



Hurricane Dean Update: Here's What We Know about Mexico's Oil and Gas Infrastructure and Supply

Posted by [Prof. Goose](#) on August 19, 2007 - 8:30pm

Topic: [Supply/Production](#)

Tags: [cantarell](#), [hurricane dean](#), [kmz](#), [mexico](#), [oil](#), [oil prices](#), [peak oil](#), [refining](#), [shipping](#), [texas](#) [[list all tags](#)]

UPDATE, NEW POST UP TOP AS OF 1:20 AM EDT, 8/21

We know that many of the models have Dean going into the Bay of Campeche. But what does that mean for supply and production?

Well, *if the current forecast holds* we could be talking about 2.5 million barrels per day of supply capacity being shut in for a while, and some of that for an extended amount of time. Can that matter when the US consumes about 21 million barrels per day (and the world consumes 85 mbpd)? Yes.

Especially when there isn't "slack" supply to be brought to market. That is what "peak oil" is about.

The markets aren't reacting yet. Do they know something we don't know? Maybe.

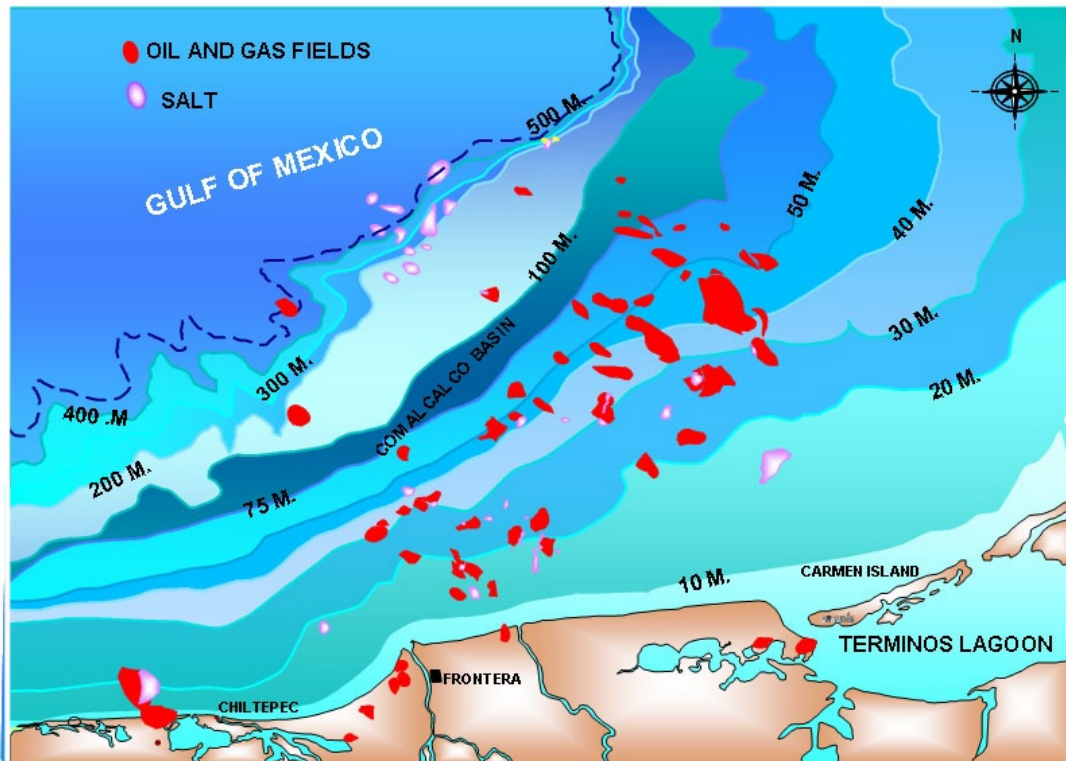
But what do we actually know about Mexico and its supply and infrastructure?

