

## **APPENDIX D: PRESENTATIONS**

**Presentations from the March 2005 workshop have been provided in this separate Appendix D document.**

***Devon's Beaufort Sea Exploration Project***

**Bill Livingstone, Devon**

***Development Scenarios for the Beaufort Sea***

**Giles Morrell, DIAND**

***The Historical Context for Beaufort Sea Oil and Gas***

**Ricki Hurst, DIAND**

***Research Funding for Northern Oil and Gas Development***

**Ruth McKechnie, DIAND**

***An Integrated Approach to Prepare for Oil and Gas Development in the Beaufort Sea***

**Doug Chiperzak, DFO**

***Beaufort Sea: Ongoing and Planned Initiatives***

**Hal Mills, IEG-GeoNorth**

***Beaufort Regional Plan for Action (Beaufort Regional Strategic Environmental Assessment)***

**Jon Pierce, CEAAG**

***Workshop Wrap-up Presentation***

**Vicki McCulloch, Terriplan Consultants**

## Beaufort Sea Program







### Beaufort Sea Exploration Project

Project Status

RSEA Workshop  
Inuvik  
March 2005

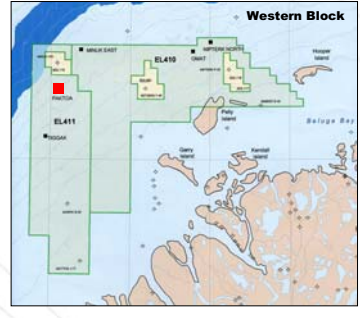
## Devon Offshore Lands






- EL 420: 836,000 acres
- Water depths range from 0 to 27m
- Various drill targets developed based on 3D
- Four well work commitment before Aug 2009
- Drilling scheduled to commence in 2005/2006 winter

## Exploration Overview





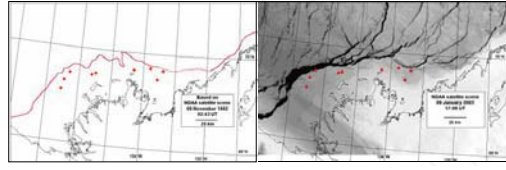
Paktoa is primary drill target

Paktoa is near existing gas discoveries.

Paktoa is located within the landfast ice zone in a water depth of 12m-13m


## EL 420 – Operational Conditions








### Landfast Ice Zone




- Devon has completed an 12 year hindcast ice study to determine the current status of landfast ice conditions across EL-420.
- This study shows the landfast ice is forming later, and breaking up slightly earlier than during the last drilling cycle.
- The results of this study have been incorporated into Devon's operational planning



## Drilling System Selection



Molikpaq		✗			
CIDS		✗			
Tarsiut CRI		✗			
Esso CRI		✗			
Islands		✗			
			SDC		✓
			Ice Islands		✓

## Drilling Systems : Deep Caissons




### Steel Drilling Caisson (SDC)

- Owned by Seatankers and is available for either sale or lease
- Currently located in Herschel Basin, NWT after drilling it's last well for Encana in the US Beaufort at the McCovey prospect
- Water depth range 7.6 - 24.4 m
- Suitable unit for Paktoa drill site and a significant portion of the Devon acreage

## Environmental Review Process




```

graph TD
    A[Project Description  
May 2002] --> B[Scope of Assessment  
Aug 2002]
    B --> C[Prepare Comprehensive Study Report  
April 2004]
    C --> D[CEAA Review by Federal Authorities]
    D --> E[Inuvialuit Review]
    E --> F[Ministers Decision  
Mar 2005?]
    
```

- Devon started early
- Extensive community & stakeholder consultations
- Two multi-stakeholder workshops
- Traditional Knowledge Study
- French Translation & Public review
- Public review

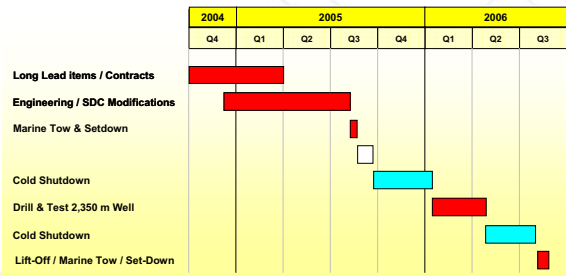
## Regulatory Review Schedule



Federal review: CSR	Apr 04 – Aug 04
Inuvialuit review: EISC	Sep 04 – Oct 04
French translation	Oct 04 – Nov 04
Public review	Dec 04 – Mar 05?
<b>Total review time</b>	<b>+/-12.0 months</b>

## SDC: Drilling Schedule

devon



## Scheduling Considerations

devon

- Approval of our alternative well kill (AWK) system could provide scheduling flexibility at the beginning and end of the operating season
- AWK system has been constructed and initial testing has commenced.
- Formal testing will be conducted in April 2005.

## AWK – Alternate Well Kill

devon



- Devon / Cameron is currently working on the development of Super, Shear & Seal BOP
- A second generation BOP able to cut any obstruction in hole and achieve a seal
- Proposed to NEB as an "Equivalency" to a relief well drilling approach
- NEB have provided "general acceptance of concept" subject to testing

## Next Steps

devon

- Waiting on Ministerial recommendation
- Prepare application for Drilling Program Approval (DPA) and Authority to Drill a Well (ADW)
- Complete testing of AWK and establish "equivalency" with NEB
- Continued discussion on "worst case scenario"

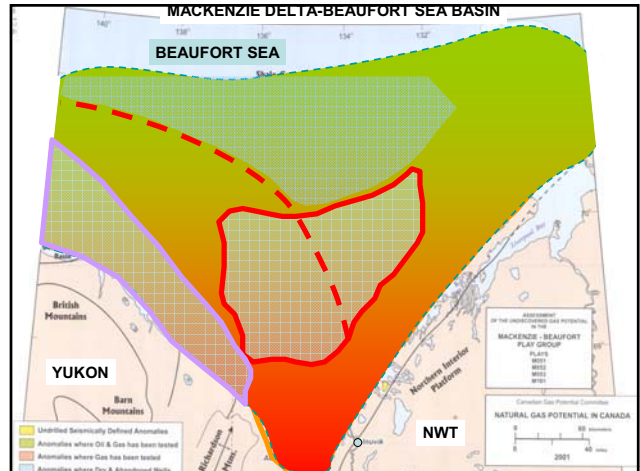
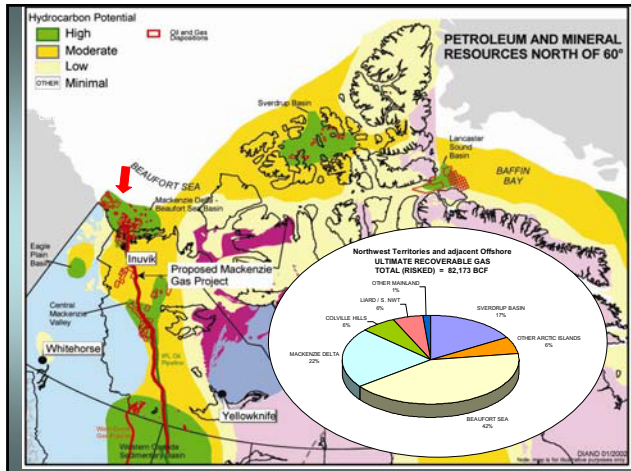
# Beaufort Sea Oil and Gas Development

