MMS
Gulf of Mexico

New Horizons

Lars Herbst
Regional Director
MMS, Gulf of Mexico
Outline

• Current Activities Overview
  – Status of GOM OCS
  – Energy Policy Act 2005

• New 5 year lease program

• Operational Issues/Challenges
Current Activities Overview
CURRENT ACTIVE LEASES

- Active Leases as of 12/31/2007
- Protraction/Map Area
- Planning Area Boundary
Gulf of Mexico Oil Production Forecast
Gulf of Mexico Gas Production Forecast
Gulf Deepwater Development Continues to Expand

- 13th year of major expansion
- 113 projects in production at start of 2008
- 6 new production projects in 2007
- 4 large projects to start production in 2008
<table>
<thead>
<tr>
<th>Prospect</th>
<th>Operator</th>
<th>Area / block</th>
<th>Water Depth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atlantis</td>
<td>BP</td>
<td>Green Canyon 699</td>
<td>6,133’</td>
</tr>
<tr>
<td>Atlas-Atlas NW / Ind. Hub</td>
<td>Anadarko</td>
<td>Lloyd Ridge 50</td>
<td>8,934’</td>
</tr>
<tr>
<td>Cheyenne / Ind. Hub</td>
<td>Anadarko</td>
<td>Lloyd Ridge 399</td>
<td>8,951’</td>
</tr>
<tr>
<td>Cottonwood</td>
<td>Petrobras</td>
<td>Garden Banks 244</td>
<td>2,130’</td>
</tr>
<tr>
<td>Deimos</td>
<td>Shell</td>
<td>Mississippi Canyon 806</td>
<td>3,106’</td>
</tr>
<tr>
<td>GB 302</td>
<td>Walter</td>
<td>Garden Banks 302</td>
<td>2,410’</td>
</tr>
<tr>
<td>Ghenghis Khan</td>
<td>Anadarko</td>
<td>Green Canyon 652</td>
<td>4,300’</td>
</tr>
<tr>
<td>Jubilee / Ind. Hub</td>
<td>Anadarko</td>
<td>Atwater Valley 349</td>
<td>8,825’</td>
</tr>
<tr>
<td>MC 161</td>
<td>Walter</td>
<td>Mississippi Canyon 161</td>
<td>2,924’</td>
</tr>
<tr>
<td>Merganser / Ind. Hub</td>
<td>Anadarko</td>
<td>Atwater Valley 37</td>
<td>8,015’</td>
</tr>
<tr>
<td>Mondo NW / Ind. Hub</td>
<td>Anadarko</td>
<td>Lloyd Ridge 1</td>
<td>8,340’</td>
</tr>
<tr>
<td>Q / Ind. Hub</td>
<td>Hydro</td>
<td>Mississippi Canyon 961</td>
<td>7,925’</td>
</tr>
<tr>
<td>San Jacinto / Ind. Hub</td>
<td>Dominion</td>
<td>Desoto Canyon 618</td>
<td>7,850’</td>
</tr>
<tr>
<td>Spiderman / Ind. Hub</td>
<td>Anadarko</td>
<td>Desoto Canyon 621</td>
<td>8,087’</td>
</tr>
<tr>
<td>Vortex / Ind. Hub</td>
<td>Anadarko</td>
<td>Atwater Valley 261</td>
<td>8,344’</td>
</tr>
</tbody>
</table>
2007-2008 Major Production Starts

- Independence Hub
  - Mississippi Canyon 920
- Atlantis
  - Green Canyon 787

Locations:
- Houston
- Lake Charles
- New Orleans
- Biloxi
- Mobile
- Corpus Christi
- Western
- Central
# New Major Production in 2007

