



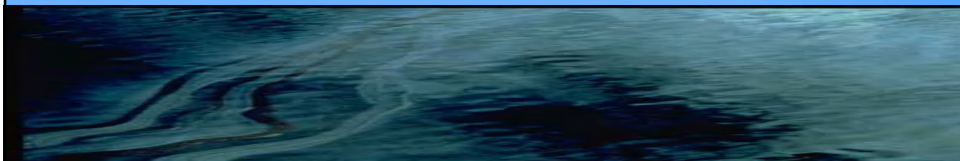
ADNOC Strategy for Enhancement of Oil Spill Response Preparedness



ADNOC Response Preparedness

Assessment & Assurance Elements:

1. Recognition of Potential Spill Sources
2. Evaluation of Potential Impacts
3. Understanding Fate & Effect of Risk Oils
4. Tiered Response Philosophy
5. Enhancing Response Capability





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Potential Spill Sources

- Gulf Region
 - 29% of the Worlds Oil Production
 - 45% of Worlds Seaborn Crude Oil Trade Passes through the Strait of Hormuz
 - Worlds 3rd Largest Concentration of Offshore Drilling
 - Large Increases in Commercial Vessel Traffic
 - Large Increases in Coastal Development Activity
 - Political or Social Insurgent Attack
 - Military Conflict



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Potential Spill Sources

- ADNOC/ Abu Dhabi
 - Worlds 4th Largest Oil Reserves
 - Worlds 5th Largest Gas Reserves
 - Roughly 2.8 mmbd crude oil production
 - 500 mbd refining and transportation
 - Over 60 Vessels
 - Over 25 Drilling Rigs
 - 7 Crude and Product Tankers
 - Bunkering Operations
 - 4 Major Marine Oil Ports
 - Extensive Growth & Development





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Key Socioeconomic Considerations:

- ADNOC Operations are Critical to the U.A.E.
- ADNOC is a Significant Response Resource
- The Marine Environment is Critical to U.A.E.
- Minimal Regulatory Pressure
- ADNOC is Influential in the Gulf Oil Industry
- U.A.E is Influential in the GCC

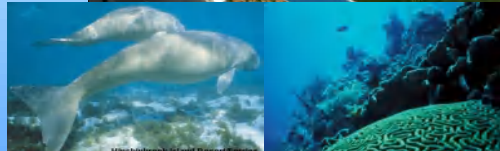


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Areas of Potential Impact

- **Seawater Intakes**
 - Power generation
 - Drinking Water
 - Industrial processing / cooling
- **Tourism**
- **Environmental Impacts**
 - Fragile Ecosystems
 - Threatened Species
- **Public Impacts**
- **Business Reputation**
- **Economic Impacts**





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Understanding Risk Oils

- 16 ADNOC Marine Risk Oils
- Laboratory Analyzed for Fate and Behaviour
- High Volatility
- High Spreading Coefficient
- Forms Stable Emulsions
- Dispersant Candidate, Limited Window
- Extensive and Ongoing Spill Modeling



ADNOC Response Preparedness



Tiered Response Structure

- Tier 1 – Facilities
- Tier 2 – Corporate/Country
- Tier 3 – Regional/International

Based Upon:

- Years of Incident Experience
- Immediate Response is Essential to Success
- Major Incidents Always Exhaust Company Resources
- Mutual Aid is Always Time Limited
- Mitigation May Require Specialized Expertise/Equipment



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Enhance Mechanical Response

- Strategic Placement of Mechanical Inventory
- Boom Inventory for all Environments/Missions
- Hi-speed Skimming Equipment
- Viscous Oil Recovery
- Dedicated Response Vessels
- Building Temporary Storage Capacity
- Influencing Tier 1 Inventories (50+ Facilities)
- Packaging for Systems Deployment
- Night Operations Support
- Defining Disposal Options



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Response Staffing Plan

- 46 Full Time Tier 2 Responders
- National Development Program
- Average 10 Tier 1 Responders per Facility, 24/7
- Daily Training, Maintenance, Drills, Exercises, etc...
- Developing Local Contractor Resources
- Influencing Professional Response Services in UAE



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Priority for Immediate Response