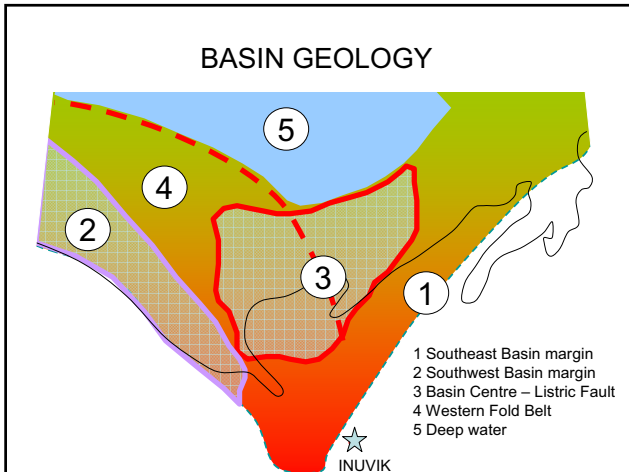


Presentation March 2005, Inuvik  
 Giles Morrell  
 Northern Oil and Gas Branch, INAC

## Contents

- Oil and gas potential
- The Beaufort-Mackenzie Petroleum Basin
- Basin Geology and Exploration Zones
- Exploration Rights
- Recent and current operations
- Estimating future activity
- Projected focus of operations – present out ten years
- MGP Development
- Post-MGP development schematics
- How to plan for uncertainty – plan to adapt





### ZONE 1: SE BASIN MARGIN

- Parsons Lake - anchor infrastructure
- Existing Discoveries - gas and oil (Tuk field, Atkinson Point)
- New exploration - PetroCanada, Devon
- Large onshore area with 'fair' discovery record
- Offshore areas to NE more remote, one modest discovery
- Delta area to SE - complex geology - difficult terrain, rivers
- Outlook: delineation of existing discoveries, new wells to meet concession agreement commitments; few wells at limits of trend and limited offshore potential

### ZONE 2: SW BASIN MARGIN

- No discoveries: could be oil or gas or both
- Potential higher moving offshore: offshore drilling
- Mackenzie Trough limits shallow water drilling
- Interesting sub-basins in West Beaufort, offshore Yukon but remote from MGP infrastructure
- Coastal areas 'off limits'.
- Outlook: Interest beyond 2015

### ZONE 4: WESTERN FOLD BELT

- 1 Gas (Kingark) and 1 Oil discovery (Adlartok) - many potential structures
- But moving into deeper water
- Distant from MGP infrastructure
- Outlook: 5 to 10 years take up of new exploration licences. Extensive seismic prior to drilling

## ZONE 3: BASIN CENTRE

- Two MGP anchor fields onshore: Taglu, Niglintgak
- Several undeveloped discoveries, hydrates onshore
- Offshore discoveries at Amauligak, Issungnak etc in 'Lystric Fault Zone'
- Active exploration to new targets defined by 3D seismic
- Very High Potential for new discoveries extends into shallow offshore
- Trends differ in eastern and western areas
- Outlook: focus of activity in next ten years

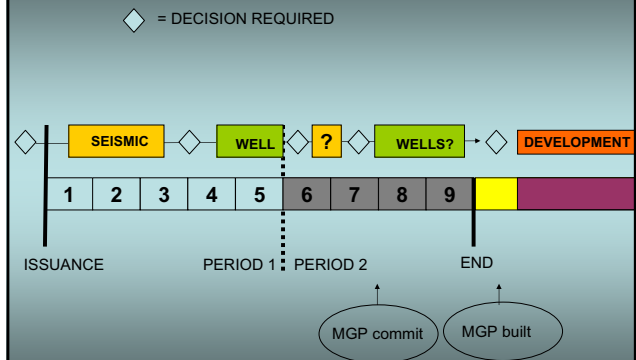
## ZONE 5: DEEP WATER

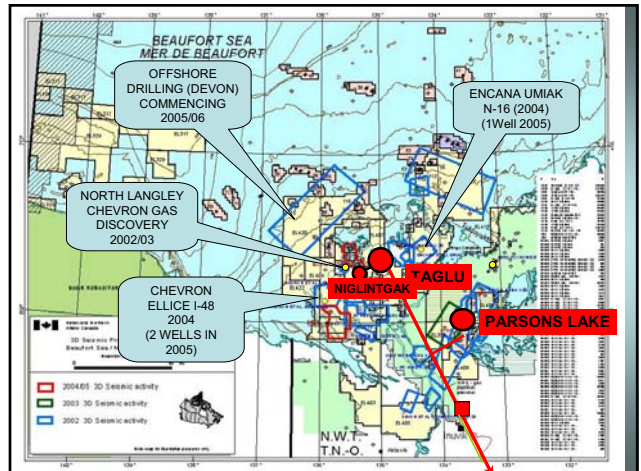
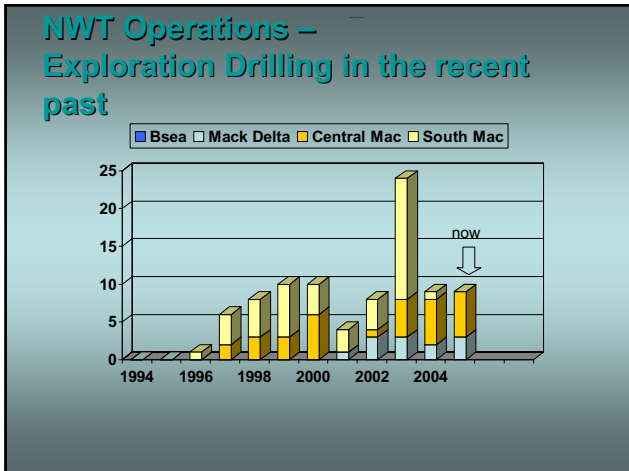
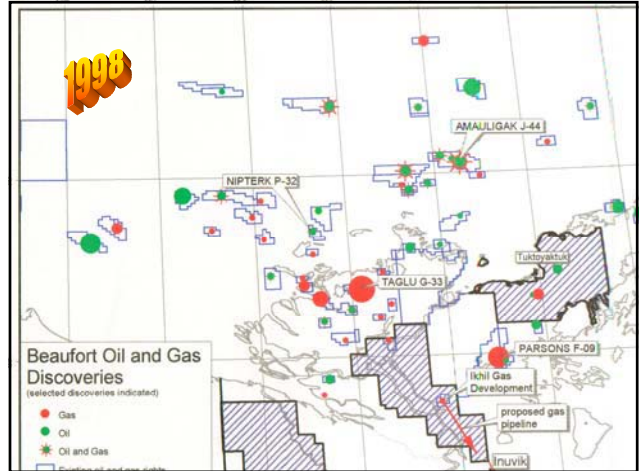
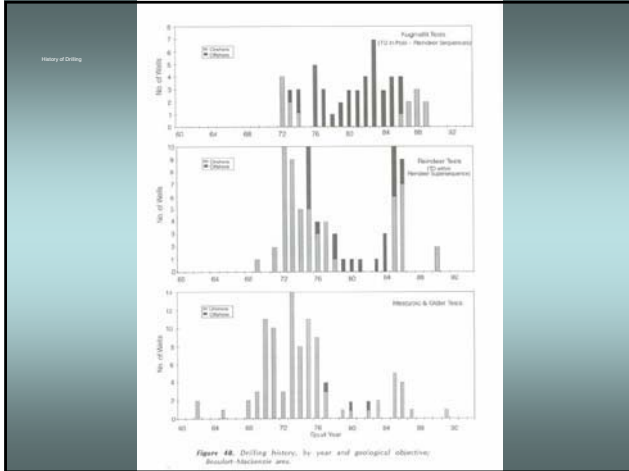
- 'Domed discoveries' – Kopanoar, Koakoak, Nektoralik: oil and gas mix
- Complex geology – unconfirmed potential
- New seismic may unlock this play
- 'Beyond' chain of discoveries (Amauligak to Issungnak) in 20-30 m water depth which would be developed first
- Outlook: long term – would require extensive 3D seismic investment