<table>
<thead>
<tr>
<th>Project</th>
<th>Operator</th>
<th>Estimated Oil (BOPD)</th>
<th>Estimated Gas (MMCFPD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Independence Hub</td>
<td>Anadarko</td>
<td></td>
<td>1000</td>
</tr>
<tr>
<td>Atlantis</td>
<td>BP</td>
<td>200,000</td>
<td>180</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>200,000</td>
<td>1180</td>
</tr>
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</table>
# New Major Production in 2008-10

<table>
<thead>
<tr>
<th>Project (year)</th>
<th>Operator</th>
<th>Estimated Oil (BOPD)</th>
<th>Estimated Gas (MMCFPD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neptune (08)</td>
<td>BHP</td>
<td>50,000</td>
<td>50</td>
</tr>
<tr>
<td>Thunder Horse (08)</td>
<td>BP</td>
<td>250,000</td>
<td>200</td>
</tr>
<tr>
<td>Tahiti (08)</td>
<td>Chevron</td>
<td>200,000</td>
<td>180</td>
</tr>
<tr>
<td>Blind Faith (08)</td>
<td>BP</td>
<td>40,000</td>
<td>35</td>
</tr>
<tr>
<td>Cascade/ Chinook (09)</td>
<td>Petrobras</td>
<td>80,000</td>
<td>16</td>
</tr>
<tr>
<td>Shenzi (09)</td>
<td>BHP</td>
<td>100,000</td>
<td>50</td>
</tr>
<tr>
<td>Perdido Host (10)</td>
<td>Shell</td>
<td>100,000</td>
<td>200</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>820,000</strong></td>
<td><strong>731</strong></td>
</tr>
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</table>
### 2007 Deepwater Gulf Discoveries (Announced)

<table>
<thead>
<tr>
<th>Prospect</th>
<th>Operator</th>
<th>Location</th>
<th>Water Depth – Ft.</th>
</tr>
</thead>
<tbody>
<tr>
<td>West Tonga</td>
<td>Anadarko</td>
<td>GC 726</td>
<td>4700</td>
</tr>
<tr>
<td>Isabela</td>
<td>British Petroleum</td>
<td>MC 562</td>
<td>6500</td>
</tr>
<tr>
<td>Magellan</td>
<td>Mariner Energy</td>
<td>EB 424</td>
<td>2767</td>
</tr>
<tr>
<td>Droshky (previously Troika Deep)</td>
<td>Marathon Oil</td>
<td>GC 244</td>
<td>2900</td>
</tr>
<tr>
<td>Noonan/Danny</td>
<td>Helix Energy Solutions</td>
<td>GB 506</td>
<td>2700</td>
</tr>
</tbody>
</table>
2007 Deep Gas Gulf Discoveries (Announced)

<table>
<thead>
<tr>
<th>Prospect</th>
<th>Operator</th>
<th>Location</th>
<th>Water Depth – Ft.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Butch Cassidy</td>
<td>Bois d'Arc Energy</td>
<td>ST 81</td>
<td>61</td>
</tr>
<tr>
<td>Flatrock</td>
<td>McMoran Exploration</td>
<td>SM 212</td>
<td>10</td>
</tr>
<tr>
<td>Hurricane Deep</td>
<td>McMoran Exploration</td>
<td>SM 217</td>
<td>12</td>
</tr>
</tbody>
</table>
Deep Shelf Discoveries
Energy Policy Act - 2005

- Three key components for MMS:
  - Alternative Energy and Alternative Use
  - Establish Coastal Impact Assistance Program
  - Create an Automated Royalty Credit System
Alternative Energy

- Issued a Programmatic Environmental Impact Assessment
- In the process of establishing program regulations
- Currently reviewing two wind projects
Alternative Energy

- Leasing
  - Technology Test/ Resource Assessment Lease
  - Commercial Lease
- Developing proposed rules
- Solicited area nominations
- GOMR will support leasing and permitting activities related to AE
## Anticipated Potential Projects

