Plans Workshop
April 25, 2012
Today’s Agenda

9:00 a.m. Welcome/Opening Remarks
9:10 a.m. Plans Overview
9:20 a.m. Worst Case Discharge (WCD)
9:40 a.m. OSRP and WCD
10:00 a.m. WCD Results
10:20 a.m. BREAK
10:35 a.m. Air Quality Program
11:55 a.m. Archeology & Historic Preservation
11:15 a.m. Waste & Discharge Tables
11:35 a.m. Frequent Errors/Tips to Resolve
12:00 p.m. General Qs & As
12:25 p.m. Concluding Remarks
Clarify Requirements and Best Practices
Identify Common Errors
Open Discussions
Reduce Plan Processing Time!
## Overview of the Two New Organizations

### Assistant Secretary, Land and Minerals Management

**BOEM**

**Role:** Resource science and management  

**Mission:** Manage development of the Nation’s offshore resources in an environmentally and economically responsible way  

**Key functions:**  
- Leasing  
- Plans  
- Environment studies  
- NEPA analysis  
- Economic and reserves analysis  
- Geologic risk analysis  
- Renewables development

### BSEE

**Role:** Regulatory enforcement  

**Mission:** Enforce safety, environment, and conservation compliance on the Nation’s offshore resources  

**Key functions:**  
- Permitting  
- Environmental compliance  
- Conservation compliance  
- Engineering standards and regulations  
- Oil spill response planning  
- Inspections  
- Enforcement and investigations
Plans Overview

Robert Sebastian
• Exploration activities
• Development and production activities
• Geological or geophysical exploration or a development activity when it will result in:
  - penetration of seabed >500 ft
  - use of explosives
  - certain ancillary activities (seismic surveys, scientific studies)
Determine if proposed activities will:

• comply with applicable federal laws and regulations (including Coastal Zone Management Act, Clean Air Act, Endangered Species Act, etc.),
• unreasonably interfere with other uses of the area or interfere with or endanger operations on other leases,
• result in pollution,
• create hazardous or unsafe conditions, or
• disturb any site, structure, or object of historical or archaeological significance,
Determine if proposed activities will cause serious or undue harm or damage to:

- life,
- property,
- any other mineral deposits (in leased or unleased areas),
- the national security or defense, or
- the marine, coastal, or human environment.
Permits Requiring Approval of EP or DPP

- BSEE Applications for Permit to Drill (APD)
- BOEM/BSEE Platform applications
- BOEM/BSEE Lease-term Pipeline applications
• OCS Lands Act requires:
  Exploration Plans (43 USC 1340)
  Development and Production Plans (43 USC 1351)

• 30 CFR 250/550 Subpart B
  Plans and information that must be submitted
  before conducting any activities on a lease or unit
<table>
<thead>
<tr>
<th>NTL No.</th>
<th>Document Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008-G04</td>
<td>Information Requirements for Exploration Plans and Development Operations Coordination Documents</td>
</tr>
<tr>
<td>2009-G27</td>
<td>Guidance for Submitting Exploration Plans and Development Operations Coordination Documents</td>
</tr>
<tr>
<td>2009-G34</td>
<td>Ancillary Activities</td>
</tr>
<tr>
<td>2010-N06</td>
<td>Information Requirements for Exploration Plans, Development and Production Plans, and Development Operations Coordination Documents on the OCS</td>
</tr>
<tr>
<td>December 13, 2010</td>
<td>Guidance, “Approval Requirements for Activities that Involve the Use of a Subsea BOP or a Surface BOP on a Floating Facility”</td>
</tr>
</tbody>
</table>
2007 National Marine Fisheries Service (NMFS) and BOEM coordinated on an Endangered Species Act (ESA) consultation supporting the 2007-2012 Gulf of Mexico Leasing Plan.

2010 Following the spill, BOEM requested re-initiation of the existing ESA consultation and NMFS concurred.

2012 Interim process established which allows for NMFS review of plans and approvals to ensure that post-lease activities continue to be implemented according to the terms and conditions of the 2007 Biological Opinion.

Interim process includes NMFS review of EPs, DOCDs, and DPPs.

- 15-day review period for EPs
- 30-day review period for DOCDs and DPPs.
• BOEM, in accordance with 30 CFR 550.231(a), has 15 working days to review an EP to determine whether it can be “deemed submitted.”

• Per 30 CFR 550.231 (b), BOEM will inform operators within that timeframe if there are deficiencies and problems that need to be addressed.

• Once the operator responds to these issues, the 15 day clock is restarted; operators should be aware that delays in fixing deficiencies will slow down the process – according to 30 CFR 550.231 (a), a plan cannot be deemed submitted until it “fulfills requirements and is sufficiently accurate.”

• Once BOEM has deemed a plan submitted, a 30-calendar day requirement for EP consideration begins (30 CFR 550.233); if operators submit amendments after the EP is deemed submitted, the process restarts, beginning with the 15-working-day review for completeness (30 CFR 232(d)).