## EXPLORATION RIGHTS

- Exploration initiated by issuance of exploration rights e.g exploration licences offered by the Federal Government in offshore; concession offered by Inuvialuit on Inuvialuit lands.
- Duration, terms of the licence encourage exploration. These terms are practical in that they reflect operating realities.
- Exploration licences can give good short term 0-5 yr estimates of activity; and less good estimates out to 9 years.

## NINE YEAR CYCLE – EXPLORATION LICENCE

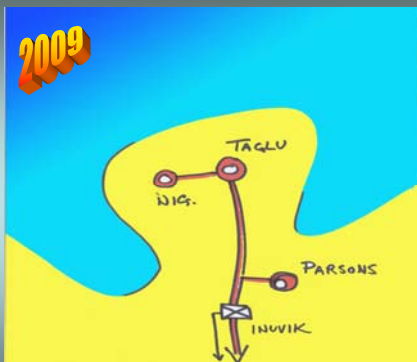
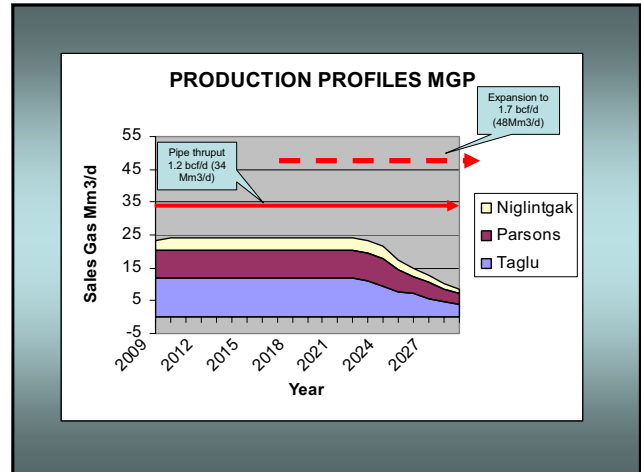




## DEVELOPING A VIEW OF FUTURE ACTIVITY

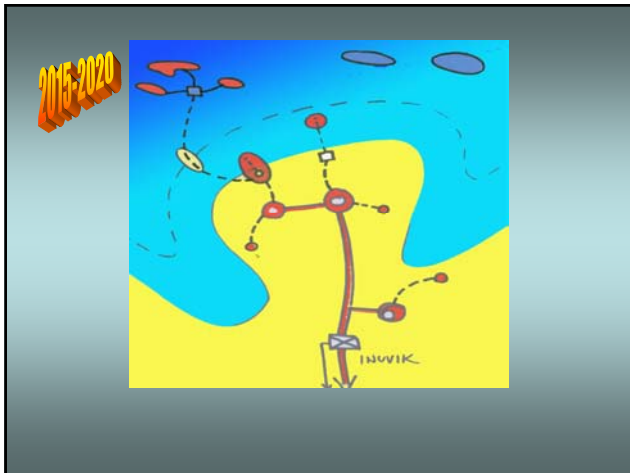
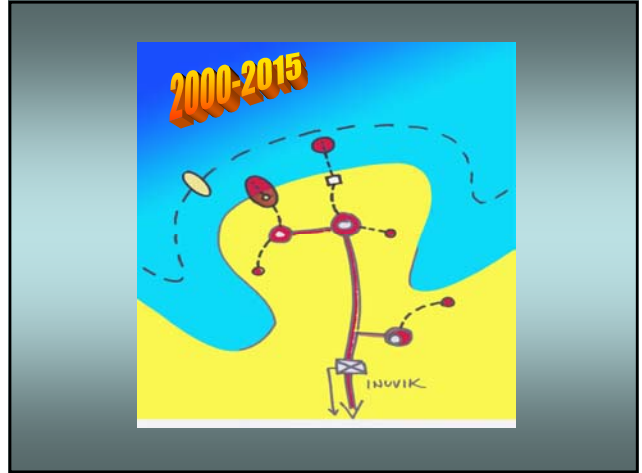
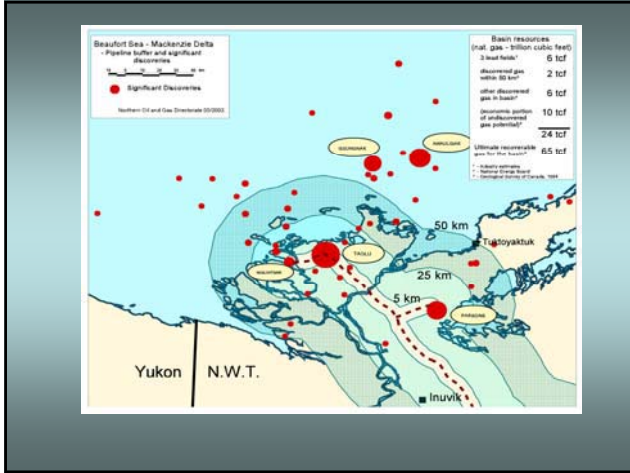
Three main activities.....

