.W. Alaska, 1974

Standard Oil, 1941-1985

- Primary Foss Vessels
  - Edith Foss, Christine Foss, Wendy Foss, Alaska Husky
- Areas of Operation
  - Dutch Harbor
  - Bristol Bay
  - Bering Sea (various ports and villages, from Kotzebue to Nome)
- Objectives
  - Barge petroleum products between Dutch Harbor distribution base to various ports in Bristol Bay and the Bering Sea
  - Supply petroleum products to remote villages in the Aleutian Islands and Western Alaska
  - Alaska Husky: Assist and supply the oil drilling platforms in Cook Inlet

Alaska Husky in an icy Cook Inlet assisting an oil platform

DEW Line Support, 1957-1964

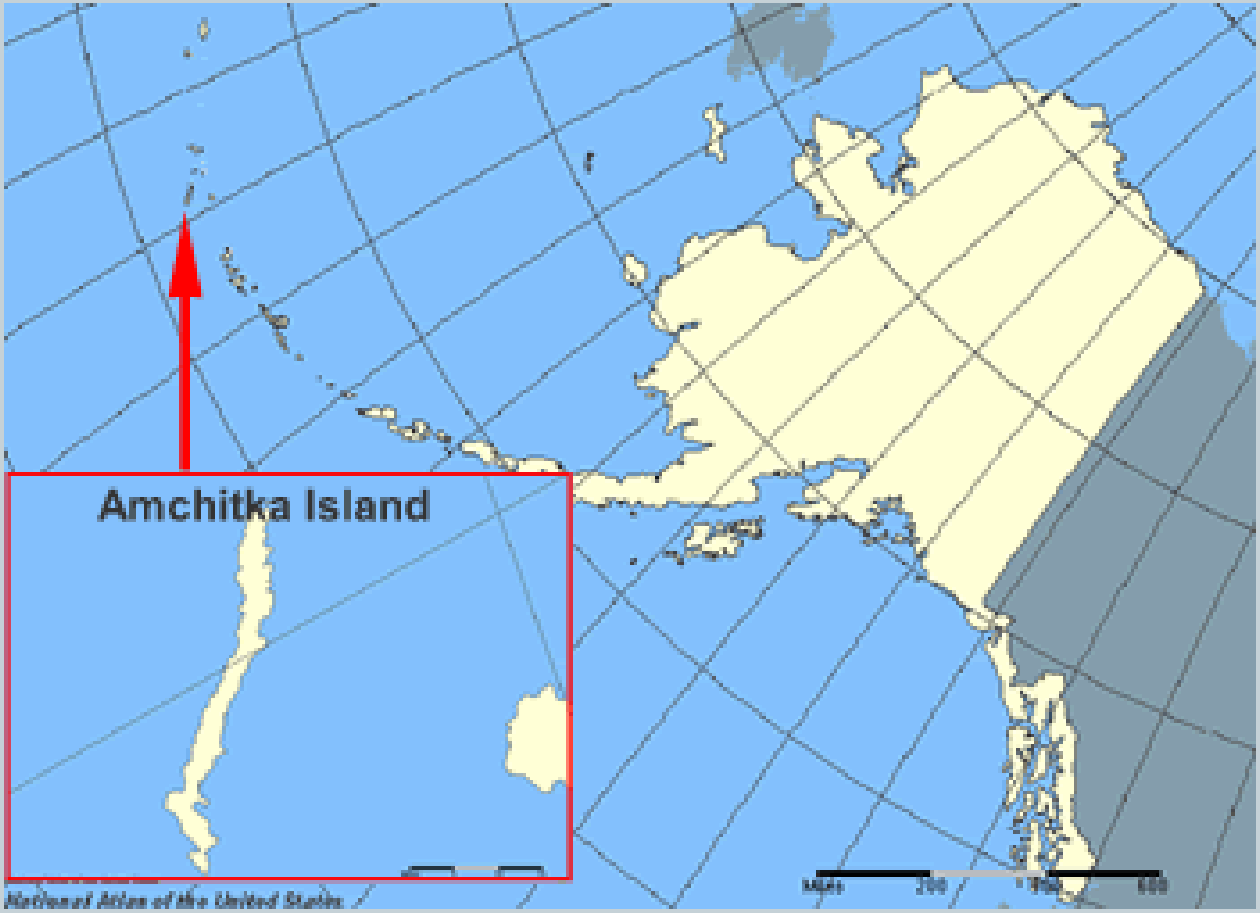
- Primary Foss Vessel
  - Agnes Foss, and other sister tugs
- Areas of Operation
  - Bering Sea
  - Arctic Ocean
  - Airforce Base at Shemya Island
- Objectives:
  - DEW Line construction support and yearly resupply
  - Complete job in stormy and unpredictable weather
  - Complete 5,800 mile round trip