• Corresponding process for DPPs/DOCDs at 30 CFR 550.266-550.273
WORST CASE DISCHARGE (WCD)

Nancy Shepard
Authority for BOEM to Request Information for WCD Scenario

Pursuant to 30 CFR 550.213(g) an Exploration Plan (EP) must be accompanied by a blowout scenario description. 30 CFR 550.243(h) requires the same for a Development and Coordination Document (DOCD).

Pursuant to 30 CFR 550.219 and 550.250, all plans as applicable must also be accompanied by information regarding oil spills.

BSEE Regulation for Determining Volume of WCD

30 CFR 254.47(3)(b): “For exploratory or development drilling operations, the size of your worst case discharge scenario is the daily volume possible from an uncontrolled blowout. In determining the daily discharge rate, you must consider any known reservoir characteristics. If reservoir characteristics are unknown, you must consider the characteristics of any analog reservoirs from the area and give an explanation for the selection of the reservoir(s) used...”
Effective June 18, 2010:

“...provide a scenario for the potential blowout of the proposed well in your plan or document that you expect will have the highest volume of liquid hydrocarbons.”

“...describe the assumptions and calculations that you used to determine the volume (daily discharge rate) of the your worst case discharge scenario...”

• Operator responsibility to determine WCD.

• Verification of operator submitted analogs, assumptions, and calculations through independent analysis.

• Verification of parameters assuming a best case exploration mode.

• Proprietary and non-proprietary data from BOEM corporate database used for verification.

• BOEM identifies all potentially producible hydrocarbon sands exposed to any open segment of the wellbore during drilling to determine the package of reservoirs that will discharge the maximum daily volume.
• BOEM will model water sands only if the water sand(s) has been modeled by the operator. Only water sands that would contribute to the flow should be modeled.

• BOEM does not consider bridging.

• Assume all casing strings are successfully run and cemented above zone that is flowing.

• Assume flow is up unobstructed casing and liner with no drill pipe in the hole.

• WCD calculated at location of BOP stack.
Q. What are the common problems that hinder the timely verification of the calculations and assumptions used in the determination of the Worst Case Discharge volume?

A. There are 4 main problems that BOEM encounters in data submitted in support of the WCD volume determination:

- **Inconsistent data** in the Plan. For example, the depth of the top of the target sand or the bottom hole location of the WCD well is not consistent on forms or displays included with the submittal.

- **Insufficient data** submitted to verify the critical parameters needed to perform a reservoir simulation/nodal analysis.

- **Multiple analogs are listed but not linked to** specific reservoir parameters.

- **Borehole data was not submitted to BSEE** (TDMS in GOMR) as required by NTL 2010 G02.

Q. Does BOEM want the P10 (larger) numbers for all reservoir and rock properties for the reservoir simulation?

A. Regulation 254.47(3)(b) states that “you must consider any known reservoir characteristics. If reservoir characteristics are unknown you must consider the characteristics of any analog reservoir from the area and give an explanation for the selection of the reservoir(s) used.”

It can be considered the best drilling results, i.e., the largest discharge volume, which the operator can expect to encounter at the well site.

The WCD model is not expected to be formed as a combination of extreme values for key variables but rather a “success” exploration case typified by analog commercial fields or recent discoveries.
Q. I was notified that my WCD volume was less than the BOEM’s WCD volume. Can I receive more clarification on the actual critical parameters and analogs that BOEM used in their analysis?

A. BOEM may discuss the methodology and nonproprietary analogs, assumptions, and calculations used in the WCD analysis with the operator.

For the Gulf of Mexico and Atlantic Regions, the Plan Coordinator will arrange in-house meetings and teleconferences.

For the Alaska and Pacific OCS Regions contact the respective OCS Region office that receives EPs, DPPs, and DOCDs.
BOEM does not release the analogs and their corresponding data on this form due to potential proprietary issues.
Q. What specific data should I submit regarding the assumptions and calculations used to determine the volume (daily discharge rate) used in my Worst Case Discharge (WCD) scenario?

A. Document in a narrative the assumptions that you made (with analog data cited) concerning well design, reservoir and fluid characteristics, and pressure volume temperature (PVT) characteristics. Provide an explanation of the reasoning for the analogs used and all calculations employed to derive the WCD volume.

For the open hole section that was determined not to be the worst case scenario, document that you evaluated the zones but the sands were depleted, watered out, low yield gas, etc.
BOEM-0137 provides tables for the operator to submit geologic and engineering parameters for the well with the highest worst case discharge volume.

Form 137 is not sufficient by itself to support the WCD scenario but allows BOEM to easily identify critical factors used in the calculation.

