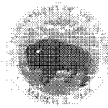


Well Integrity/Shut-In Discussion

July 23, 2010
11:00am CDT



7/23/2010

10.0 Daily Meetings\10.1 WIT Mtg\23 JUL 1100

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Topics for Discussion July 23, 11:00am CDT

1. **Acoustic and Seismic Update**– Marcia McNutt, Kate Moran, Larry Mayer
2. **Well Integrity Flow and Temperature** – Paul Hsieh
3. **Geological Evidence for Aquifer** – Peter Flemings

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**1. Acoustic and Seismic Update—
Marcia McNutt, Kate Moran, Larry
Mayer**

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NOAA SONAR MONITORING

23 July 2010 11:00 Central Time Presentation

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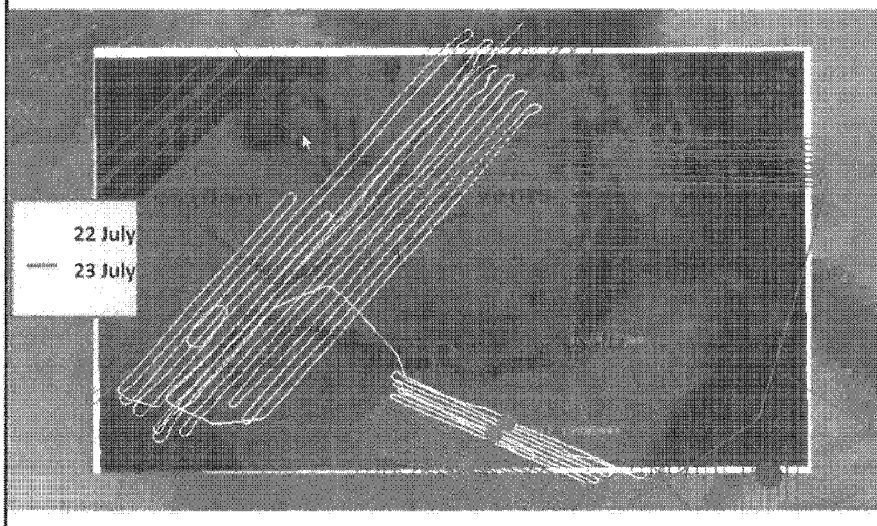
Sonar Monitoring Status

- NOAA Ship Pisces in port & will return to MC 252 #1 area based on weather
- NOAA Ship Gordon Gunter conducted surveys outside of the wellhead area
- NOAA Ship Gordon Gunter confirmed gas seep previously found by the NOAA Ship Pisces located in the vicinity of the abandoned well
- Captain Ablondi can provide update on plans that are now weather dependent

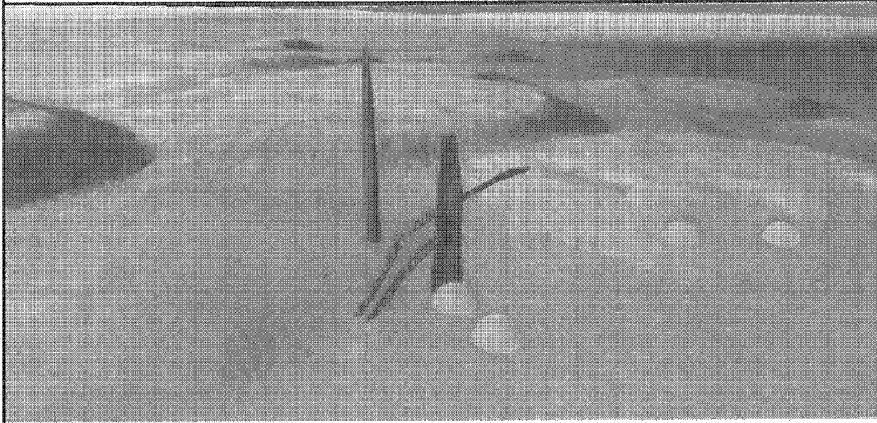
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GUNTER SONAR COVERAGE AS OF 0930 EDT 23 July 2010



**GUNTER finds acoustic target over same spot that
PISCES found intermittent targets – Seventeen
Hands/ Rigel area? Plus pinger? Noise.**



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**2. Well Integrity Flow and Temperature –
Paul Hsieh**

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Reservoir support, depletion, and possible oil leak from well to formation

1. Is the reservoir supported?

Shut-in pressures acquired during the Well Integrity Test indicate that the reservoir shape and behavior are consistent with a reservoir that has no aquifer support, or minimal aquifer support (e.g., volume of water = 1 to 2 times volume of oil).