Barrow DEW Station

Amchitka Island, 1967-1971

- Primary Foss Vessel
  - Adeline Foss, and other sister tugs
- Areas of Operation
  - Amchitka Island, part of the Aleutian Chain
- Objectives
  - Sealift of supplies and equipment for Holmes & Narver, the prime contractor for the Atomic Energy Commission's underground explosion project
  - 73 separate tows at an average of 40 days each

Remote: Amchitka Island



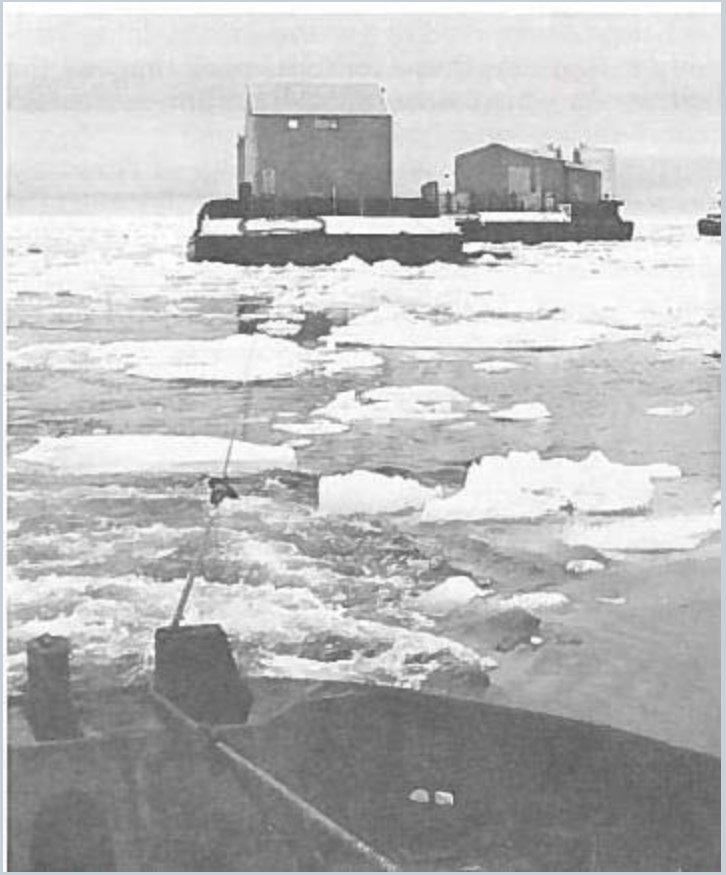
Prudhoe Bay Sealift, 1975-1978

- Primary Foss Vessels
  - Jeffrey Foss, Arthur Foss, Henry Foss & other sister tugs
- Areas of Operation
  - Prudhoe Bay, Alaska
- Objectives , Challenges, & Results
  - Deliver 47 barges to oil industry customer in Prudhoe Bay
  - Record levels of polar ice led to extremely challenging conditions
  - All 47 barges were delivered safely to Prudhoe Bay
  - The Foss tugs were able to make it out of Prudhoe before the ice thickened
  - 25 barges had to be left in the Bay until the ice thawed

Prudhoe Bay Sealift, 1975-1978

Icy waters made it challenging to tow 47 barges to Prudhoe Bay, but Foss tugs were able to complete the job.