<table>
<thead>
<tr>
<th><strong>Worst Case Discharge (WCD) Well Information</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>WCD Well Name</strong></td>
</tr>
<tr>
<td>Analog Well(s)</td>
</tr>
</tbody>
</table>

**Note:** The table above is a template for the WCD scenario. The actual columns and data will vary depending on the specific well and the parameters being submitted.
Geologic Data for WCD includes:

<table>
<thead>
<tr>
<th>Open Hole Interval for WCD</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Top (TVD in feet)</td>
<td>Base  (TVD in feet)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Formation Data</th>
<th>Sand 1</th>
<th>Sand 2</th>
<th>Sand 3</th>
<th>Sand 4</th>
<th>Sand 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sand Name</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Estimated Top TVD</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Estimated Base TVD</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Estimated Net Sand Height MD</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Net Pay if hydrocarbon)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Estimated Net Sand Height TVT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Net Pay if hydrocarbon)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fluid Type</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Used in WCD? (Yes/No)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Seismic Survey Used
### Engineering Data for BOEM-0137 includes:

<table>
<thead>
<tr>
<th>Information</th>
<th>Mudline</th>
<th>y/n</th>
<th>Atmosphere</th>
<th>y/n</th>
</tr>
</thead>
<tbody>
<tr>
<td>WCD (STB/Day)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WCD Calculated at</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flow Correlation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Outlet Pressure (Psia)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gas Turbulence Factor</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Software Model Used</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Formation Data

<table>
<thead>
<tr>
<th>Sand</th>
<th>Sand 2</th>
<th>Sand 3</th>
<th>Sand 4</th>
<th>Sand 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sand Name</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Permeability (mD)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Initial Pressure (PSIA)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reservoir Temperature (F)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Porosity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water Saturation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rock Compressibility (microsips)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water Salinity (ppm)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drive Mechanism</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drainage Area (acres)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Oil Reservoir Data

<table>
<thead>
<tr>
<th>Data Type</th>
<th>Sand 1</th>
<th>Sand 2</th>
<th>Sand 3</th>
<th>Sand 4</th>
<th>Sand 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bubble Point Pressure (PSIA)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Initial Bo (RB/STB)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bo (RB/STB) @ Bubble Point</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rsi (SCF/STB)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Initial Oil Viscosity (Cp)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oil Viscosity (CP) @ Bubble Point</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oil Compressibility (1/PSIA)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oil API Gravity (API)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specific Gas Gravity (0.00)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Gas Reservoir Data

<table>
<thead>
<tr>
<th>Data Type</th>
<th>Sand 1</th>
<th>Sand 2</th>
<th>Sand 3</th>
<th>Sand 4</th>
<th>Sand 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Condensate API Gravity (API)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specific Gas Gravity (0.00)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yield (STB/MMCF)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Permeability Data for BOEM-0137 includes:

<table>
<thead>
<tr>
<th>Source of Permeability Used</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permeability from MDT</td>
</tr>
<tr>
<td>Permeability from Core Analysis</td>
</tr>
<tr>
<td>Pressure Transient Analysis</td>
</tr>
<tr>
<td>Permeability from CMR or NMR log analysis</td>
</tr>
<tr>
<td>Permeability from other source</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Provide Model Input Values for Relative Permeability:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residual Oil to Gas fraction (=1-Slc-Swc)</td>
</tr>
<tr>
<td>Residual Oil to Water fraction (=Soc)</td>
</tr>
<tr>
<td>Critical Gas fraction (Sgc, Gas/Oil-Water Systems)</td>
</tr>
<tr>
<td>Residual Gas to Water fraction (Sgc, Gas/Gas-Water Systems)</td>
</tr>
<tr>
<td>Kro Oil Curve Endpoint (fraction of absolute permeability)</td>
</tr>
<tr>
<td>Krg Gas Curve Endpoint (fraction of absolute permeability)</td>
</tr>
<tr>
<td>Krw Water Curve Endpoint (fraction of absolute permeability)</td>
</tr>
</tbody>
</table>
Supporting Wellbore Data Needed in Addition to Form 137 to Complete WCD Review

**Wellbore schematic** showing casing program for the proposed well to include casing/liner sizes (outside and inside diameters) and setting depths (MD/TVD), and hole size (depths at MD/TVD) as the well is being drilled. **Proposed directional survey** (in x/y or lat/long if possible).

![Example Well Casing Program](image)

**Example Well Casing Program** with Potential Producible Hydrocarbon Sand (PPHS) Identified

- Gas Reservoir
- Water Reservoir
- Oil Reservoir

**Casing Program**:
- 6" Open Hole
- 10" Open Hole
- 4.050" 13 5/8" 86 lb/ft Casing
- 9.350" PPHS A
- 8.400" PPHS B
- 10.750" PPHS C
- 12.450" 9 5/8" 61.1 lb/ft Casing
- 13.921" PPHS D
- 12.750" PPHS E
- 14.665" Total Depth
Structure Maps for each producible sand to be encountered in the open hole.

Cross-section depicting all anticipated hydrocarbons bearing zones.

Annotated seismic section through well site location using the most recent seismic data available. A section that ties the WCD well to the analog well is beneficial.
Reservoir Simulation and/or Nodal Analysis:

For input data, screen-shot images of data input panels as viewed in the model. For output data, provide screen-shots of the summary reports/graphs of the nodal programs. Most summary reports/graphs are about six pages.