- Mackenzie Gas Project commitment and realization (Imperial, ConocoPhillips, Shell, APG)
- Current and new exploration for new discoveries (Chevron, Encana, Devon)
- Assessment and development of additional AND existing discoveries



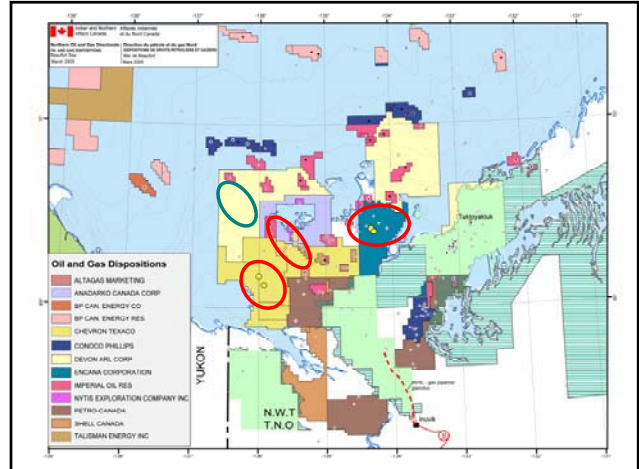
## Decision to develop OR explore for more?

- Is MGP a go (two years)?
- What is the chance of discovering an economic pool?
- What is cost of development?
- What is unit cost of gas?
- What is gas price doing?
- Is the return worth the development?
- Are there other investments which give the same or better return at less risk?



## Current and new exploration for new discoveries

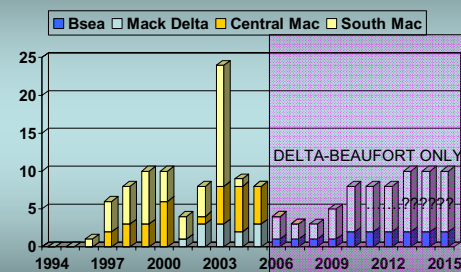
- Active drilling programs (Chevron, Devon and Encana)
- Future trends
- Uptake of new Exploration Licences (trigger MGP confirmation)
- Driver for new exploration drilling (as per exploration licence cycle).



## So how to plan with major contingencies?

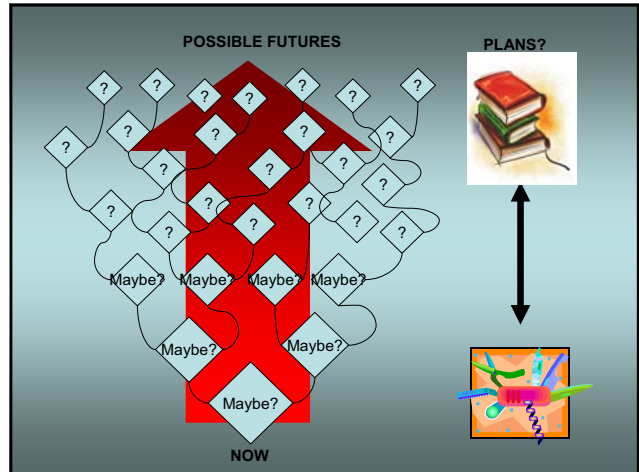
- No MGP commitment (over next 2 years) – re-evaluation of investment plans
- No success in offshore drilling in period 2005-2007. Re-evaluation of offshore potential. Offshore exploration in near offshore. Low activity levels 5 -10 years
- Devon success – signalled by continued investment and delineation drilling in 2007-2009. (4 plus wells in this period)
- Uptake of new Exploration Licences. Focus on nearshore and land to offshore drilling? Ice island platforms for exploration wells
- Limited availability of offshore lands in shallow waters around delta fringes

## Future drilling....



## IF SUCCESSFUL WHY NOT A LOT MORE WELLS?

- Cost of wells
- Limited rig/offshore platform availability
- Would low offshore activity levels be sufficient to sustain infrastructure such as ice-breaking, barging etc.?
- Land tied up on delta and nearshore
- Access for exploration (protected areas)
- Holders of rights to existing discoveries can dictate pace of development
- Large seismic data sets acquired. With improved evaluation by seismic – fewer wells necessary.....but
- Psychology of success can lead to land rush
- A successful MGP with high prices likely to lead to increased activity levels.



Indian and Northern Affairs Canada / Affaires indiennes et du Nord Canada

**NOGAP  
BEMP, MEMP & BREAM**

Inuvik Meeting

Ricki Hurst  
March 2005

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**NOGAP  
BEMP, MEMP & BREAM**

PRESENTATION:

- Historical Context
- Programs
- Hypothesis Development
- Applicability to BSSEA

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HISTORICAL CONTEXT – 1970S

- Operating bases at Tuktoyaktuk & Richards Island
- First offshore man-made drilling islands
- Arrival of reinforced drill ships and icebreakers
- Gas discoveries at
  - Taglu (1971)
  - Parson Lake (1972)
  - Niglintgak (1973)
- Competing gas proposals – Arctic Gas and Foothills
- Justice Berger Inquiry

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**NOGAP  
BEMP, MEMP & BREAM**

HISTORICAL CONTEXT – 1980s

- Beaufort Sea Mackenzie Delta EIS to FEARO: Dome/Esso/Gulf (1982)
- 22 artificial islands supporting 23 exploratory wells
- Kulluk Drilling Platform (1983)
- Discovery of Amauligak oil field
- Approval of Norman Wells (IPL) pipeline
- Federal funding program (1984) NOGAP
- Downturn in gas/oil market
- Exxon Valdez oil spill (1989)

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## NOGAP BEMP, MEMP & BREAM 1984-1994

Complexity - "If the Lord Almighty had consulted me before embarking upon Creation, I would have recommended something simpler"  
Alfonso X of Castile, Astronomer

**Adaptive Environmental Assessment and Management** – a methodology for making better environmental assessments; environmental management from perspective of systems analysis

**Systems Analysis** – a reasoned approach to complex problems of choice that are characterized by uncertainty  
Holling UBC 1978

An Ecological Framework for Environmental Assessment in Canada (VECS)  
Beantlands and Duinker 1983

BEMP	(1983 -87)	ESSA, ESL, LGL, DIAND, DOE, DFO, others
MEMP	(1986 -88)	
BREAM	(1990 -94)	

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## NOGAP BEMP, MEMP & BREAM

### NORTHERN OIL AND GAS ACTION PROGRAM (1984-1991)

Cabinet approved seven year research and planning program to advance government preparedness (regulatory and policy) for HC production in north.