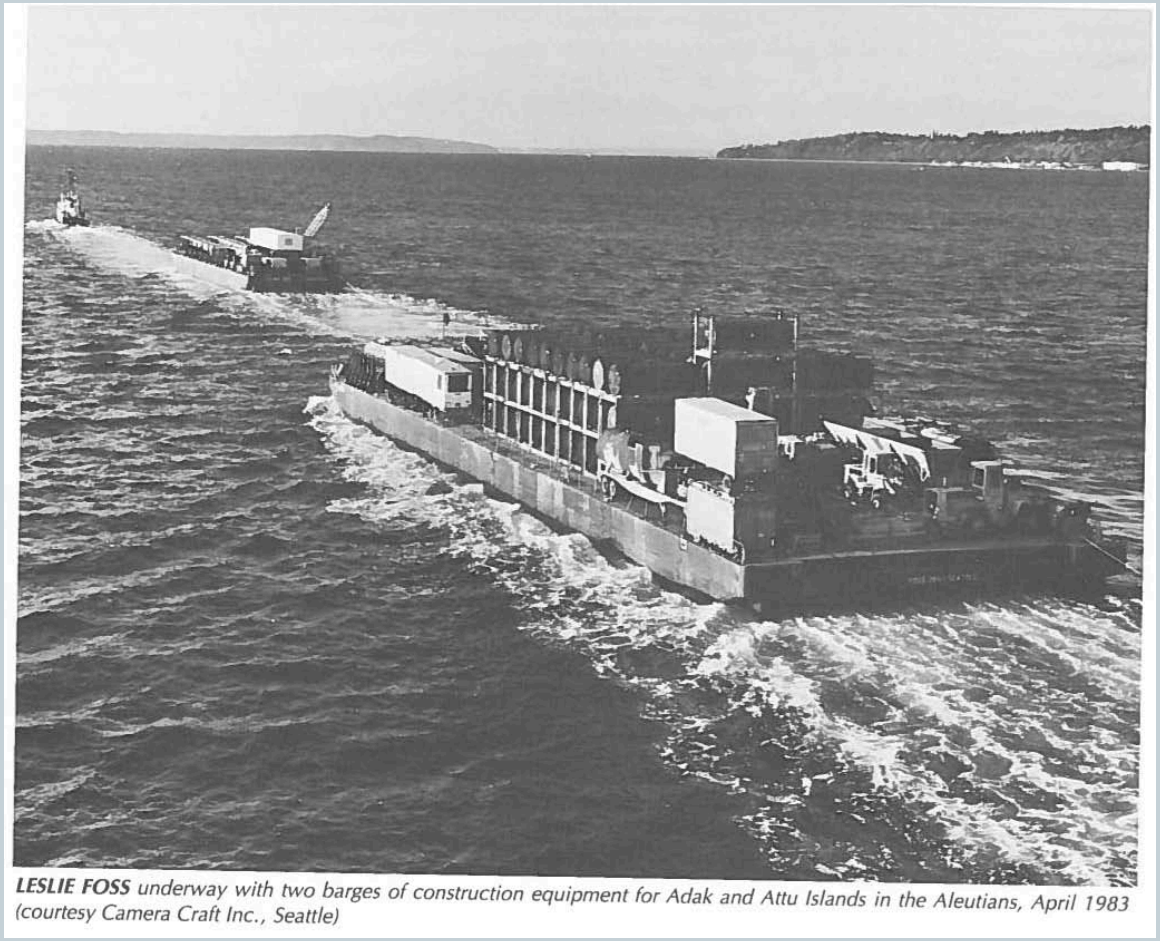
Right: The barges being towed to Prudhoe Bay



Military Sealift Command, 1978-1983

- Primary Foss Vessel
  - Justine Foss, and sister tugs
- Areas of Operation
  - Adak, Aleutian Islands
- Objectives
  - Deliver one barge-load to Adak once every 3 weeks
  - To maintain the schedule, the regular Foss Alaska Line tug transported the Military Sealift Command cargo on a barge and dropped it off at Sitka, where it would sit in a marshalling area to await the Justine.