BOEM may request input and output files of proprietary nodal software.
<table>
<thead>
<tr>
<th>Category</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>WCD Submittals Received:</td>
<td>339</td>
</tr>
<tr>
<td>WCD Verifications Completed:</td>
<td>325</td>
</tr>
<tr>
<td>July – Dec 2010</td>
<td>89</td>
</tr>
<tr>
<td>Jan – Dec 2011</td>
<td>178</td>
</tr>
<tr>
<td>1st quarter 2012</td>
<td>52</td>
</tr>
<tr>
<td>2nd quarter 2012</td>
<td>6</td>
</tr>
<tr>
<td>Request to Operator for Additional Data</td>
<td>116</td>
</tr>
<tr>
<td>WCD Scenario Submitted for Deep Water Plan:</td>
<td>166</td>
</tr>
<tr>
<td>WCD Scenario Submitted for Shallow Water Plan:</td>
<td>173</td>
</tr>
<tr>
<td>BOEM WCD Greater than Operator’s WCD</td>
<td>115</td>
</tr>
<tr>
<td>Number of Meetings with Operators:</td>
<td>71</td>
</tr>
<tr>
<td>Regional OSRP - Drilling Scenarios verified:</td>
<td>60%</td>
</tr>
</tbody>
</table>
Reactions to WCD Review Process?

Have you met to review WCD with BOEM staff?
Questions?

Contact: Donald.Maclay@boem.gov
OSRP and WCD

Mike Tolbert
• 30 CFR 550.219 and 250 require that certain information pertaining to oil spills and information related to your worst-case discharge (WCD) accompany your EP or DOCD. One of the oil spill items is a site-specific OSRP or reference to an approved regional Oil Spill Response Plan (OSRP).

• 30 CFR 254.26 (a) requires that your regional OSRP demonstrate your ability to contain and recover your WCD to the maximum extent practicable.
• Each EP/DOCDs WCD is thus compared to your regional OSRP to determine if it should supersede the scenario in your approved OSRP.

• If the submitted WCD information is greater than that contained in your OSRP, your OSRP must be updated and approved.
30 CFR 254.47 defines methods for WCD calculations:

- For production facilities
  \[ \text{WCD volume} = \text{Storage} + \text{flowlines} + \text{pipelines} + \text{daily volume from uncontrolled blowout of highest capacity well} \]

- For exploratory/development drilling
  \[ \text{WCD volume} = \text{daily volume possible from uncontrolled blowout} \]

30 CFR 254.6 defines “\textit{Maximum extent practicable}”:

- within the limitations of available technology, as well as the physical limitations of personnel, when responding to a worst case discharge in adverse weather conditions.
Contact: Mike.Tolbert@bsee.gov
WCD RESULTS

James Webb
If BOEM accepts operator’s WCD Results

- The operator’s WCD calculation is greater than or equal to BOEM’s WCD Calculation
- All values based on the plan’s WCD in the comparison chart, blowout scenario and WCD calculations should be correct
If Operator accepts BOEM’s WCD Results

- Update WCD comparison chart with new WCD for plan and/or OSRP

<table>
<thead>
<tr>
<th>Category</th>
<th>Drilling</th>
<th>Production</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Regional OSRP WCD</td>
<td>Regional OSRP WCD</td>
</tr>
<tr>
<td>Type of Activity</td>
<td>Drilling</td>
<td>Drilling</td>
</tr>
<tr>
<td>Facility Location (Area/Block)</td>
<td>XXX</td>
<td>XXX</td>
</tr>
<tr>
<td>Facility Designation</td>
<td>Well No. 5</td>
<td>A Platform, Well No. 3</td>
</tr>
<tr>
<td>Distance to Nearest Shoreline (miles)</td>
<td>95</td>
<td>100</td>
</tr>
<tr>
<td>Volume</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Storage tanks &amp; flowlines</td>
<td>N/A</td>
<td>1,400</td>
</tr>
<tr>
<td>(total)</td>
<td></td>
<td>57</td>
</tr>
<tr>
<td>Lease term pipelines (total)</td>
<td>95,000</td>
<td>75,000</td>
</tr>
<tr>
<td>Uncontrolled blowout</td>
<td>95,000</td>
<td>76,457</td>
</tr>
<tr>
<td>Total Volume (bbles)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type of Oil(s)</td>
<td>Crude</td>
<td>Crude</td>
</tr>
<tr>
<td>(crude, condensate, diesel)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>API Gravity</td>
<td>29°</td>
<td>29°</td>
</tr>
</tbody>
</table>
If Operator accepts BOEM’s WCD Results

- Update blowout scenario with new WCD and total volume
  - Estimated flow rate (barrels per day)
  - Total Volume (barrels) (flow rate X duration)
- Note in WCD calculations that operator accepted BOEM’s WCD
  - On the first page of WCD calculations, state the operator accepted BOEM’s WCD calculation of XXX
REMINDER

• Provide the OSRP WCD calculations
  • If previously submitted and/or verified list the plan and it’s respective plan number
Questions?

Contact:  James.Webb@boem.gov

AIR QUALITY PROGRAM

Stacie Merritt
- Clean Air Act
- OCS Lands Act
- CFR 30 Subpart 550
The Clean Air Act, which was amended in 1990, requires EPA to set National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to human health and the environment.

- Primary standards provide public health protection.
- Secondary standards provide public welfare protection.
EPA set NAAQS for six principal pollutants also known as “criteria” pollutants:

- Carbon Monoxide
- Lead
- Nitrogen Dioxide
- Ozone
- Particulate Matter
- Sulfur Dioxide
Operations west of 87.5° W. longitude fall under BOEM jurisdiction for the enforcement of the Clean Air Act.