<table>
<thead>
<tr>
<th>Region</th>
<th>Technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>North Atlantic</td>
<td>Wind</td>
</tr>
<tr>
<td>Mid Atlantic</td>
<td>Wind</td>
</tr>
<tr>
<td>South Atlantic</td>
<td>Wind</td>
</tr>
<tr>
<td>Straits of Florida</td>
<td>Wave</td>
</tr>
<tr>
<td>Straits of Florida</td>
<td>Ocean Current</td>
</tr>
<tr>
<td>Gulf of Mexico</td>
<td>Wind</td>
</tr>
<tr>
<td>Pacific Northwest</td>
<td>Wave</td>
</tr>
<tr>
<td>Southern California</td>
<td>Wind</td>
</tr>
</tbody>
</table>
Coastal Impact Assistance Program

- Requires disbursement of $250 Million for each year from 2007 through 2010
- Allocations for 2007 were announced on April 16, 2007 as follows:

<table>
<thead>
<tr>
<th></th>
<th>% Allocation</th>
<th>Total</th>
<th>State</th>
<th>CPS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alabama</td>
<td>10.54%</td>
<td>$25,551,607.04</td>
<td>$16,608,544.58</td>
<td>$8,943,062.46</td>
</tr>
<tr>
<td>Alaska</td>
<td>1.00%</td>
<td>$2,425,000.00</td>
<td>$1,576,250.00</td>
<td>$848,750.00</td>
</tr>
<tr>
<td>California</td>
<td>3.07%</td>
<td>$7,444,441.75</td>
<td>$4,838,887.13</td>
<td>$2,605,554.61</td>
</tr>
<tr>
<td>Louisiana</td>
<td>52.60%</td>
<td>$127,547,898.57</td>
<td>$82,906,134.07</td>
<td>$44,641,764.50</td>
</tr>
<tr>
<td>Mississippi</td>
<td>12.76%</td>
<td>$30,939,850.55</td>
<td>$20,110,902.86</td>
<td>$10,828,947.69</td>
</tr>
<tr>
<td>Texas</td>
<td>20.04%</td>
<td>$48,591,202.09</td>
<td>$31,584,281.36</td>
<td>$17,006,920.73</td>
</tr>
</tbody>
</table>
Gulf of Mexico Energy Security Act Implementation

1. Add acreage to Central Sale 205
2. Conduct Eastern sale in 2008
3. Implement removal of Presidential withdrawal from area south of 181
4. Implement revenue sharing to coastal states
5. Adopt regulations for bonus credits from existing Eastern leases
Leasing Moratoria in Gulf (2022)

In Eastern Planning Area
- Acreage within 125 miles of Florida coast
- Acreage east of military mission line (86 degrees 41 minutes west)

In Central Planning area
- Acreage in Pensacola, Destin Dome, and Desoto Canyon which are within 100 miles of Florida coast
GOMESA Areas

Proposed Sale 205 Area
Target 2007 Sale
371 blocks
2,037,584 acres

181 South Area
Possible 2009 Sale
(GOM Energy Security Act of 2006)
1,069 blocks
5,927,640 acres

Proposed Sale 224 Area
Target 2008 Sale
(GOM Energy Security Act of 2006)
134 blocks
543,548 acres

Disclaimer: All figures shown are approximate.
Revenue Sharing

• For 181 Area in Eastern Planning Area Sale 224 and “South of 181” Area the revenue sharing begins immediately

• For leases, in areas historically offered, entered into on or after the date of Act - the revenue sharing begins in fiscal year 2017
Basic Revenue Sharing Formula

- 50% to General Fund in Treasury
- 37.5% will go to Gulf producing States
- 12.5% will go to Land and Water Conservation Fund
- Distribution to Gulf States will be inversely proportional to the distance between points on Gulf States and geographical center of leased tract
- Revenue Sharing is capped at $500 million
EGOM Credits

• May exchange leases for bonus or royalty credit
• Equal to Bonus bid and rent paid on leased tract
• Regulations have been drafted that will govern the exchange
5 Year Lease Plan