Towing Barges



LESLIE FOSS *underway with two barges of construction equipment for Adak and Attu Islands in the Aleutians, April 1983 (courtesy Camera Craft Inc., Seattle)*

Teck Cominco, 1988-present

- Primary Foss Vessels
  - Barbara Foss, Justine Foss, Drew Foss, Jeffrey Foss, Stacey Foss
- Areas of Operation
  - Red Dog Mine, NW Alaska
- Objectives
  - Use Foss self-loading barges to pick up the ore and lighter it to the ships anchored offshore
  - Complete objectives in a 90-100 day season due to weather and ice


Aerial View of the Mine in the summer

The Stacey Foss towing the specially designed lighter barge

Teck Cominco says Red Dog Mine does everything it can to lessen its environmental footprint – following strict regulations and setting its own environmental and safety standards.

Sakhalin Islands, 2005-2006

- Areas of Operation
  - Sakhalin Islands, North East Russia
- Objectives and Results
  - Transport 36 prefabricated modules to support the construction of an LNG production facility on the NE tip of Sakhalin Island
  - Each module was 280’ long x 45’ wide x 85’ tall and weight 1,800 tons
  - Manage challenging ice, typhoons and dangerous seas
  - Project completed ahead of schedule and safely

Foss tugs towing a barge with one of 34 modules for the Sakhalin Island LNG facility


Chayvo Beach, Sakhalin Island

Cook Inlet Tug & Barge

- FMH Subsidiary Company
  - Acquired in 2010
  - Two ASD tractor tugs, one conventional tug, two flat deck ramp barges, and two crew boats
- Services
  - Harbor Services
  - Construction Support
  - LNG Support
  - Oil rig assist and resupply
- Areas of Operation
  - Port of Anchorage – RoRo, Container, Barge, Construction
  - Nikishi-Kenai – Fuel, LNG, Offshore Rig support
  - Homer
  - Port MacKenzie