Operations east of 87.5° W. longitude fall under USEPA jurisdiction.
BOEM regulates projected emissions of the following pollutants:

- Carbon Monoxide
- Nitrogen Oxides
- Sulfur Dioxide
- Particulate Matter in the form of PM\(_{2.5}\) and PM\(_{10}\)
- Volatile Organic Compounds
Air Quality Reviews are performed on

- Explorations Plans (EPs)

- Development and Operations Coordination Documents (DOCDs)

- Lease-Term Pipelines

- Flare Requests
Reviews Comparison

Development Plan

• Days of drilling
• Days of completion
• Installation operations
• Vessel operations
• Equipment type
• Rig type or rig name
• Vessel type
• Distance to shore
• Construction operations
• Production Operations

Exploration Plan

• Days of drilling
• Days of completion
• Installation operations
• Vessel operations
• Equipment type
• Rig type or rig name
• Vessel type
• Distance to shore
Lease Term Pipelines (LTP) need to be reviewed to see if the emissions are adequately included in the appropriate DOCDs

Note: Please reference the DOCD number when submitting a LTP application
For flares, if dispersion modeling is needed to determine significance, a revised plan will be requested, and if appropriate, a NEPA review will also be conducted on the resulting revised plan.
Check the following before submitting:

• Activity schedule information should match information included in spreadsheets

• Verify horsepower ratings

• Verify distance to shore (available on website)

• Check units

• Check for inconsistencies

• Avoid cutting and pasting to minimize errors
• Check the appropriate AQ Screening Checklist questions.

• Use remarks section to indicate a change to default values.

• Be prepared for possible mitigation on plan submittal.

• If H₂S is present in operations, please indicate this in the plan and include H₂S concentration.

• If proposed activities exceed the exemption levels, please submit air quality modeling.
Be Prepared

- OCD modeling
- H$_2$S modeling
- Fish and Wildlife Service review and possibly additional modeling
- 1-hr NO$_x$ standard
- 1-hr SO$_x$ standard
### Fuel Usage Conversion Factors

<table>
<thead>
<tr>
<th></th>
<th>SCF/hp-hr</th>
<th>SCF/hp-hr</th>
<th>GAL/hp-hr</th>
<th>REF.</th>
<th>DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural Gas Turbines</td>
<td>9.524</td>
<td>7.143</td>
<td>0.0483</td>
<td>AP42 3.2-1</td>
<td>4/76 &amp; 8/84</td>
</tr>
<tr>
<td>Natural Gas Engines</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diesel Recip. Engine</td>
<td>10.9</td>
<td>11.8</td>
<td>0.14</td>
<td>AP42 3.2-1</td>
<td>10/96</td>
</tr>
<tr>
<td>REF.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Equipment/Emission Factors

<table>
<thead>
<tr>
<th>Equipment/Emission Factors</th>
<th>units</th>
<th>PM</th>
<th>SOx</th>
<th>NOx</th>
<th>VOC</th>
<th>CO</th>
<th>REF.</th>
<th>DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>NG Turbines</td>
<td>gms/hp-hr</td>
<td>0.00247</td>
<td>1.3</td>
<td>0.01</td>
<td>0.83</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NG 2-cycle lean</td>
<td>gms/hp-hr</td>
<td>0.00185</td>
<td>10.9</td>
<td>0.43</td>
<td>1.5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NG 4-cycle lean</td>
<td>gms/hp-hr</td>
<td>0.00185</td>
<td>11.8</td>
<td>0.72</td>
<td>1.6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NG 4-cycle rich</td>
<td>gms/hp-hr</td>
<td>0.00185</td>
<td>10</td>
<td>0.14</td>
<td>8.6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diesel Recip. &lt; 600 hp.</td>
<td>gms/hp-hr</td>
<td>1</td>
<td>1.468</td>
<td>14</td>
<td>1.12</td>
<td>3.03</td>
<td>AP42 3.3-1</td>
<td>10/96</td>
</tr>
<tr>
<td>Diesel Recip. &gt; 600 hp.</td>
<td>gms/hp-hr</td>
<td>0.32</td>
<td>1.468</td>
<td>11</td>
<td>0.33</td>
<td>2.4</td>
<td>AP42 3.4-1</td>
<td>10/96</td>
</tr>
<tr>
<td>Diesel Boiler</td>
<td>lbs/obl</td>
<td>0.084</td>
<td>2.42</td>
<td>0.84</td>
<td>0.008</td>
<td>0.21</td>
<td>AP42 1.3-12,14</td>
<td>9/68</td>
</tr>
<tr>
<td>NG Heaters/Boilers/Phumers</td>
<td>lbs/mmscf</td>
<td>7.6</td>
<td>0.593</td>
<td>100</td>
<td>5.5</td>
<td>84</td>
<td>42 1.4-1, 14-2, &amp; 14</td>
<td>7/68</td>
</tr>
<tr>
<td>NG Flares</td>
<td>lbs/mmscf</td>
<td>0.593</td>
<td>71.4</td>
<td>60.3</td>
<td>388.5</td>
<td></td>
<td>AP42 11.5-1</td>
<td>9/91</td>
</tr>
<tr>
<td>Liquid Flaring</td>
<td>lbs/obl</td>
<td>0.42</td>
<td>6.83</td>
<td>2</td>
<td>0.01</td>
<td>0.21</td>
<td>AP42 1.3-1 &amp; 1.3-3</td>
<td>9/68</td>
</tr>
<tr>
<td>Tank Vapors</td>
<td>lbs/obl</td>
<td>0.03</td>
<td>6.6</td>
<td>2</td>
<td>0.01</td>
<td>0.21</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fugitives</td>
<td>lbs/hr/comp</td>
<td>0.0005</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>API Study</td>
<td>12/63</td>
</tr>
<tr>
<td>Glycol Dehydrator Vent</td>
<td>lbs/mmscf</td>
<td>6.6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>La DEC</td>
<td>1991</td>
</tr>
<tr>
<td>Gas Venting</td>
<td>lbs/scf</td>
<td>0.0034</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Sulfur Content Source