2. Is the reservoir depletion ~1800psi?

The shut-in pressure data also indicate that the reservoir shape and behavior are consistent with high reservoir depletion (~1800 psi).

3. Are there any leaks? If so, what size?

The constantly improving surveillance provides confidence that there is no leak, or at most, a small leak.

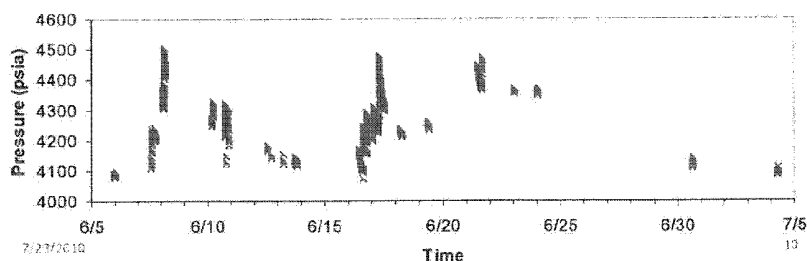
Reservoir simulations indicate that a leak of 10,000 bpd or higher is very unlikely. However, reservoir simulations cannot provide conclusive determination if there is no leak or a small leak (5,000 bpd) of oil from the well into the formation.

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Pressure at base of BOP

- Pressure data at base of BOP are available at the Sandia SharePoint: - 3.2.7 (BP Response Data to the RFI on BOP & Choke Pressure)
- During the period from June 5 to July 4, 2010, there was minimal change to wellhead configuration. Pressure data from this period were examined for possible trend detection.
- Finding: Pressure data during the period from June 5 to July 4, 2010 are too erratic for accurate determination of a long-term pressure trend. Therefore, the data cannot be used to assess reservoir depletion.



Wellhead Temperature

- Wellhead temperature data are available at the Sandia SharePoint
 - 3.2.7 Temperature Data
- Heat flow simulations are used to investigate the effect of cooling on shut-in pressure.
- Preliminary results suggest that cooling causes a decrease in shut-in pressure of about 1 psi per day.
- Additional simulations are being carried out to refine the analysis.

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3. Geological Evidence for Aquifer – Peter Flemings

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Geological evidence for an elongate, heterogeneous reservoir

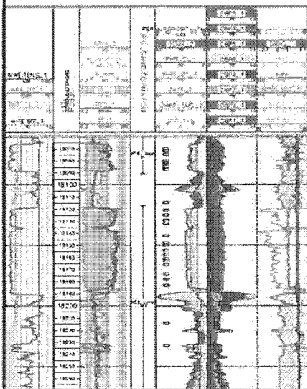
The USGS Team, Bill Shedd, Peter Flemings

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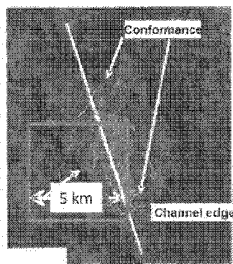
The Data

Log.



3 blocky sand bodies.

Seismic: field scale



Seismic mapped by BP, Seismic is proprietary

Seismic at field scale is blotchy, with NE/SW lineations.

Higher amplitudes (both in and out of hydrocarbons are interpreted to record thicker sands