Stellar Wind breaking ice

Glacier Wind in the ice

Rig Tow and Tendering for Furie Operating Alaska, LLC

Cook Inlet Oil Field Services

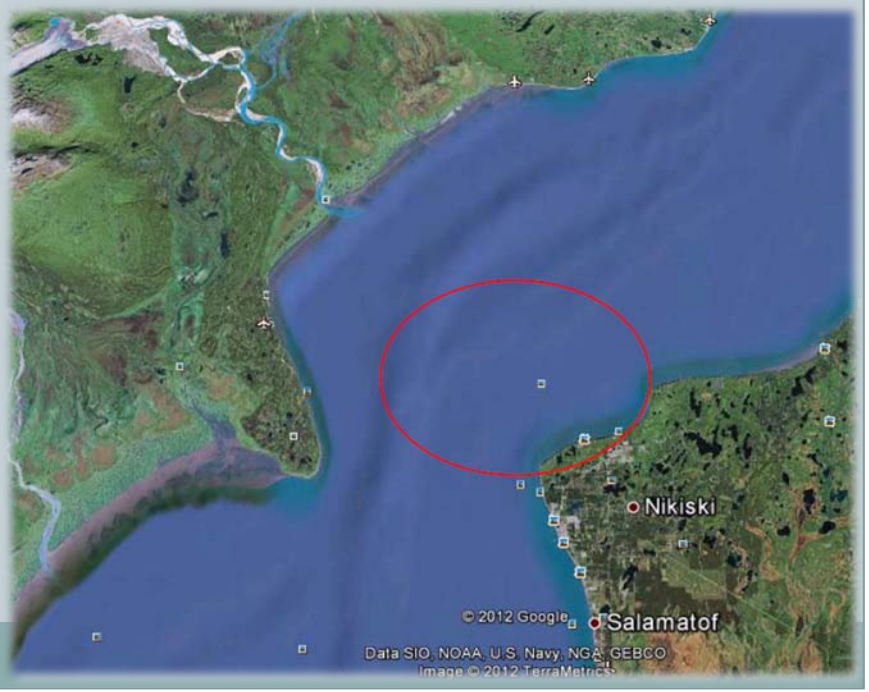
Rig Tow and Supply

Rig Towing

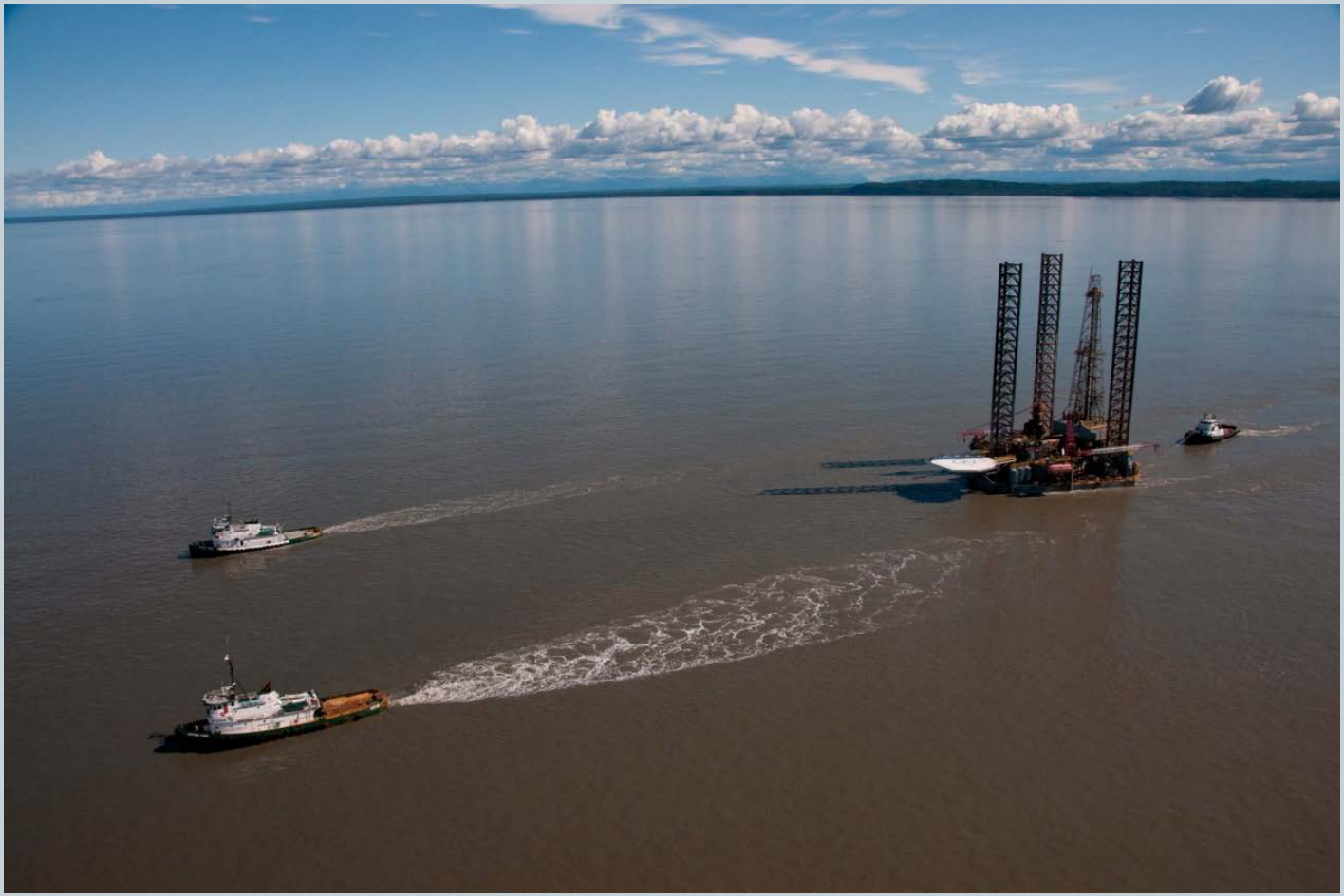
- Furie purchased and operates 85,000 acres of marine leases in Cook Inlet, previously owned by Arco
- Exploration Plan: 2 wells each summer
- Rig winters in Port Graham, AK
- Requires 3 tugs per move to help position the rig over the drill site