- Direct response to Beaufort EARP
- \$68 M & 210 person years (in \$1984)
- DIAND NOGAP Secretariat & 5 federal departments & 2 TGs
- DIAND had 7 broad research priorities
- Priority *Environmental Assessment and Monitoring* funded BEMP, MEMP, BREAM

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## NOGAP BEMP, MEMP & BREAM

### BEAUFORT ENVIRONMENTAL MONITORING PROJECT 1983-1988

- Emerging environmental concerns
- Inadequate baseline information
- Unknown responses to impacts
- Government Response to Beaufort Sea EARP Report (DIAND and DOE)

BEMP objective: to provide the technical basis for design, operation and evaluation of a comprehensive and defensible environmental research and monitoring program to accompany hydrocarbon development activities in the Beaufort Region

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## NOGAP BEMP, MEMP & BREAM

Meet the BEMP Program Objectives by using Adaptive Environmental Assessment and Management (AEAM) modeling approach to:

- Define the development scenario
- Identify valued ecosystem components (VECs)
- Define the spatial extent
- Define planning horizon
- Select Valued Ecosystem Components
- Develop (Phase I) & Evaluate (Phase II) Hypotheses
- Identify research and monitoring needs

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## NOGAP BEMP, MEMP & BREAM

**VALUED ECOSYSTEM COMPONENTS (VECS)**

Resources or Environmental Features that:

1. Are important to local human populations;
2. Have national or international profiles;
3. If altered, will be important in evaluating the impacts of development and in focusing management or regulatory policy.

**Total BEMP:** 23 hypotheses  
15 VECs (bowhead, polar bears, diving ducks, fish (5), etc)  
NOT zooplankton, arctic cod, shorebirds

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## NOGAP BEMP, MEMP & BREAM

**HYPOTHESIS DEVELOPMENT**

**Phase I:** Hypothesis Development

**Phase II:** The Iterative Cycle

- Hypothesis Construction Linkages
- Evidence for and against each Linkage
- Conclusion:

1. Hypothesis Should be Tested with detailed monitoring plan  
OR
1. Hypothesis extremely unlikely, not worth testing
2. Hypothesis possible but too difficult to detect
3. Hypothesis valid-more info before designing monitoring plan

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## NOGAP BEMP, MEMP & BREAM

Every Year from 1983 to 1987/88 research was reviewed, new information was identified, impact hypotheses were updated

Change in development scenario made in 1985 to reflect use of oil-based drilling muds and construction of near shore structures

Technical workshops in 1985/86 and 1986/87 focused on impacts on bowhead whales including effects of westward moving tanker traffic during open water

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## NOGAP BEMP, MEMP & BREAM 1990/91 to 1993/94

- Onshore companion program to BEMP
- As BEMP (Science, technical, biophysical process, routine oil spills) but MEMP focus on effects of oil and gas activity on people (harvesting activities and employment)

Objective: To assess the potential effects of hydrocarbon development on the terrestrial and freshwater environment in the Mackenzie Valley.

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**NOGAP**  
**BEMP, MEMP & BREAM**  
**1990/91 to 1993/94**

As BEMP and MEMP for offshore and onshore plus: community based concerns, catastrophic oil spills, EA methodology

Scope influenced by:

- Exxon Valdez oil spill in 1989
- Inuvialuit EIRB hearings on Kulluk & Isserk drilling
- Beaufort Sea Steering Committee (BSSC) in 1991
- Recognition of "New" concepts:
  - Comprehensive Land Claims
  - Traditional Knowledge
  - Global Warming
  - Cumulative Impacts

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**NOGAP**  
**BEMP, MEMP & BREAM**  
**1990/91 to 1993/94**

Divided Effort into 3 Technical Working Groups

- Impact Hypotheses
- Catastrophic Oil Spills
- Community Based Concerns

Emphasis on catastrophic oil spills and environmental assessment process

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**NOGAP**  
**BEMP, MEMP & BREAM**  
**1990 and 1991**

**BEAUFORT SEA STEERING COMMITTEE (BSSC)**

**Area:** Beaufort Sea ISR

**Chair:** Robert Hornel

**Agencies:** COGLA, DIAND, DOE, DFO, YTG, GNWT, IGC

**Tasks:**

- Worst Case Scenario
- Remediation and Restoration
- Compensation and Financial Liability
- Research and Science
- Government Management
- Operation Seasons
- Contingency Plans

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**BEMP, MEMP & BREAM**  
**1983-1994**

**Positive Reviews**

- Inclusive (government, industry, Aboriginal, community)
- Industry role & development scenario-critically important
- Workshops provided neutral ground & a cooperative approach
- VECs focused discussions on resources and biophysical processes of greatest concern
- Impact hypotheses focused discussions on interactions between the VECs and the development scenarios
- Process was flexible, responsive, iterative
- Forced rigor on decision making & avoided "pet" research

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## BEMP, MEMP & BREAM 1983-1994

### Criticisms

- Scope limited to environmental and resource harvesting issues
- Community representatives increasingly wanted social issues included (now might include social and economic)
- Adding oil spills to BREAM did not really reduce uncertainty or build confidence in ability to respond
- Inclusive nature of attendants slowed progress
- Heavy investment and focus on process vs. action
- Costs for process were high, and funds to implement research and monitoring programs were always insufficient

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## NOGAP BEMP, MEMP & BREAM 1983-1994

### Relationship to Beaufort Sea SEA?

- NOGAP provided \$68 M (\$1984) of targeted northern oil and gas research.
  - Are we making full use of information/data from NOGAP?
- BEMP, MEMP & BREAM provided a framework to focus research and monitoring efforts in the past.
  - Is such a framework useful now?
- If not the BEMP/MEMP/BREAM model,
  - are there elements of those exercises that we can use?
  - what framework will be used instead?

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## Research Funding for Northern Oil and Gas Development

Beaufort Sea Oil and Gas Workshop  
Inuvik, NWT  
March 22-24, 2005

### Why Science Information is Critical

- Enables federal and territorial government, northern boards and agencies to respond to the environmental assessment and regulatory processes re. Mackenzie Gas Project and the associated exploration and development activities on shore and in the Beaufort Sea
- Necessary to make informed decisions so that environmental impacts related to northern hydrocarbon development can be identified and mitigative measures can be taken
- Supports sustainable development

### How Science Gaps have been identified

#### March 2001 - Preliminary Review of material

- Report on Key Issues and Data Gaps Related to Development and Transportation of Gas from Western Canadian Arctic and Alaska

#### November 2001 - Federal Science Experts Meeting - Calgary

- involved oil and gas industry representatives and federal scientists

#### Key Messages

- Don't reinvent the wheel, examine previous research & information collected- Berger Inquiry, Beaufort Sea Environmental Review Process, NOGAP etc.
- Need information management system to deal with cumulative impact & information sharing - in Mackenzie Valley / Delta and Beaufort Sea
- Need habitat mapping for the whole Delta
- Impact of seismic activity

### How Science Gaps Have Been Identified

- **Federal Northern Oil and Gas Science Steering Committee established - DIAND, NRCan, DFO and EC with linkages to NEB, NRC, Parks and IC**
- **January 2002** - Environmental Studies Research Funds (ESRF) and DIAND sponsored workshop in Inuvik on Research Gaps for Natural Gas Exploration and Development and Gathering Lines in the Mackenzie Delta and Near shore Beaufort Sea
  - Identified knowledge gaps re:
    - Oceanography
    - Air quality and climate change
    - Permafrost, Soils and Terrain Stability
    - Waste Management
    - Fisheries and Aquatics
    - Marine Mammals
    - Terrestrial Vegetation
    - Wildlife and Migratory Birds
    - Biodiversity