Under the fold (click "there's more" below), I am going to try to bring together some of our information we have gleaned to this point. I also encourage you to deliver news tips, forecasts, insights, and other links in the comment thread below.

UPDATE: PEMEX is shutting down ~140 rigs and moving 13,000+ workers on land. Cantarell + Ku-Maloob-Zaap account for 66% of the total oil production of PEMEX in June 2007. Cantarell alone is 47%.

To begin, we have some recent history with this kind of track. [Hurricane Emily followed a track similar to the modeled path](#), but she was a weak Cat4 when she hit the Yucatan in 2005. Dean is forecast to be a mid-range Cat5, which means, with relative flatness of the Yucatan, he could reemerge in the Bay of Campeche as a Cat1 or Cat2.

What is the area we're worrying about? Cantarell and KMZ, as said above, PEMEX is shutting down ~140 rigs and moving 13,000+ workers on land. Cantarell + Ku-Maloob-Zaap account for 66% of the total oil production of PEMEX in June 2007. Cantarell alone is 47% of the total...and here's the best pic we have (right click and view image to see full size):



The United States imported approximately 620,000,000 barrels from Mexico last year. (<http://tonto.eia.doe.gov/dnav/pet/hist/mttimusmx1m.htm>)

More on importers (Mexico is the 2nd ranked importer (at 1.5 MBPD) to the US behind Canada in 2007, then comes Saudi Arabia): http://www.eia.doe.gov/pub/oil_gas/petroleum/data_publications/company_1...

The IEA on Mexico: http://www.iea.org/Textbase/country/m_country.asp?COUNTRY_CODE=MX

Google maps of the Bay of Campeche: <http://maps.google.com/maps?ie=UTF8&om=1&z=7&ll=19.849394,-94.163818&spn...>

Khebab posted "[An Update on Mexico's Oil Production--The Rapid Collapse of Cantarell by the Numbers](#)"

Last year, I expressed my concerns about the eventual impact of a rapid collapse of Cantarell on Mexico's oil production (story here). The last production numbers from PEMEX seems to confirm the rapid decline of Cantarell as well as the inability of the Mexican to rapidly bring new production online. The Wall Street Journal (thanks to Jérôme) published an article on Cantarell last week:

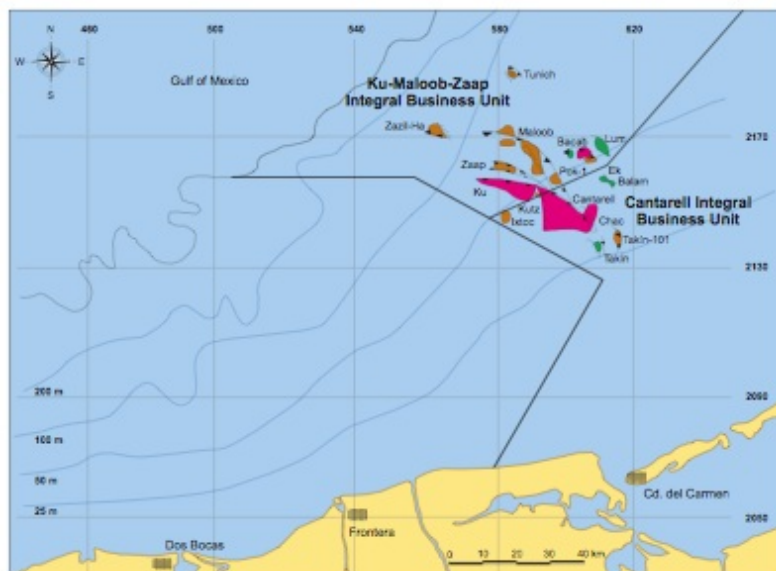
The virtual collapse at Cantarell -- the world's second-biggest oilfield in terms of output at the start of last year -- is unfolding much faster than projections

from Mexico's state-run oil giant Petroleos Mexicanos, or Pemex. Cantarell's daily output fell to 1.5 million barrels in December compared to 1.99 million barrels in January, according to figures from the Mexican Energy Ministry.