<table>
<thead>
<tr>
<th>Sulfur Content Source</th>
<th>Value</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel Gas</td>
<td>3.33</td>
<td>ppm</td>
</tr>
<tr>
<td>Diesel Fuel</td>
<td>0.4</td>
<td>% weight</td>
</tr>
<tr>
<td>Produced Gas (Flares)</td>
<td>3.33</td>
<td>ppm</td>
</tr>
<tr>
<td>Produced Oil (Liquid Flaring)</td>
<td>1</td>
<td>% weight</td>
</tr>
<tr>
<td>COMPANY</td>
<td>AREA</td>
<td>BLOCK</td>
</tr>
<tr>
<td>---------</td>
<td>------</td>
<td>-------</td>
</tr>
<tr>
<td>OPERATIONS</td>
<td>EQUIPMENT</td>
<td>RATING</td>
</tr>
<tr>
<td>Diesel Engines</td>
<td>HP</td>
<td>GAL/HR</td>
</tr>
<tr>
<td>Nat. Gas Engines</td>
<td>MMBTU/HR</td>
<td>SCF/HR</td>
</tr>
<tr>
<td>DRILLING</td>
<td>PRIME MOVER&gt;600hp diesel</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>PRIME MOVER&gt;600hp diesel</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>PRIME MOVER&gt;600hp diesel</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>PRIME MOVER&gt;600hp diesel</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>BURNER diesel</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>AUXILIARY EQUIP&lt;600hp diesel</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>VESSELS&gt;600hp diesel(crew)</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>VESSELS&gt;600hp diesel(supply)</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>VESSELS&gt;600hp diesel(tugs)</td>
<td>0</td>
</tr>
<tr>
<td>PIPELINE INSTALLATION</td>
<td>PIPELINE LAY BARGE diesel</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>SUPPORT VESSEL diesel</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>PIPELINE BURY BARGE diesel</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>SUPPORT VESSEL diesel</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>VESSELS&gt;600hp diesel(crew)</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>VESSELS&gt;600hp diesel(supply)</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>VESSELS&gt;600hp diesel(tugs)</td>
<td>0</td>
</tr>
<tr>
<td>FACILITY INSTALLATION</td>
<td>DERRICK BARGE diesel</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>MATERIAL TUG diesel</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>VESSELS&gt;600hp diesel(crew)</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>VESSELS&gt;600hp diesel(supply)</td>
<td>0</td>
</tr>
<tr>
<td>PRODUCTION</td>
<td>RECIP.&lt;600hp diesel</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>RECIP.&lt;600hp diesel</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>RECIP.&lt;600hp diesel</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>SUPPORT VESSEL diesel</td>
<td>0</td>
</tr>
</tbody>
</table>
HISTORIC PRESERVATION

Jack Irion
AUTHORITY

Section 106 of the National Historic Preservation Act of 1966 (NHPA)

• Requires Federal agencies to take into account the effects of their undertakings on historic properties.

• Historic preservation process mandated by Section 106 is outlined in regulations issued by the Advisory Council on Historic Preservation (ACHP) at 36 CFR 800.

National Environmental Policy Act of 1969

• Preserve important historic, cultural, and natural aspects of our national heritage, and maintain, wherever possible, an environment which supports diversity, and variety of individual choice.
IDENTIFYING HISTORIC PROPERTIES

• As a result of oil and gas surveys, **27 historic shipwrecks** have been positively identified since 2005.

• Over half of these historic wrecks have been found in deepwater blocks.
**Mitigation 3.20**

Beginning in March 2011, BOEMRE began requiring operators to certify that their actions would have no effect on significant archaeological resources within the Area of Potential Effect of their project after conducting ROV or AUV investigations. This was needed so that the Agency could reach a Finding of No Significant Impact (FONSI) in its NEPA analyses.

Surveys required under a 3.20 mitigation would be submitted after the plan was approved.