### How Science Gaps Have Been Identified

- November 2002, study to identify biophysical knowledge gaps associated with oil and gas exploration, development and a potential pipeline in the Mackenzie Valley (ISR boundary south to Alberta) funded by INAC, RWED, ESRF – Background report, action plan
- Federal departments identified projects to fill gaps for MGP and Induced exploration and development and requested funds:
- Budget 2004 funds to federal departments for science \$25 million over 3 years for EA and regulatory review process MGP (Mackenzie Valley and Delta)
- Budget 2005 funds – approximately \$39 million over 4 years for MGP and Exploration and development (Mackenzie Valley, Delta and Beaufort Sea)

### Research on Delta and offshore from Budget 2004 and Budget 2005 Funds

- **DFO, EC, INAC and NRC** science projects
  - in support of EA & regulatory process for the MGP and induced exploration and development
- **INAC and EC**- NWT Protected Areas Strategy - Mackenzie Valley Five Year Action Plan

#### Environment Canada

- Kendall Island Bird Sanctuary-assessment of the impacts of sumps, baseline info on migratory birds and wildlife use of KIBS and impacts monitoring
- Shorebirds (rare breeding distribution), Marine Migratory Birds Programs (sea ducks and red throated loons)- collect baseline info (Delta and Offshore) for future monitoring

### Research Continued

- Polar Bear Program- track adult and sub adult male bears- baseline information for impacts
- Water Quality- increase water quality monitoring along Mackenzie River, collect baseline info on natural sources of hydrocarbons and info on aquatic ecosystem health
- Hydrology Program- groundwater, permafrost, flow rates, lake drainage, ice jams, hydrological modeling, atmospheric modeling, channel migration and sedimentation in outer delta, info for critical hydrologic conditions, water quantity impacts, flooding of critical habitat etc.
- Water Flow Monitoring Program- hydrometric stations to monitor water levels and flow

### Research Continued

#### Fisheries and Oceans

- Mackenzie Gas Project Rivers and Lakes Studies- environmental disturbance of spawning routes, altering habitat-identify critical spawning and over wintering area habitat types for species- habitat classification models
- Sensitive Fish Species Study-investigate and record seasonal occurrence and habitat use of fish species- maps of seasonal distributions and biodiversity-coastal areas
- Water Drawdown Study-impacts of winter water withdrawal on fish and fish habitat Seismic Survey Study-behavioral responses of fish in Mackenzie River
- Fish Habitat Modeling
- Sediment Studies –sediment effects on fish

## Research Continued

### Fisheries and Oceans and Natural Resources Canada

- **Northern Coastal Marine Program aboard the Nahidik**- seabed mapping, data on ice scours, artificial islands, seabed disturbance, navigation hazards, physical and biological sampling and data, ecosystem assessment of impacts of coastal dredging
- **Beluga Monitoring** -Assessment of the habitat requirements of beluga whales-tagging
- Evaluation of hydrocarbon exploration on the winter breeding populations of **seals**
- **Update navigational charts**

## Research Continued

### Natural Resources Canada

- Beaufort Sea Geoscience- Nahidik
- Permafrost Monitoring- Delta & MV
- Surficial Mapping-MV
- Seismic Hazards
- Geotechnical Evaluation of Slope Failures and Movement Mechanisms-MV
- Regional Terrain Hazards and Landslide Mapping
- Geospatial Database Coverage- topographic maps
- Materials Reliability- pipeline
- Coastal and Near shore Conditions- coastal stability

## Research Continued

### Indian Affairs and Northern Development

- Pipeline Stream Crossings Study- baseline water quality and hydrometric data for stream-crossings
- Terrain and Permafrost Conditions in the Mackenzie Delta
- Aerial Photography of the Mackenzie Valley and the delta and development of a Digital Elevation Model for the Delta
- Cumulative Effects Assessment Management-Regional Plans of Action
- Cumulative Effects Database
- Geology Proposal for CS Lord- resource assessment
- Pipeline Readiness Office- Yellowknife-Science
- Science Coordination- Ottawa

## Environmental Studies Research Funds Northern Study Areas 2005

*ESRF funding is provided through levies on frontier lands paid by oil and gas exploration companies that are license holders*

### Priority Area 1 –Gap analysis follow-on

- Assess potential effects of near shore exploration activity on ringed/bearded seals in Beaufort Sea- 3<sup>rd</sup> year - \$150K Eco Marine
- Effects of seismic exploration on migratory birds and habitats in Kendall Island Migratory Bird Sanctuary, Delta – Studies complete-independent review of one and report for vegetation - EC -\$20K
- Post environmental impact study of the Ikhil pipeline, regulated under COGOA- \$30K

### Priority Area 2- Waste discharges and emissions

- Inuvialuit Settlement Region Drilling Waste Disposal Sumps Study to be published – April 05 -Follow-on from the Sumps study -\$100K
- Sumps Best Practices CD-April 05

## **Environmental Studies Research Funds Northern Study Areas 2005**

### **Priority Area 3 - Seismic**

- Follow-on from the fish deterrents study-two part study on caged fish and tamping and plug methodology, improved techniques for setting charges – MOU with DFO, in kind support EnCana – follow-on \$100K
- Contribution to the DFO Beluga whale tagging study - \$120K

### **Priority Area 4 - Traditional knowledge and heritage resources**

- Follow-on study from the traditional knowledge study – Phase 2 manual for guidelines on use, collection and interpretation of TK in assessment studies based on work in the ISR is nearly complete - \$115K

### **Priority Area 5- Cumulative effects**

- *Follow-up study on thresholds in Kendall Island Migratory Bird Sanctuary - \$100K*

## An Integrated Approach to Prepare for Oil and Gas Development in the Beaufort Sea

Presentation to the Workshop on the Development of a Strategic Regional Plan to prepare for Oil and Gas Development in the Beaufort Sea, March 22-24, Inuvik, NT

## Oceans Management: its really only common sense

It is about focusing on the activities

- occurring in oceans
- dependant on oceans
- impacting on oceans

It is about planning and managing those activities in such a way as to:

- not compromise the health of marine ecosystems
- maximize the potential of current economic & socio-cultural activities
- capitalize on potential opportunities

But this is not new for most sectors

## Oceans Action Plan (OAP)

- The OAP identified in the Speech from the Throne is a Government of Canada initiative.
- The plan supports ocean management planning in all three oceans.
- Recognizes and builds on the needs and interests of those who use and share responsibility for the oceans
- The Plan supports sound ecosystem science as the basis for integrated decision-making.
- The Plan will be implemented in a phased approach with Phase 1 to be implemented over two years with a focus on five areas of which one is the Beaufort Sea.