Euan Mearns put some flesh on the bones of Mexican oil production [here](#) (discusses the KMZ area very nicely and has a couple of nice maps too.)

Following on from Khebab's posts ([Jan 2007](#) and [July 2006](#)) I wanted to put some production geology flesh on the bones of Mexican oil production. The main points I want to make are:

1. Forecast production decline of 14% per annum in Cantarell sounds alarming but it is in fact the result of planned reservoir management.
2. The forecast decline of Cantarell is due in part to the diversion of nitrogen injection from Cantarell to the neighbouring Ku-Maloob-Zaap (KMZ) complex of fields. Production at KMZ is forecast to rise to around 800 MBD and this will partly offset production falls at Cantarell.
3. Cantarell / Mexican production is predominantly heavy crude, and it is postulated that any production declines in Mexico may be met by additional production of Saudi Arabian heavy crude forward to 2012.
4. Notwithstanding point 3, Mexican oil production decline means that 4 out of 5 major OECD producers are now in decline (Norway, UK, USA and Mexico), leaving only Canada with growing production and this presents the OECD with a growing problem of energy security.
5. The Hubbert Linearisation (HL) for Mexico reflects reservoir management (gas lift and nitrogen injection) and new field developments but the interpretation remains equivocal. A brief description is given of why Pemex have used gas lift and nitrogen injection to boost production at Cantarell.



Luis de Souza put together this [analysis of world oil exports for Mexico](#)

Mexico is here assessed to be capable of producing a total of 50 Gb to 2075, giving a midpoint of depletion in 1999, some fourteen years after what appears to be a premature actual peak in 1985. Production now stands at about 3.2 Mb/d, being subject to a fairly high depletion rate of 5% a year.

Mexico seems to have peaked only in 2004, but the future decline rate is maintained.

Ace also does some work on Mexico on his [Updated World Oil Forecast](#).

All TOD Work on Cantarell and Mexico

<http://www.theoildrum.com/tag/cantarell>

<http://www.theoildrum.com/tag/mexico>

Mexican Oil reserves:

<http://www.ruf.rice.edu/~leeman/MexOilReserves.gif>

Mexican refineries:

<http://www2.nrcan.gc.ca/es/es/NA-enrgpic2006/rpImages/5-04-e.gif>

Some PEMEX background:

<http://en.wikipedia.org/wiki/Pemex>

http://en.wikipedia.org/wiki/Cantarell_Field

Here's a list of [refineries](#):

- * Minatitlan Refinery (Pemex) 170,000 bpd
- * Cadereyta Refinery (Pemex) 292,000 bpd
- * Tula Refinery (Pemex) 320,000 bpd
- * Salamanca Refinery (Pemex) 236,000 bpd
- * Ciudad Madero Refinery (Pemex) 190,000 bpd
- * Salina Cruz Refinery (Pemex) 320,000 bpd

More from PEMEX on KMZ: <http://www.pemex.com/files/content/ACFWVNY7kO2v.pdf>

Almost Total Cantarell Evacuation

Mexico clears oil rigs as hurricane nears
Might order total well closure

Mexican state oil company Pemex on Sunday evacuated thousands of oil workers from the Gulf of Mexico and warned it might close up to 2.2m barrels a day of crude oil production as the powerful hurricane approached.

Pemex said it was evacuating 13,360 workers – most of its workforce in the area - and that it might order the "total closure of the oil wells" in the Cantarell oil field and other fields.

