FRESH WATER SPILL 2004
SYMPOSIUM

Oil Spill Preparedness and Response in the Amazon Region -- Lessons Learned From Drills and Exercises

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OIL & GAS INDUSTRIAL INSTALLATIONS AND ACTIVITIES IN THE AMAZON REGION
Aerial View of the Installations and Surrounding Environment
Aerial View of the Installations and Surrounding Environment

Flooded vegetation at the mouth of the Urucu River
Aerial View of the Installations and Surrounding Environment

(Solimões River Terminal)
GEOGRAPHICAL VIEW

Distâncias:
- Urucu – TESOL = 281 km
- Urucu – Manaus = 630 km
Drills and Exercises

Accidental Scenarios Selection Criteria

- Security, Health and Environment involvement.
- High Environmental Damage Potential.
- Possibilities for near-by communities involvement.
- Feasibility
Drills and Exercises

Accidental Scenario -- DRILL #1

• Collision of two Diesel Oil Transportation Vessels
  --- Injured Victims.
  --- Oil spill in Rio Negro waters (29m³/h.).
  --- Possible shipwreck.
  --- Possible contamination of river margins and fishery areas.
Drills and Exercises
Accidental Scenario -- DRILL #2

- Complete Rupture of the Hose Connection at the Dock, during a Vessel Loading Operation
  - Firing and Explosion in the Terminal Dock
  - Casualties and Injured Victims.
  - Oil spill in Rio Solimoes waters (10m³)
  - Possible contamination of the Coari community water supply, river margins and fishery areas.
Drills and Exercises  
(DRILL #2)  
Basic Response Structure

• Emergency Response Organization

• Human and Material Resources

• Available Logistics
Emergency Response Structure

- Company Corporate
- INCIDENT COMAND
- Public Authorities
  - Communications
  - Law & Enforcement
    - Intitucional
    - Press
      - Operational Group
      - Logistics Group
      - Financing Group
      - Planning Group
        - Control & Protection
        - Recovery
        - Cleaning
        - First Aid
<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>QUANT.</th>
</tr>
</thead>
<tbody>
<tr>
<td>BOOM - SEAFENCE type</td>
<td>830 m</td>
</tr>
<tr>
<td>EGMOPOL (barge with recovery facility)</td>
<td>01</td>
</tr>
<tr>
<td>Workboat (fast response landing craft)</td>
<td>03</td>
</tr>
<tr>
<td>SKIMER-PAK (lightweight weir type)</td>
<td>04</td>
</tr>
<tr>
<td>SKIMER-ROOL (industrial type 16 ton./h)</td>
<td>01</td>
</tr>
<tr>
<td>Tank (Inflatable, floating structure)</td>
<td>01</td>
</tr>
<tr>
<td>Tank (inflatable, self-supporting structure)</td>
<td>01</td>
</tr>
<tr>
<td>Support boats &amp; small fast motor boats</td>
<td>20</td>
</tr>
<tr>
<td>COARI Terminal Full Fire Combat Structure</td>
<td>01</td>
</tr>
</tbody>
</table>
## Available Resources
(At the Environment Defense Center in Manaus)

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>QUANT.</th>
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</thead>
<tbody>
<tr>
<td>High Volume Skimmer System - HVSS</td>
<td>01</td>
</tr>
<tr>
<td>Containment Booms type Current Booster</td>
<td>150 m</td>
</tr>
<tr>
<td>Containment Booms type SEAFENCE</td>
<td>14500 m</td>
</tr>
<tr>
<td>Muck Heavy Crane Trucks</td>
<td>02</td>
</tr>
<tr>
<td>Ferry Boats</td>
<td>04</td>
</tr>
<tr>
<td>· Transport of “Oil Fake” material</td>
<td></td>
</tr>
<tr>
<td>· Waste Recovery</td>
<td></td>
</tr>
<tr>
<td>· Wild Life Rehabilitation Unit</td>
<td></td>
</tr>
<tr>
<td>· Transport of the HVSS Equipment</td>
<td></td>
</tr>
<tr>
<td>Propellers boats for the barges</td>
<td>10</td>
</tr>
<tr>
<td>Fast small motor boats</td>
<td>15</td>
</tr>
<tr>
<td>Truck Communication System</td>
<td>40</td>
</tr>
<tr>
<td>Personal</td>
<td>55</td>
</tr>
<tr>
<td>Current Flow measure device</td>
<td>01</td>
</tr>
<tr>
<td>Helicopter</td>
<td>01</td>
</tr>
<tr>
<td>Small planes</td>
<td>02</td>
</tr>
<tr>
<td>Pick up</td>
<td>02</td>
</tr>
<tr>
<td>Boat for temporary residence</td>
<td>01</td>
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</tbody>
</table>
## Human Resources