## Beaufort Sea Integrated Management Planning Initiative (BSIMPI)

DFO, FJMC, IRC, IGC joined with the Canadian Association of Petroleum Producers (CAPP) to form the Beaufort Sea Integrated Management Planning Initiative (BSIMPI)

BSIMPI was established to undertake the task of IM planning for the marine and coastal environment in the ISR, with an initial focus on the evaluation of the Beaufort Sea Beluga Management Plan Zone 1(a)s as a potential MPA

BSIMPI has contributed some important preliminary information in preparation fro development in the Beaufort Sea.

What role does BSIMPI have in preparing for development in the Beaufort Sea?

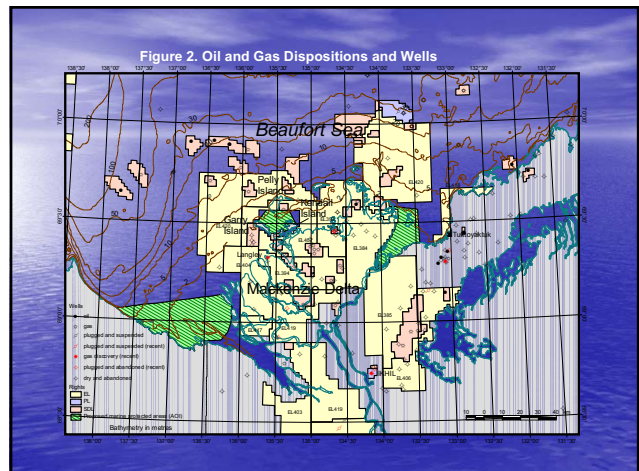
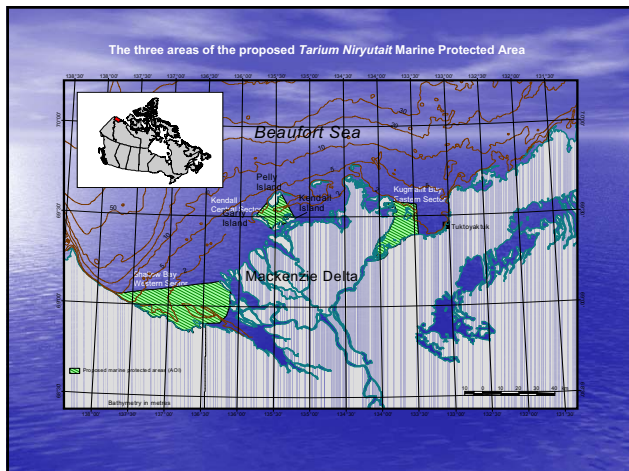
## Proposed Tarium Niryutait Marine Protected Areas

- Status: Pending approval of regulatory intent by BSIMPI Working Group and Senior Management Committee before proceeding to drafting of regulations and formal regulatory process.
- Being developed through an integrated management planning process.
- Conservation Objectives:
  - To conserve and protect beluga whales and the supporting ecosystem within the *Tarium Niryutait* Marine Protected Areas;
  - To support the goals of the Beaufort Sea Beluga Management Plan and the Inuvialuit Final Agreement:
    - to maintain a thriving population of beluga whales and beluga habitat in the Beaufort Sea; and
    - to provide for optimum sustainable harvest of beluga whales by the Inuvialuit within the MPA.

## Value added of the proposed *Tarium Niryutait*

The MPA will

- provide regulatory effect to Zone 1(a)'s of Beaufort Sea Beluga Management Plan
- provide the regulatory protection for beluga and beluga habitat that has been recommended by successive independent and government funded studies and reports since the Berger Inquiry in the 1970's.
- compliments protection provided by the Kendal Island Bird Sanctuary.
- ensure that human activities both within and adjacent to the MPA can be managed in a manner that both protects the conservation values within the MPA and allows for responsible development in the surrounding waters.
- provide clarity for industry and regulators.



## An Oceans Management Approach

- Ecosystem-based management
  - A guiding principle for integrated management
- Integrated management planning guided by:
  - A geographic framework for planning areas (eco-regions, ocean planning areas)
  - An ecosystem-based management framework
  - A governance framework (collaboration, advisory bodies etc.)

## What is ecosystem-based management (EBM)?

- EBM is “*the management of human activities so that ecosystems, their structure, function, composition, are maintained at appropriate temporal and spatial scales*” (IM Policy and Framework 2002).
- In plain language – figure out what the ecosystem can support and manage within those bounds.

## Ecosystem-based Management: Key Elements

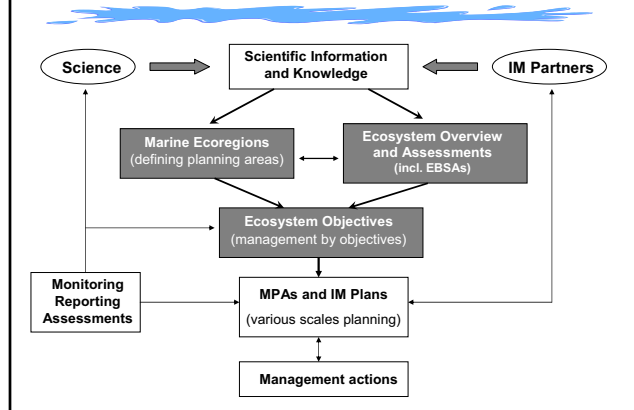
### Ecological Overview and Assessment (EOA):

- Ecological Overview: used to identify critical & functional elements of marine ecosystems within the planning area.
- Ecological Assessment: used to assess the ecological condition of the ecosystem and set ecosystem objectives.

Ecosystem Objective: (EO) are standards, guidelines, objectives set to maintain biodiversity, productivity, water and habitat quality

Biologically & ecologically significant areas (EBSA) are identified and determination made if additional protection measures needed

## The EBM Model





Beaufort Sea Science

- Nahidik habitat mapping
  - Fish, benthos, zooplankton, water chemistry
- Beluga tracking
- Seal studies
- Fish studies
- Climate Change
- Marine Mammal health

### Integrated Management and what is required to make it work

Integrated management is a collaborative approach for planning and managing human activities.