After the survey is complete, send a certification email to: ENV-Compliance-ARC@boem.gov

In the written report, please include the PLAN NUMBER on the title page.
NEPA Categorical Exclusions: Extraordinary Circumstances

43 CFR 46.215

Have significant impacts on properties listed, or eligible for listing, on the National Register of Historic Places as determined by the bureau.
Eight potential shipwrecks have been reported in areas outside the current archaeology “high-probability” areas in Keathley Canyon, Walker Ridge and Desoto Canyon since March 2011.

Two of these have been confirmed through industry or BOEM investigations as historic sites.
NTL 2011-JOINT-G01

1. Added blocks to list requiring submittal of survey reports at the same time or before the application is submitted.

2. With a few exceptions, blocks are all shoreward of the 200-m depth contour, where high resolution survey is required for shallow hazards (NTL 2008-G05).

3. Other blocks added to this NTL include those where shipwrecks have already been discovered.
DO YOUR PART TO PROTECT HISTORIC SHIPWRECKS

1. BOEM considers archaeological site location information to be confidential in order to protect these sites from harm.

2. Please do not disclose site location coordinates (including magnetic anomalies or unidentified sonar targets) in public copies of plans.

3. Ask your consultant to prepare a “sanitized” version without coordinates of any archaeological analysis that will be included in the public version of the plan posted on the internet.
WASTE AND DISCHARGE TABLES

Erin O’Reilly
Necessary:

• 30 CFR 550 subpart B
  – Recently moved from 30 CFR 250
  – NTL No. 2008-G04
  – “Approval Requirements for Activities that Involve the Use of a Subsea Blowout Preventer (BOP) or a Surface BOP on a Floating Facility”

• CZM information
Audience:

- BOEM
- BSEE
- States
- Environmental Protection Agency
- Public

Two new streamlined tables:

- Designed to increase efficiency

- The first table is for wastes that will be discharged to the Gulf of Mexico or disposed of downhole
- The second table is for wastes that will be transported and disposed of onshore
Streamlined tables replace the following five tables:

- Support Vessels and Aircraft information (30 CFR 550.224 and 550.257) (d) Solid and liquid wastes transportation,
Using the older tables:

• Five tables described in NTL No. 2008-G04 may still be used
• Older tables lengthen review process
• Older tables increases chance of plan having inconsistencies (errors)
Tips for filling out the streamlined tables:

• Proofread!

• Be sure the tables are filled out to match the actions in the document
  – Production wastes for production
  – Exploration wastes for exploration

• Be sure any described wastes in the text match that listed in the tables

• Be sure the tables show NPDES permit compliance
Tips for filling out the streamlined tables:

- Include the appropriate units with numbers
- NPDES permit coverage question
  - General/individual
  - Not yes/no
- NA may only be used if you do not have a waste
- Fill in all blanks
  - NA
  - Values
    - Ranges, if logical for the waste stream
    - Averages
Tips for filling out the streamlined tables:

- Disposal is not a disposal method
- More than one disposal method may be stated
- Be sure the location listed handles the waste disposal method
- It is unrealistic to expect all trash to be recycled.
  Break entry up into recyclable and non-recyclable
- The projected amount can be the total amount projected for the planned action or the total amount per well for the planned action
- The rate is generally the amount of waste generated per a relevant unit of time.
FREQUENT ERRORS AND TIPS TO RESOLVE

Karen Dunlap
Michelle Griffitt Evans
James Webb
Frequent Errors in the Initial Submittal of EP/DOCD Plans

- Plan contents
- Coordinate consistency TV/MD
- Distance to shore
- Worst case well volume
- Blowout scenario plan
- WCD calculations/assumptions not required
- Anchors/Maps
- Consistency of activity days & timeframes

- AQR spreadsheets for multiple rigs
- Calculate new commencement date
- Proprietary data in public version
- Ancillary activity notification with air gun
- Proofreading and copy errors
Clearly state on the BOEM 0137 your **proposed** activity:

- Exploration drilling
- Development drilling
- Well completion
- Well test flaring (for more than 48 hours)
- Installation or modification of structure
- Installation of production facilities
- Installation of subsea wellheads and/or manifolds
- Installation of lease term pipelines
- Commence production
- Other (Specify and attach description)
If more than one type of rig will be utilized, check the appropriate box(es) on Form 137, and under Proposed Activity select Other and include an attached description identifying the wells that will be drilled with a specific rig.

Storage tanks and production vessels charts. If more than one rig type will be utilized, include each type as noted in the below chart.
In each Storage tank chart, identify the type, i.e., diesel, or the API gravity and verify that the tank capacity times the number of tanks equals the total capacity.