- Requirement for Facility Response Teams
- Consulting with Operations on Development Issues
- Implementation of Incident Command System (ICS)
- Corporate Incident Information Management System
- Improving Facility Response Plans
- Uniform Training, Strategies & Tactics
- Auditing Tier 1 Performance



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ADNOC Responder Development Plan

- Participation in Essential Core Training
- International Drill & Exercise Participation
- Developing International Intern Programs
- Developing Specialist Immersion Programs
- Practice, Practice, Practice
- Participating in Spills of Opportunity
- Leadership Skills Development for All Responders



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Dispersant Program Assurance

- Large Stockpile in ADNOC & GCC
- Questionable Stockpile Viability
- Excellent Option for ADNOC Risk Oils
- Pre-approvals in Place
- Actions to Improve Dispersant Capability
 - Wide area application system
 - Dispersant selection based on scientific evidence
 - Centrally managed program and stockpile
 - Aerial support program
 - Annual training
- Extended Strategy to GCC Resources



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Sensitive Area (SA) Protection

- Excellent Initial Development of SA Index
- Assess Critical Resources for Pre-Staging
- Develop Site Specific Protection Tactics
- Ensure Tier 1 Commitment to SA Protection
- Special Focus Areas: Sir Ban Yas, Marawah, etc.





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Regional Response Development

Objective: Enhance Tier 2 and Tier 3 Response within Region

Opportunities & Advantages to GCC Companies

- Extensive Response Inventory
- Extensive Dispersant Inventory
- Shared Risk
- Rapid Response Times
- Potential for Dedicated Facility
- Improved Effectiveness of GCC Mutual Aid
- Ability to Minimize Customs/Immigration Issues
- Shared Cost for Specialized Services
- Potential Internship Program



ADNOC Response Preparedness



Regional Response Development

Regional Benefit Opportunities:

- Improved Overall Response Times
- Improved Relations with Response Community
- Reduced Dependency on Non-Region Resources
- Improved Efficiency in Mutual Aid Actions
- Shared Cost for Specialized Services
- Continuity in Strategies, Tactics and Training
- Minimization of Customs/Immigration Issues
- Reduced Costs and Improved Performance



ADNOC Response Preparedness



PAJ Joint Industry Exercise

January 22 & 23, 2007

Abu Dhabi, United Arab Emirates (UAE)

Participants:

- PAJ Response Program Management
- PAJ Response Base Personnel
- First Officer Japanese Embassy, Abu Dhabi
- UAE Coast Guard Personnel
- Lamnalco Personnel
- Vikoma Personnel
- IRSHAD Marine Services Personnel
- ESNAAD Marine Logistics Personnel
- ADNOC Oil Spill Response Personnel
- SPC Management



ADNOC Response Preparedness



PAJ Joint Industry Exercise Objectives

1. Demonstrate the practical value of the PAJ response equipment commitment to the Gulf Region.
2. Coordinate a Mutual Aid Deployment of PAJ response equipment in an offshore response exercise.
3. Demonstrate the ability to access, mobilize and engage the PAJ response equipment stockpile in a timely manner.
4. Create an opportunity for sharing of response strategies and tactics among Industry Partners with common interests for the protection of the Arabian Gulf.



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PAJ Joint Industry Exercise – Day 1

- No-notice callout of ESNAAD Logistics
- Warehouse Loading – T +20 minutes
- Transport & Secure to Vessel – T+1hour 40 minutes



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PAJ Joint Industry Exercise – Day 2

- Dockside Pre-Exercise Briefing at 0700
- Challenging Weather Conditions
- Work Boat Ordered to Return to Port





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PAJ Joint Industry Exercise – Day 2

- Decision to Attempt Single Vessel Boom Lay
- Problems with Weather Continue
- Work Boat Ordered to Return to Port



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PAJ Joint Industry Exercise – Day 2

- Wind Gusts to 30 kts.
- Seas 5 – 6 ft.
- Towline Parted During 180° Maneuver
- Recover Boom and Return to Port





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PAJ Joint Industry Exercise – Lessons

- Excellent Demonstration of Mutual Aid Capability
- Outstanding Experience of Rough Weather Deployment
- Good Sharing of Information/Building Relationships
- Promote Value for Additional Joint Industry Activities



ADNOC Response Preparedness



Appreciation to PAJ for Environmental Commitment