<table>
<thead>
<tr>
<th>TEAMS</th>
<th>QUANT.</th>
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</thead>
<tbody>
<tr>
<td>Coari Terminal Fire Brigade</td>
<td>17</td>
</tr>
<tr>
<td>First Aid (medical(02), nursing (05) ; paramedical (07))</td>
<td>14</td>
</tr>
<tr>
<td>Oil Pollution</td>
<td>110</td>
</tr>
<tr>
<td>Terminal Operation Staff</td>
<td>08</td>
</tr>
<tr>
<td>Faking fatal casualties and injured people</td>
<td>10</td>
</tr>
<tr>
<td>General Command</td>
<td>02</td>
</tr>
<tr>
<td>Land support</td>
<td>02</td>
</tr>
<tr>
<td>River support</td>
<td>08</td>
</tr>
<tr>
<td>Fishery community</td>
<td>27</td>
</tr>
<tr>
<td>Observers</td>
<td>17</td>
</tr>
<tr>
<td>Maintenance</td>
<td>04</td>
</tr>
<tr>
<td>Health, Security and Environment Sector</td>
<td>04</td>
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<tr>
<td>Logistics</td>
<td>06</td>
</tr>
<tr>
<td>Environment Defense Center</td>
<td>55</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>284</strong></td>
</tr>
</tbody>
</table>
CONTAINMENT BOOMS
BASIC RESPONSE EQUIPMENTS
EGMOPOL
Oil Recovery Equipment
PERMANENT TRAINING
The Amazon Oil Spill Drill and Exercise Performance
PREPARING FOR ACTION
BRINGING REALISM TO THE VICTIMS
INCIDENT PRIMARY EVENT
FIRST EMERGENCY ACTIONS
SIMULATING THE OIL SPILL
THE OIL SPILL SPREAD OUT
GETTING THE MIDDLE RIVER
THE RESPONSE ACTION
THE “OIL” CONTAINMENT AND RECOVERY
AERIAL SURVEILLANCE
“OIL” RECOVERY ACTIONS
“OIL STORING ACTIONS
DISCUSSING AND EVALUATING THE DRILL
Amazon Drills and Exercises
Critical Analysis - STRONG POINTS

• The Drill Planning
• People commitment
• External communication, highlight for the creation of a “Press Room” in the near town of Coari
• Understanding and integration with local and state authorities
• Oil recovery operation performance
Amazon Drills and Exercises
Critical Analysis - STRONG POINTS

• Correct response from the “Predictive Oil Dispersion Model”
• The presence of external and independent “Observers”
• The performance of the INFOPAE, a potent software that can provide a complete set of “all nature” data and information available to support the “Operational Decisions” and a full on-line report of all relevant accident response fact
INFOPAE

PERFORMANCE AT THE DRILL
DRILL SCENARIO

LAGO
COARI
FORECAST RESULTS (22.10.03) X RESULTS AT THE DRILL (29.10.03)

V = 6 km/h

1h 10' - Forecast

10:18h - Time Zero

300m
SITUATION AT 10:38 hs.
OPERATIONS DETAIL

Esperança

1.64 ha

3.28 ha

1.64 ha

3.28 ha
Amazon Drills and Exercises
Critical Analysis - POINTS TO IMPROVE

- The Drill Planning
- Firing Control Response
- Victims Rescue Operation from the accident scenario
- Logistics to remove of the very injured casualties to more advanced medical care centers
- Definition of the command and leaders tasks
Amazon Drills and Exercises
Critical Analysis - POINTS TO IMPROVE

• Integration and sufficiency of the “first aid” and medical care team with the Response Command
• The “TV” surveillance system of the Terminal
• Integration and more participation of the Environmental Agency
• News and “briefing” about the casualties for the work colleagues
THANKS FOR YOUR ATTENTION

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