<table>
<thead>
<tr>
<th>Type of Storage Tank</th>
<th>Type of Facility</th>
<th>Tank Capacity ((Barrels))</th>
<th>Number of Tanks</th>
<th>Total Capacity (barrels)</th>
<th>Fluid Gravity (API)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel Oil</td>
<td>Semi-submersible</td>
<td>250</td>
<td>2</td>
<td>500</td>
<td>No. 2 Diesel</td>
</tr>
<tr>
<td>Fuel Oil</td>
<td>Drillship</td>
<td>500</td>
<td>3</td>
<td>1500</td>
<td>37°</td>
</tr>
</tbody>
</table>
Frequent Errors in Coordinate Consistency

Consistency of Coordinates and True Vertical Depth/Measured Depth of well(s)

- BOEM 0137
- Location Plats
- Bathymetry map
- Anchor Radius map
- Hazard assessment
- Structure map
- Cross sections and structure maps in the Geological section of plan
Consistency of Distance to Shore

- BOEM 0137
- Vicinity map
- AQR spreadsheets
- OSRP comparison chart and spill response discussion
- NTL 2010-N06 data submitted with the plan
- Environmental Impact Assessment
Regional OSRP Worst-Case calculations/assumptions do not need to be resubmitted if they have been submitted in a previous EP/DOCD. Please reference the previous plan control number.

<table>
<thead>
<tr>
<th>Category</th>
<th>Regional OSRP</th>
<th>EP or DOCD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of Activity</td>
<td>Drilling</td>
<td>Drilling</td>
</tr>
<tr>
<td>Facility Location (area/block)</td>
<td>EI 250</td>
<td>MC 900</td>
</tr>
<tr>
<td>Facility Designation</td>
<td>Well No. 2*</td>
<td>Platform JA</td>
</tr>
<tr>
<td>Distance to Nearest Shoreline</td>
<td>45 miles</td>
<td>160 miles</td>
</tr>
<tr>
<td>Volume</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Storage tanks (total)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flowlines (on facility)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lease temp pipelines</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uncontrolled blowout (volume per day)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Volume</td>
<td>1600 bbls</td>
<td>1000 bbls</td>
</tr>
<tr>
<td>Type of Oil(s)-(crude oil, condensate, diesel)</td>
<td>Crude oil</td>
<td>Crude Oil</td>
</tr>
<tr>
<td>API Gravity</td>
<td>37°</td>
<td>37°</td>
</tr>
</tbody>
</table>

*Reference the control number.
Blowout scenario in public and proprietary versions (per NTL 2008-G04 and NTL 2010-N06)

- Estimated flow rate
- Duration
- Total volume
- Relief well information
- Measures to reduce the likelihood of a blowout
- Bridging over,
- Likelihood for surface intervention
- Availability of a rig to drill the relief well
- Rig package constraints
- Estimated time to drill the relief well

Calculations and assumptions are the only portion that is considered proprietary
Frequent Errors for WCD

WCD Calculations/assumptions for a supplemental or revised EP or DOCD are not required if

- BOEM has verified the plan/project worst case well in a previously approved EP or DOCD, then reference the plan control number in the blowout scenario section, and submit.

If your plan involves drilling, ensure the plan contains a description of how you will:

- enhance your ability to prevent a blowout,
- reduce the likelihood of a blowout, and
- conduct effective and early intervention in the event of a blowout, including your arrangements for drilling relief wells, and any other measures you propose

WCD volume number should be identified and consistent in the Blowout Scenario, OSRP comparison chart, BOEM 0137, and spill response discussion.
Consistency of Activity Days and Timeframes

- BOEM 0137
- AQR spreadsheets

Support Vessels

- Check number of vessels
Frequent Errors for Biological Anchors/Maps

Biological Anchors/Maps (NTL 2009-G40)

- When utilizing a rig which requires anchors, ensure that the anchor radius or specific pattern is depicted on the map, as well as the 2,000-foot radius around each surface location.
- Ensure that the radius is consistently stated on the:
  - BOEM 0137
  - Hazard assessment
  - Features/bathymetry maps
Consistency of Tentative Activity Schedule

- Plan drilling, completion, structure installation days, etc. should be consistently stated on the:
  - BOEM 0137
  - AQR spreadsheets

Should the commencement date as originally submitted no longer be feasible due to amendments/modifications, then calculate the commencement date based off the date of last submittal.
NTL 2009-G34 requires submittal of notification for proposed activities 15-30 days before your proposed start date.

Correct common errors by

• Submit notification 15-60 days before start date (30 days added for Revised EP process)
• Per 550.208(a)(4), submit letters of notification to offset operators with your notification of proposed activities
• Use of an airgun or explosives will force this to BOEM Revised EP process
• If activity is on a well, include Form 0137
• Include a public version of your notification - this will be posted on the BOEM and offered for NMFS review
• FAQs for ancillary activities can be found at the following web address:

• Ensure Proprietary data not included in Public Information copy

• Proofreading and copy errors
Questions?

Contact:  Karen.Dunlap@boem.gov
          Michelle.Griffitt@boem.gov
          James.Webb@boem.gov

Website:  http://www.boem.gov/Oil-and-Gas-
           Energy-Program/Plans/index.aspx
Plans on the Web

Easier access to plans information by selecting “Exploration and Development Plans” from one of the main menus

http://boem.gov/

Additional menu options for:
- Guidance submitting a complete plan
- Form 0137
- Exploration & Development Plan Online Query

The updated pages provide:

- EP/DOCD Checklist
- FAQs for EPs & DOCDs
- Archeology Requirements
- Maximum Storage Tank Estimates
- FAQs for Ancillary Activity
- Water Quality Spreadsheets
- eWell changes re: Eps & DOCDs
- Additional guidance

General Question
&
Closing Remarks