Knowledge of the marine environment

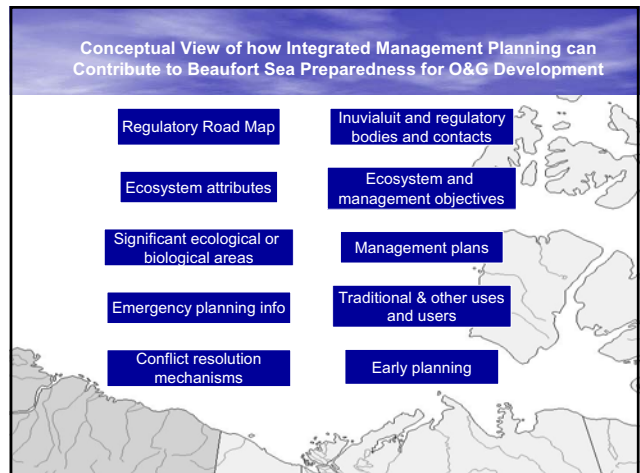
- its natural state, the pressures it is subject too, and the changes which ensue

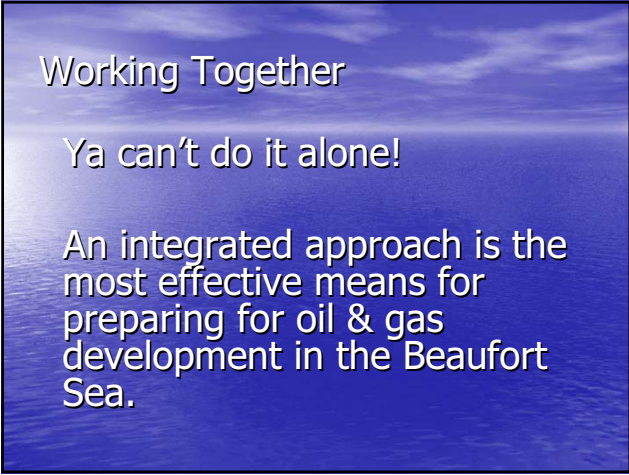
Inuvialuit, governments and industry working together

- Regulators – managers - users
- Collaboration on issues of common concern
- industries need to know and participate in the development of rules
- All need to know the science behind the decisions

### How can EBM and integrated management planning contribute to Beaufort Sea preparedness?

- Provides information and tools such as ecosystem overview and assessment, Ecological and Biological Significant Areas, ecosystem objectives and indicators
- Provide a collaborative process to facilitate early planning
- Early conflict resolution
- Can facilitate the streamlining of regulatory process and provide regulatory clarity





## Working Together

Ya can't do it alone!

An integrated approach is the most effective means for preparing for oil & gas development in the Beaufort Sea.



## Beaufort Sea: Ongoing and Planned Initiatives

- There already are ongoing and planned initiatives that are relevant to a strategic plan of action for oil and gas development in the Beaufort Sea.
- This is an overview of many of them.



## Beaufort Sea Initiatives Already Presented

- Devon Comp Study
- Industry Development Scenarios
- Historical Studies & Info Sources
- BEMP, MEMP, BREAM
- NOGAP, ESRF, ASTIS



## Beaufort Sea CIMP & CEAM

- Cumulative Impacts Monitoring Program and Audit
- CIMP monitoring of Enviro Effects
- CIMP-DFO: Tariuq Database
- Cumulative Effects Assessment and Management: strategy & framework
- CEAM Beaufort-Delta Regional Plan of Action Workshop: Inuvik, March 2004



## Beaufort Sea National Oceans Action Plan

- International Leadership, sovereignty and Security
- Integrated Oceans Management for Sustainable Development
- Health of the Oceans
- Science and Technology



## Beaufort Sea Regional Oceans Programs

- Mackenzie Gas Project Science Studies
- BSIMPI Research in the ISR
- Tarium Niryutait Marine Protected Area
- MEQ: Tariuq Community-Based Monitoring Program
- Ecosystem-Based Management
- Coastal Zone Canada Conference in Tuktoyaktuk: July, 2006



## Beaufort Sea Inuvialuit & Co-Mgt, Gwich'in

- Community Conservation Plans
- Beaufort Sea Beluga Management Plan
- IRC, IGC, community orgs
- FJMC, WMAC (NWT), WMAC (NS)
- GTC, GLA, community orgs



## Beaufort Sea Environmental Programs

- Integrated Ecosystem Thresholds Project: reflecting stakeholder values
- Arctic Environmental Sensitivity Atlas System: for emergency preparedness
- Environmental Emergencies Management System: incident tracking and management



## Beaufort Sea Circumpolar Initiatives

- Arctic Council: Arctic Marine Strategic Plan, including ass't of potential impacts of oil and gas development in the Arctic
- Implementation of the AMSP by the Arctic Council Working Group for the Protection of the Arctic Marine Environment (PAME): possible Beaufort Sea Pilot Project



## Beaufort Sea Databases & Information

- Inuvialuit Settlement Region Database: available June 2005
- Hydrocarbon Impacts Database: environmental & socio-economic
- Arctic Science & Technology Information System (ASTIS): can be customized for Beaufort Sea dev.



## Beaufort Sea Lessons Learned

- There are many past, present and planned initiatives of relevance to Beaufort Sea oil & gas development
- However, many new initiatives will be required to prepare for large-scale development
- Initiatives need planning and coordination to be cost-effective



## Beaufort Sea Questions: Something to Think About

- Do you see potential opportunities for making better use of information?
- What are the gaps or overlaps?
- Is this information relevant to you?
- What new initiatives are required to plan for Beaufort Sea development?

**BEAUFORT REGIONAL PLAN  
FOR ACTION**

**(BEAUFORT REGIONAL  
STRATEGIC ENVIRONMENTAL  
ASSESSMENT)**

**VISION:**

- Vision of where the Beaufort region should be in 25 years
- Revisit Beaufort EARP
- Regional scope
- Benchmarks for sustainable development (VECs)
- Realistic development scenario

**INFORMATION:**

- Assemble common background information base and keep it current
- Identify and fill data gaps
- Identify what good information now exists
- Traditional Knowledge
- Oceanography
- Document existing activities
- Socio-economic considerations

**SUPPORT PROJECT ENVIRONMENTAL  
ASSESSMENT AND REGULATION:**

- Standard set of operating conditions
- Best practises
- Develop mutual understanding of roles and responsibilities
- Evaluation of new technologies
- Review of regulatory framework to provide coordination, reduce duplication and provide clear timelines

**NEXT STEPS:**

## “Working Together to Prepare for Oil and Gas Development in the Beaufort Sea”

Agenda Item 13: 'Developing a Strategic Regional Plan of Action

March 14, 2005  
Inuvik, NT

## Three Categories of Actions

- Moving Forward
- Foundational Pieces
- Priority Actions

## Moving Forward

- Governance
  - Who will lead, who will be involved?
  - What is the best model?
  - What is the mandate?

## Foundational Pieces

- ‘Lessons Learned’, e.g.:
  - Beaufort EARP
  - Slave Geological Province RPA/CEAM
  - RSEA
- Determine ‘State of Knowledge’
- Develop communications approach, including initial web site
- Refine development scenarios (ongoing)

## Priority Actions

Many actions to be reviewed, synthesized and prioritized, e.g.,

- Developing community capacity (\$, human resources) to fully participate in environmental management
- Actions to address specific knowledge gaps
- Establish a prioritized, coordinated research and monitoring approach to meet the needs of communities, government, regulators, industry

## Priority Actions (cont'd)

- Sensitive area mapping
- Information management, e.g.
  - Inventories – what exists?
  - Accessibility – how to get it?
  - Coordination
- Reviews, e.g.:
  - 'best practices' offshore technology
  - regulatory framework
  - regulatory road map
- Gaps analysis: emergency preparedness and response