Rig Supply

- Delivery of supplies several trips daily from the OSK dock in Nikiski out to the rig



Rig Tow

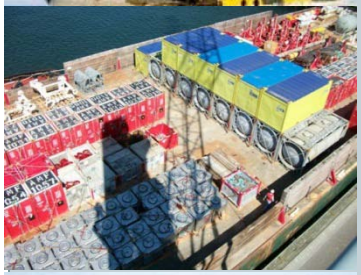


Rig Supply Vessel

Shell Alaska Offshore Exploration

- Shell has been operating in the Arctic since their geologist began surveying in 1918
- Shell first began drilling in Alaska in 1976
- The current exploration program began with permitting and research in 2006
- The 2012 Beaufort and Chukchi offshore exploration project is the largest project in the world for Shell, $4.5 billion invested.
- 2012 Primary Drilling Locations
  - Beaufort Sea: Camden Bay with the KULLUK
  - Chukchi Sea: Burger Region with the NOBLE DISCOVERER
- Extraordinary precaution has been made by Shell to ensure the safety of the marine personnel and the Arctic environment working hand in hand with the Marine Mammal Observer

Shell Alaska Fleet


- DRILLING
  1. NOBLE DISCOVERER- Drill Ship
  2. KULLUK- Drill Rig
- SUPPORT VESSELS
  1. NORDICA- (380’ X 85’)-Ice Breaker
  2. FENNICA (380’ X 85’)- Ice Breaker
  3. NANUQ (301’ X 65’)- Oil Spill Response Vessel
  4. AIVIQ (366’ X 72’)- AHTS
  5. SISUAQ (300’ X 64’)- OSV
  6. TOR VIKING (275’ X 60’)- AHTS
  7. HARVEY EXPLORER (240’ X 56’)- OSV
  8. HARVEY SPIRIT (280’ X 60’)-OSV
  9. LAUREN FOSS (150’ x 40’)- Tug Boat
  10. TUUQ (400’ x 100’)- Ware Barge
  11. CORBIN FOSS (150’ x 40’)- Tug Boat
  12. ARCTIC CHALLENGER (400’ 100’)- Well Containment
  13. BARBARA FOSS (126’ x 34’)- Tug Boat
  14. KRS 330-11 (330’ x 86’)- Cement and Cargo Barge
  15. GUARDSMAN (126’ x 34’)- Tug Boat
  16. KLAMATH (320’ x 76’)- Oil Spill Response Barge
  17. AFFINITY (748’ x 106’)- Tanker
  18. PT OLIKTOK (190’ x 32’)- Tug Boat
  19. ARCTIC ENDEAVOR (205’ x 90’)- Oil Spill Response Barge
  20. ARCTIC SEAL (134’ x 32’)- Shallow water supply