2007 - 2012
<table>
<thead>
<tr>
<th>August 2007</th>
<th>Sale 204</th>
<th>Western Gulf</th>
</tr>
</thead>
<tbody>
<tr>
<td>October 2007</td>
<td>Sale 205</td>
<td>Central Gulf</td>
</tr>
</tbody>
</table>
Nearly 700 leases in the LT play are expected to be available for the Western and Central GOM sales in 2007 and 2008.
Anticipated Lease Expirations

2007 - 2008
(2,117 leases)

2009 - 2010
(1,271 leases)

2011 - 2012
(1,020 leases)

Figure 13a. Anticipated lease expirations from 2007 to 2012 in the Gulf of Mexico.
## Sale 204 Results

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Tracts Receiving Bid</td>
<td>282</td>
</tr>
<tr>
<td>Total Number of Bids Received</td>
<td>358</td>
</tr>
<tr>
<td>Total Companies Participating in Bids</td>
<td>47</td>
</tr>
<tr>
<td>Sum of High Bids</td>
<td>$289,953,066</td>
</tr>
<tr>
<td>Sum of All Bids</td>
<td>$369,496,840</td>
</tr>
</tbody>
</table>
## Sale 205 Results

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Tracts Receiving Bid</td>
<td>723</td>
</tr>
<tr>
<td>Total Number of Bids Received</td>
<td>1,428</td>
</tr>
<tr>
<td>Total Companies Participating in Bids</td>
<td>84</td>
</tr>
<tr>
<td>Sum of High Bids</td>
<td>$2,904,321,011</td>
</tr>
<tr>
<td>Sum of All Bids</td>
<td>$5,245,583,944</td>
</tr>
</tbody>
</table>
## Remaining Sales Under Current 5-Year Program

<table>
<thead>
<tr>
<th>Sale Location and Number</th>
<th>Scheduled Sale Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central GOM Sale 206</td>
<td>2008</td>
</tr>
<tr>
<td>Eastern GOM Sale 224</td>
<td>2008</td>
</tr>
<tr>
<td>Western GOM Sale 207</td>
<td>2008</td>
</tr>
<tr>
<td>Central GOM Sale 208</td>
<td>2009</td>
</tr>
<tr>
<td>Western GOM Sale 210</td>
<td>2009</td>
</tr>
<tr>
<td>Central GOM Sale 213</td>
<td>2010</td>
</tr>
<tr>
<td>Western GOM Sale 215</td>
<td>2010</td>
</tr>
<tr>
<td>Central GOM Sale 216</td>
<td>2011</td>
</tr>
<tr>
<td>Western GOM Sale 218</td>
<td>2011</td>
</tr>
<tr>
<td>Mid-Atlantic Sale 220*</td>
<td>2011</td>
</tr>
<tr>
<td>Central GOM Sale 222</td>
<td>2012</td>
</tr>
</tbody>
</table>

*dependent on removal of Presidential withdrawal and Congressional Moratorium discontinued
Proposed Central Planning Area—Sale 206

- Includes blocks that expired, terminated or were relinquished since February 2007
- Sale is planned for March 19, 2008 at LA Superdome.
- Approximately 5000 blocks
- Royalty Relief with threshold of $35.75 per barrel and $4.47 per MCF
- Royalty Rate = 18.75%
Proposed Eastern Planning Area - Sale 224

- Sale is mandated by the Gulf of Mexico Energy Security Act of 2006 (GOMESA).
- EGOM Sale 224 will be held in conjunction with Sale 206 on March 19, 2008 in LA Superdome.
- Only sale for this area in 5 year program
- 118 whole or partial blocks
- Excluded from Deepwater Royalty Relief
- Royalty Rate = 18.75%
Revised Sale Area Map for Eastern GOM Lease Sale 224

- Blocks available: 118 blocks, 547,230 acres
- CGOM Block (portions were formerly in CGOM 224 area)
- Military Mission Line (86° 41' W)
- Planning Area Boundary
- 125 Mile Buffer from Florida coast
- Protraction Area Boundary

The map has changed slightly since the Sale 224 CG/NOI map was issued, due to the decision that the boundary between the Eastern and Central Planning Areas would follow block boundaries as opposed to splitting blocks.