Seismic: regional

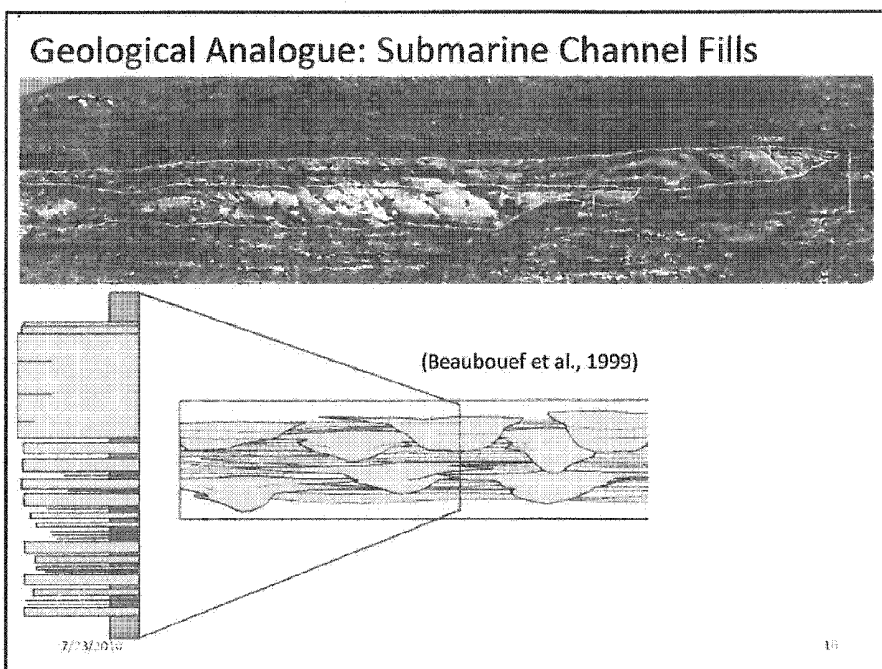
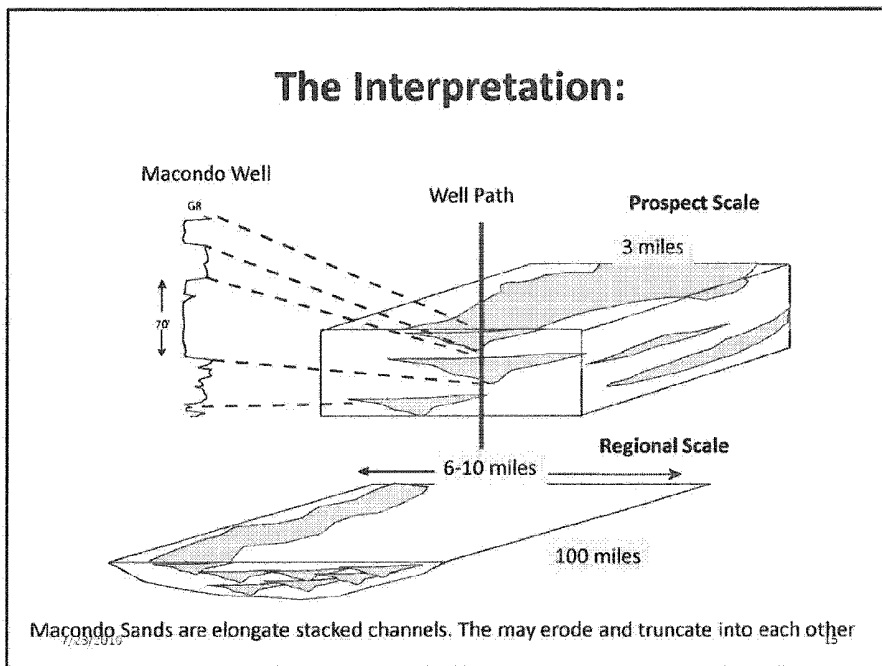


Aprox. 100 km

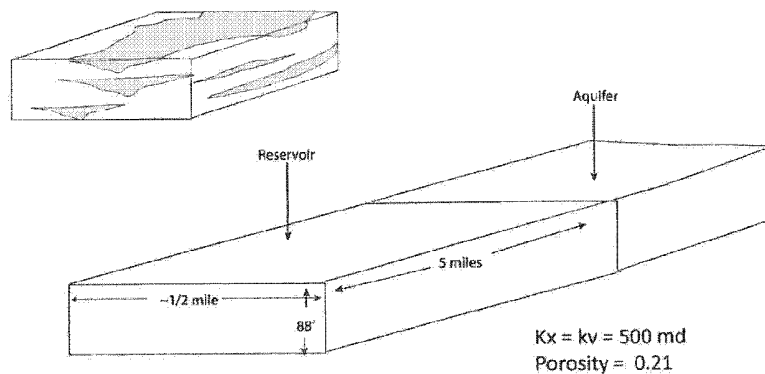
Regional map clearly shows amplitudes (interpreted to be sand rich zones that are order 10 km wide and 100 km long. (did not show seismic because it illustrates exploration strategy beyond Macondo Well and not appropriate.

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We are trying to represent this complex heterogeneous geometry with a simple geometry.



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Summary

- Macondo reservoir sands are stacked elongate channels.
- It is geologically reasonable that there is limited channel connectivity and thus limited aquifer connectivity. Channels may cut into each other and shale layers may limit aquifer connectivity.
- There is a long history of challenges predicting water drive due to sand body connectivity problems.
- It would be possible to generate much more complicated reservoir models with multiple sand bodies, but not at the time scale we are working

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