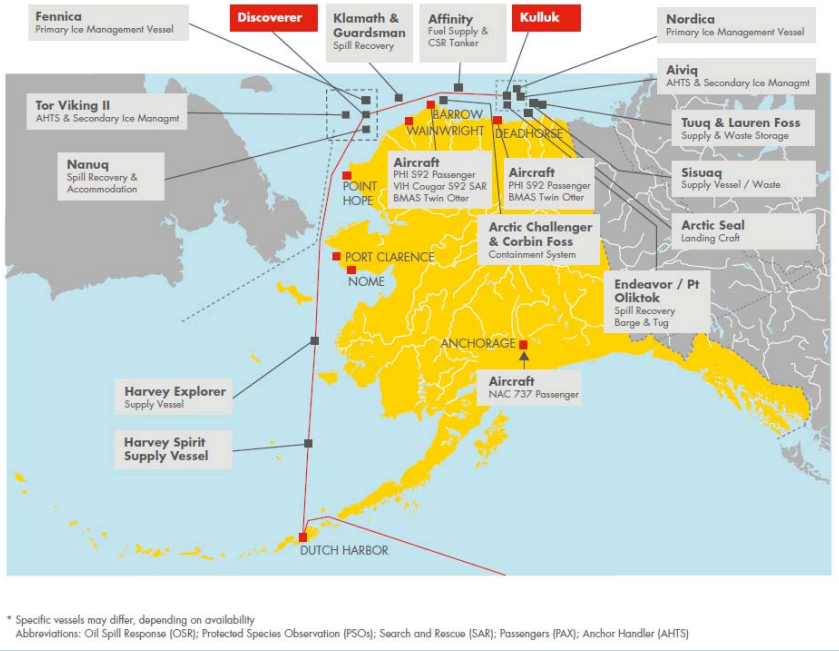
Exploration Plan

Original Expectation for 2012

- Drilling Season: 1st July to 31st October
- Wells: 3 Chukchi & 2 Beaufort

Current Expectation for 2012

- Drill Season: ASAP to 31st October for the Beaufort
- Wells: two (2)
- Considerations
- Abnormally cold temperatures delayed break up and kept the Arctic inaccessible
- Well containment barge was not delivered as originally scheduled, delaying overall drilling program.
- It takes between 2 weeks and a month to drill one well
- Inupiat tribe whale hunting season begins September 25th; exploration vessels will be removed from the region and taken to ice until the hunt is complete (appx. 3-6 weeks)



* Specific vessels may differ, depending on availability
Abbreviations: Oil Spill Response (OSR); Protected Species Observation (PSOs); Search and Rescue (SAR); Passengers (PAX); Anchor Handler (AHTS)

Operation Logistics

- Utilize two drill rigs: NOBLE DISCOVERER and KULLUK
- Supplies and equipment will be transported to the site during the mobilization of the assets from Seattle, WA
- Resupply of rigs and equipment will be brought from Dutch Harbor, AK via Offshore Supply Vessels and from Deadhorse, AK via shallow supply vessels
- Crews will be transported via helicopter to the rigs from Deadhorse, AK and Barrow, AK
- 24 hours oil spill contingency vessels and well containment vessels will be on site at drilling locations during all active drilling
- Shell is practicing zero discharge drilling in the Beaufort Sea. Mud and grey water vessels will collect and store drill cuttings and grey water from drilling rig and take to a cleaning facility for decontamination at the end of the season
- Marine Mammal Observers on board for research and observation

Risk Factors - Environmental

Ice covers much of the navigable waters of the Arctic except for brief periods in the summer, making the area inaccessible to marine traffic 6-9months per year. Much of the coastal and inland waters of Arctic Alaska are shallow with a shifting hydrography, restricting accessibility to deep draft vessels and in many cases requiring a maximum operating draft as little as 4'. Extreme cold, unpredictable weather and gale storm force wind and sea conditions are present in Arctic Alaska, even in the summer.