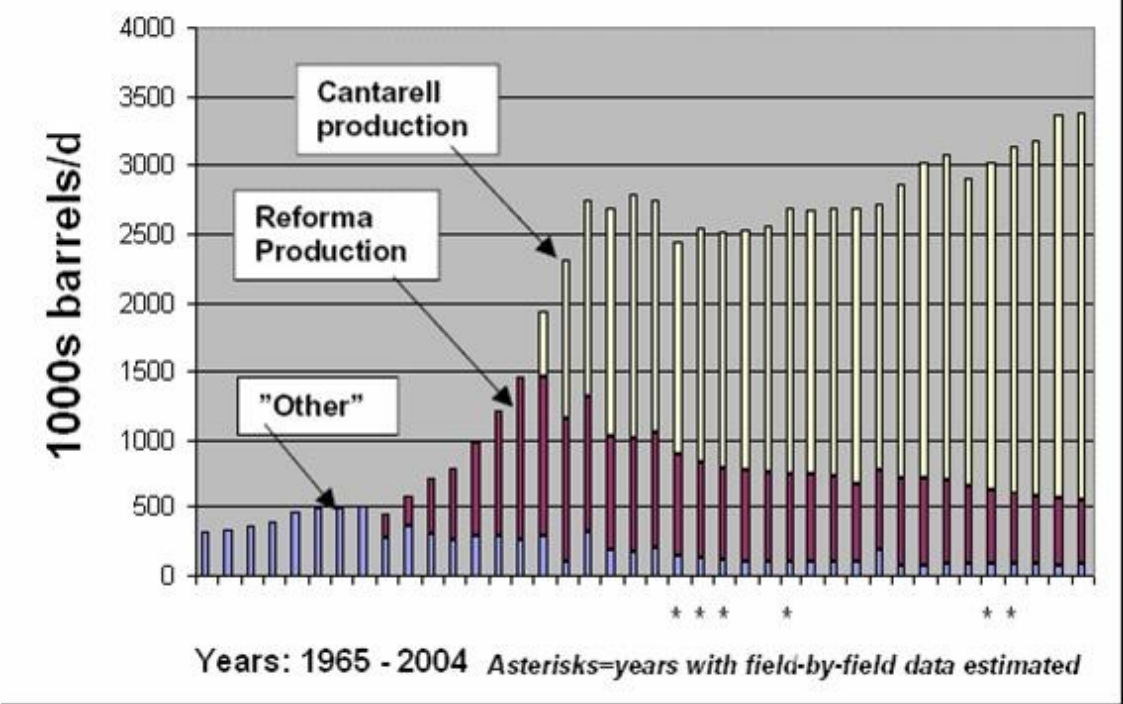
<http://www.ft.com/cms/s/0/96593284-4e46-11dc-85e7-0000779fd2ac.html>

This is from the EIA Hurricane analysis for 2007, showing historical production of oil and gas from the Outer Continental Shelf of the Gulf of Mexico.