Unleased blocks within the Sale 224 were currently numbered 319 blocks and cover 547,230 acres. They are located from 125 miles to 203 (206) miles offshore Florida and west of the Military Mission Line (86° 41' West longitude) in water depths of 910 meters (2994') to 2113 (6937') meters.
Challenges
First FPSO Project

Chinook
Petrobras America Inc
Walker Ridge Block 250
Layout of the Phoenix field, showing the FPU (*Helix Producer I*) in position. The field is scheduled for a 3Q 2008 start-up.

Courtesy Helix Energy Solutions Group
High Pressure / High Temperature (HPHT) Systems

- High Shut-in Tubing Pressure
  - Subsea wells with SITP over 15,000 psig
  - Dry tree wells with SITP over 20,000 psig

- Ultra High Pressure (XHP) equipment rated for H2S
  - Material qualification selection is critical – there is a lack of experience in this area.
  - Consideration of axial loads, pressures, temperatures and environmental loads must be addressed

- HPHT design qualification testing
  - There are currently a lack of facilities to provide this testing
Subsea Processing and Artificial Lift Technology

- Conventional sub-sea booster pumps
  - Three (3) projects have approved DWOPs with the use of subsea booster pump systems.
    - BP King
    - Shell Perdido
    - Petrobras Chinook/Cascade

- Conventional and Non-conventional sub-sea processing
  - One (1) DWOP has been approved for the use of non-conventional subsea separation in conjunction with subsea boosting.
  - MMS is not ready to approve any discharge to the environment or flaring.
Pipeline Issues

**Riser performance monitoring / integrity management**
- Riser / tendon fatigue due to VIV has become a significant issue for deepwater facilities.
- At least one (1) operator has notified MMS that several deepwater risers have exceeded 50% of the riser fatigue life (Loop Current and Hurricane effects)

**High Integrity Pressure Protection Systems (HIPPS) on long tiebacks**
- Conceptual approval was given on July 14, 2006 for the HIPPS technology
- There are many concerns including valve leakage rate requirements, length of the fortified section, material selection, and valve testing / closure timing requirements
2007 Hurricane Season
and
Beyond
Abandonment Continues

- Approximately half of the ~800 damaged wells have been abandoned
- Work will continue through 2013 on well abandonment
- Only one fourth of the 118 platforms destroyed by Katrina or Rita have been removed or reefed
- Much work remains
MMS plans the incorporation of new API Interim Bulletins

MMS proposes to:

• Issue an Interim Rule to incorporate the following API Bulletins into the regulations:
  – 2I NT-MET
  – 2I NT-DG
  – 2I NT-EX

• And concurrently,
New API Bulletins for Design of OCS Platforms

• Issued a Notice To Lessees (NTL) 2007-G26 on December 15, 2007, stating that MMS personnel will reference the following API Bulletins for the review of platform design applications:
  
• 2 INT-MET

• 2 INT-DG
API Bulletin 2I NT-EX for the Assessment of Existing Platforms

- MMS will also propose an interim rule to adopt API Bulletin 2I NT-EX as published
- MMS issued NTL 2007-G27 on October 1, 2007, to clarify the interim bulletin
Highlights of NTL 2007-G27

- Identify structures for an assessment
  - Operators had to identify by November 1, 2007, their Critical Facilities (A1/L1 platforms located in the Central and Transition Regions, Floating Facilities, and CVA Facilities).

