ExxonMobil Research on Dispersants in Cold Water

Presented to

Dispersed Oil Research Forum

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ORLAN Platform

FESCO Sakhalin

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**Sakhalin Ice Conditions**

Average ice drift is 7 km/day in Tatar Strait & 16-33 km/day on E. Sakhalin coast

AVHRR satellite image
April 7, 1999
Island length = 950 km

**Sakhalin Tanker Trials**

**Sakhalin Ice Floe**
Mechanical response is challenged by ice
Chemical dispersion of oil in ice at OHMSETT
New Dispersant Formulation

OHMSETT Wave Tank

SL Ross Wave Tank

New formula

Corexit 9500

% Dispersion

0 10 20 30 40 50 60 70 80 90 100

IFO 580 (1:20 DOR)
DOR 6500 cP
Gilda Crude (1:20 DOR)
>6000 cP
Elly Crude (1:20 DOR)
>6000 cP
Doba Crude (1:100 DOR)
>1000 cP
Weathered Terra Nova Crude (1:50 DOR)

9500 immediately after application

Drywall texture sprayer
Chemical Dispersion Enhanced by Icebreaker Prop Wash

Azimuthal Stern Drive Icebreaker

Completed positive basin tests

URC-Funded Model Basin Test Results

BP-Funded Model Basin Test Results
URC Oil Spill Response in Ice Research

Dispersant Response in Ice – Diversion Boom Concept

Extending the Prop-wash Concept to Vessels of Opportunity and Lower Ice/Open Water

Three Vessels of Opportunity and Two Booms

Two Vessels of Opportunity and One Boom

Completed basin tests using 1:25 scale workboat
URC Oil Spill Response in Ice Research

Dispersant Response in Ice – Dispersant Effectiveness over Time

Oils Tested
- Napthenic (Troll B)
- Asphaltenic (Balder)
- Paraffinic (New Oseberg)
- Waxy (Ringhorne)

Dispersants Tested
- Two commercial dispersants
- Model dispersant (similar to 9500)
URC Oil Spill Response in Ice Research

IFP Test Results at 15°C

- Napthenic
- Asphaltenic
- Paraffinic
- Waxy

Results at 72 hours

IFP Test Results at 25°C Tests

- Napthenic
- Asphaltenic
- Paraffinic
- Waxy

IFP Test Results at 0°C Tests

- Asphaltenic
- Paraffinic
- Napthenic
The End