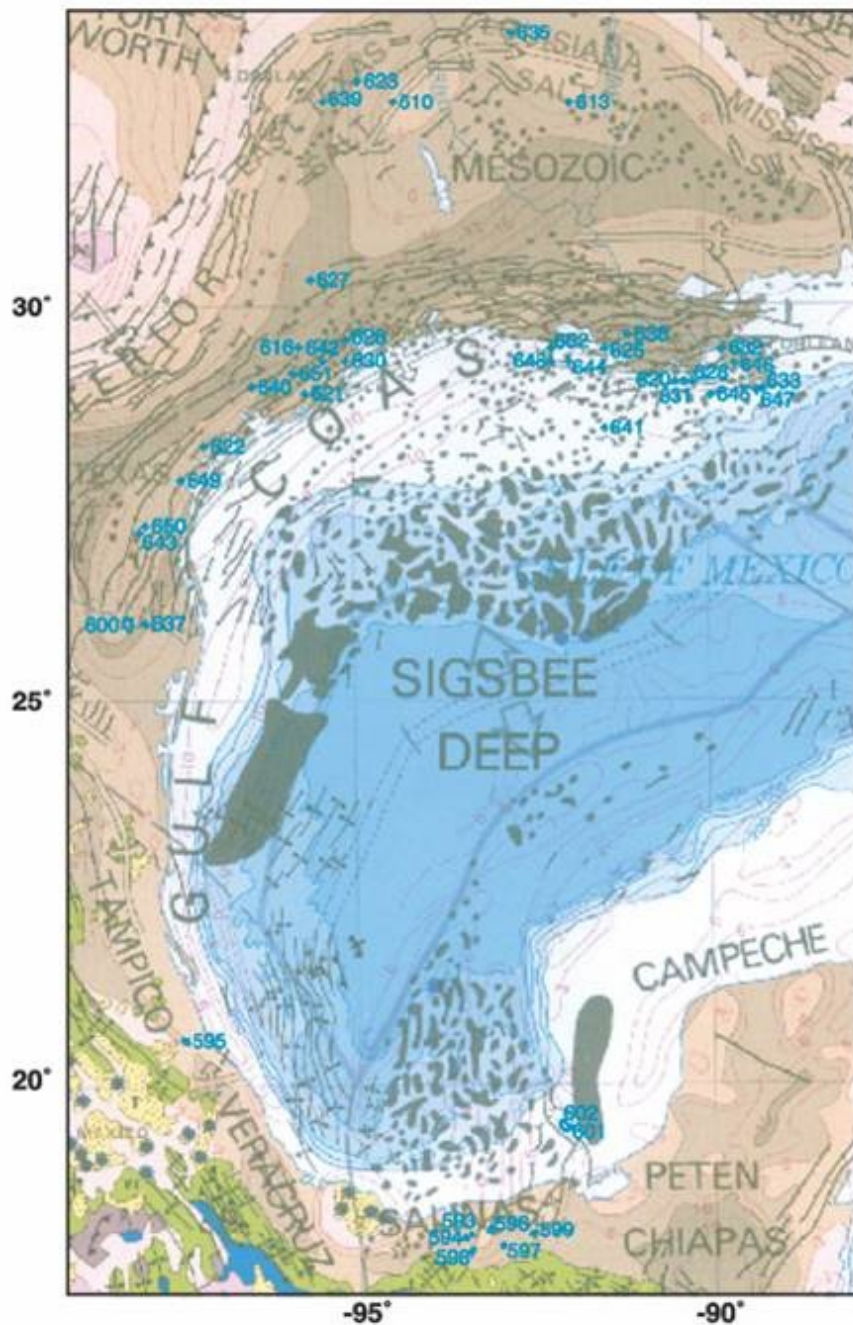
Oil production seems to be about 1.4 million BPD; natural gas appears to be about 7.5 billion cu. ft. per day.

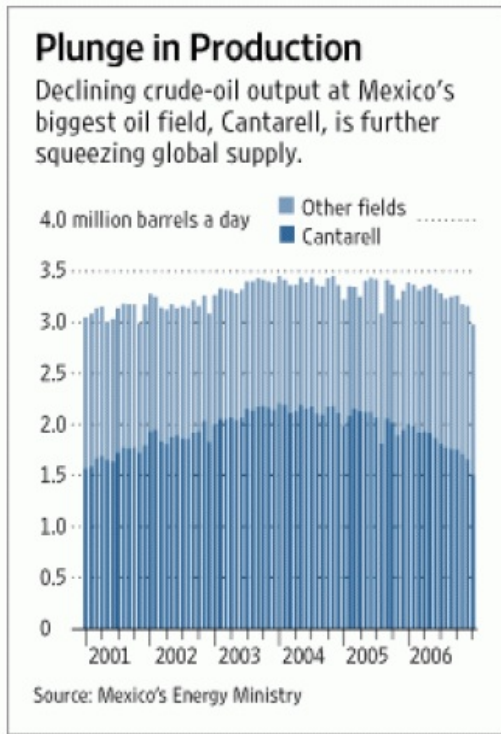
And then some charts and maps and such:

Mexico, Reforma and Cantarell









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