- Approximately 65 facilities have been identified as critical and will need an assessment performed by June 1, 2008. This assessment should include:
  - A review of analysis procedures
  - Identification of mitigation alternatives
  - Propose a timeline for analysis and mitigation
CHALLENGE –
Idle Iron Removal

• We learned from the destruction from recent hurricanes that many facilities and wells that were lost actually had little or no future utility
• Costs for removal of toppled structures and wells is in the range of 10-15 times more than normal abandonment and removal
Idle Iron (Well Abandonment)

Sec. 250.1711 When will MMS order me to permanently plug a well? MMS will order you to permanently plug a well if that well:
(a) Poses a hazard to safety or the environment; or
(b) Is not useful for lease operations and is not capable of oil, gas, or sulphur production in paying quantities.
Sec. 250.1703 What are the general requirements for
decommissioning? **When your facilities are no longer useful for operations, you must:**
(a) Get approval from the appropriate District Supervisor before decommissioning wells and from the Regional Supervisor before decommissioning platforms and pipelines or other facilities;
(b) Permanently plug all wells;
(c) **Remove all platforms and other facilities**;
(d) Decommission all pipelines;
(e) Clear the seafloor of all obstructions created by your lease and pipeline right-of-way operations;
(f) Conduct all decommissioning activities in a manner that is safe, does not unreasonably interfere with other uses of the OCS, and does not cause undue or serious harm or damage to the human, marine, or coastal environment.
Safety Alert- Abandonment of wells and Decommissioning Platforms

• Encourages operators to evaluate their current wells and facilities and decommission those that no longer have a future utility.

MMS  U.S. Department of the Interior
Minerals Management Service
Gulf of Mexico OCS Region

Safety Alert No. 233
August 1, 2007
Contact: Jane Powers
(306) 755-3258

Plug and Abandonment of Non-producing Wells and Facilities:

Following Hurricanes Ivan, Katrina, and Rita, a total of 123 platforms were destroyed on the Outer Continental Shelf (OCS) of the Gulf of Mexico (GOM). More than 800 wells were associated with these platforms. Despite these losses, there are still a significant number of non-producing structures and wells that are currently idle.

A potential problem identified by the MMS is that a large portion of these idle structures may not be able to survive the environment where they are located. This belief is supported by the API Bulletin 2INT-MET’s new hurricane metocean conditions, which take into consideration several major storms since 1993. If a facility and its wells are displaced or toppled, it can pose an immediate risk to the environment and the recovery of future production.

The regulations at 30 CFR 250.1700 (Subpart Q – Decommissioning Activities) state in part that when facilities are no longer useful for operations, an operator must permanently plug all wells and remove all platforms and other facilities within 1 year after the lease terminates in accordance with the lease stipulations. Also, MMS may order operators to permanently plug a well if that well poses a hazard to safety or the environment or it is not useful for lease operations and is not capable of oil, gas, or sulphur production in paying quantities. Historically, MMS has granted approval to operators to maintain these structures in order to conduct other future activities; however, MMS has not seen a substantial increase in the reuse of these non-producing facilities.

Therefore, MMS recommends that operators should review and evaluate their inventory of non-producing wells and facilities to determine the future utility of these structures and the level of threat posed to the environment and human safety should a facility experience a catastrophic loss. MMS further recommends that operators reference the guidance of API Bulletin 2INT-EX - Interim Guidance for Assessment of Existing Offshore Structures for Hurricane Conditions (May 2007), when conducting these evaluations. Plans should be implemented for removal of these structures beginning with those that pose the greatest threat.

--MMS--GOMR--

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Training of Offshore Operators

- Performance based regulations have been in place for about 7 years
- Change from prescriptive to performance based was to help raise the bar
- In many cases training has not improved and training related compliance issues are on the rise
- You set the “standard”
MMS Workshop

Possible SOO Regulations Related to HT/HP Equipment
New Orleans, Louisiana
January 23, 2008
Thank You!

Questions?

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