Challenges in the Arctic
Operational Considerations

- Environmental Conditions for Operation
  - Poor Weather/difficult ice
  - Reliable Charts/Navigational aid
  - Underdeveloped communications
  - Remote location logistics

- Northern Bering and Chukchi Seas
  - Earlier Spring and later Fall transitions (ice covered to ice free)
  - Improving access to the Arctic

- Increased Vessel traffic
  - Ice capable vessel transits
  - Northern sea route – Russia
  - Northwest Passage – Canada

Operational Considerations

- Potential conflicts among competing users
  - *Domestic and Foreign*
    - Natural Resource exploration, development and production
    - Fishing
    - Commercial vessel transits
    - Scientific polar research (national leadership role)
    - Tourism
    - Indigenous Peoples
      - Sealing, Whale hunting, wildlife subsistence
      - Cultural implications
    - *US Government*
      1. Protect territorial interests
      2. Controlled access and oversight
      3. Maritime safety and security law enforcement
      4. Boundary protection
      5. Natural Resources protection
      6. Environmental response
      7. U.N. Convention in the Law of the Seas (extensive mapping)
      8. Assured access and sovereign presence
         - U.S. national policy
         - Presidential decision directive

Arctic Implications
Risk Management in Arctic Operations

- Risk Factors

  Safely navigating Arctic waters has inherent risks that fall into three broad categories:

  - **Environmental**
  - **Navigation Technology**
  - **Support Resources and Infrastructure**

Risk Factor - Environmental

Environmental

- Ice
- Shallow water
- Extreme cold
- Extreme wind and sea conditions
- Atmospheric interference with electronic positioning and communication devices
- High ecological impact of incident

Risk Factors – Navigation Technology

Navigation Technology

Navigation in Polar Regions has not yet evolved to the high performance levels commonly accepted for the more heavily n marine routes in the mid and lower latitudes. This has created technology gaps in the following areas:

- Charting – inaccurate or dated charting
- Depth surveys – lack of comprehensive depth surveys
- Heading accuracy – poor performance of magnetic and inertial heading devices
- Electronic position locating – gaps in satellite coverage and atmospheric interference effect the accuracy of electronic position technology
- Aids to navigation – fixed aids to navigation are scarce and in many areas impractical

Risk Factors – Navigation Technology

Navigation Technology continued

- Ice and weather data collection and forecasting – lack of data collection resources and inconsistent weather and ice forecast accuracy
- Tidal predictions – wide areas of coastal and inland waters lack accurate localized tide and current prediction data
- Communication – gaps in SAT and cell phone coverage

Risk Factors – Support Resources and Infrastructure

Support Resources and Infrastructure

Arctic marine traffic currently has limited support from shore-based resources and infrastructure in the event of a serious marine incident. Effective immediate incident response is dependent on utilization the resources aboard the affected vessel and other vessels in its vicinity.

Areas for Improvement

- Define Arctic waters as area North and West of Unimak Pass
- Provide additional charting with more comprehensive depth contours and appropriate scaling
- Provide updated electronic charts with embedded aids to navigation
- Increase AIS coverage in the Arctic navigation area
- Develop more accurate tide and current data for the area
- Enhance Ice assessment and forecasting capabilities
- Provide more comprehensive weather data gathering tools and more accurate localized weather forecasting for the region

Areas for Improvement - continued

- Implement a Traffic Management Scheme for Unimak Pass and the Bering Strait
- Utilize the Cook Inlet Model of Phased Ice Operation Guidelines for establishing Guidelines in the Arctic
- Improve communication capabilities – satellite and terrestrial
- Create safe Harbor(s)/ Harbor of Refuge(s) with appropriate support infrastructure
  - Asses Port Clarence as a possible Safe Harbor

Areas for Improvement - continued

- Increase emergency response, salvage and search and rescue capabilities in the region
  - Provide more comprehensive U.S.C.G. Search and Rescue resources in the region
- Provide additional icebreaking resources and capability during the “shoulder” season to provide assured access to Arctic Communities during the critical summer transportation season

Questions and Answers