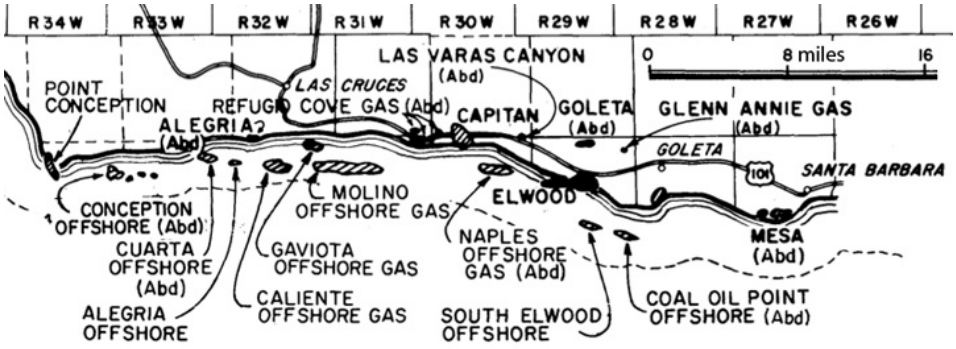
The Oil Drum
DISCUSSIONS ABOUT ENERGY AND OUR FUTURE

# Tech Talk - The Oil that Lies Offshore California

Posted by Heading Out on June 20, 2011 - 11:14am

Last week I covered some of the early history of the development of the oil industry in California, and briefly mentioned the difficulties in integrating an ongoing oil industry into a thriving surface community. I thought to take this ongoing debate offshore this week, since one of the remaining most productive regions in California (???*) is actually offshore. It is also where the "Drill, Baby, Drill" argument runs into fervent environmental opposition.




*Oil and Gas Fields off Santa Barbara (CA Conservation)*

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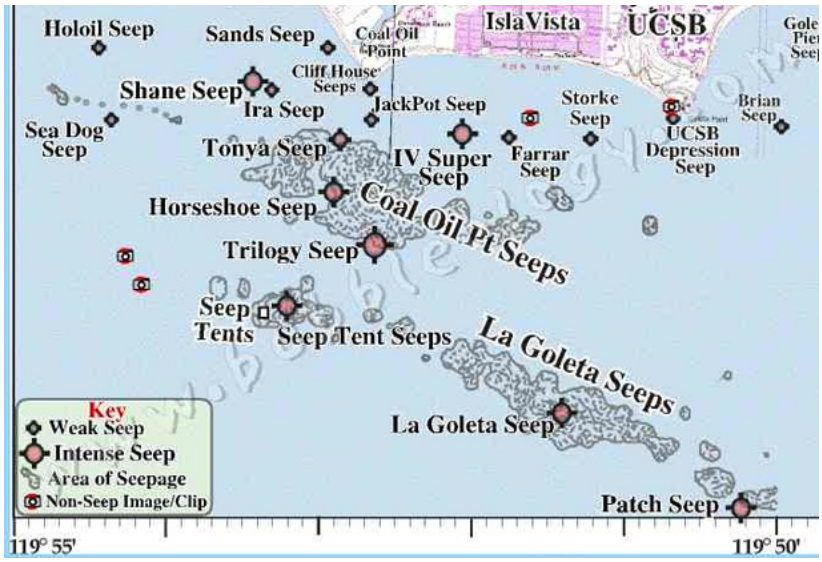
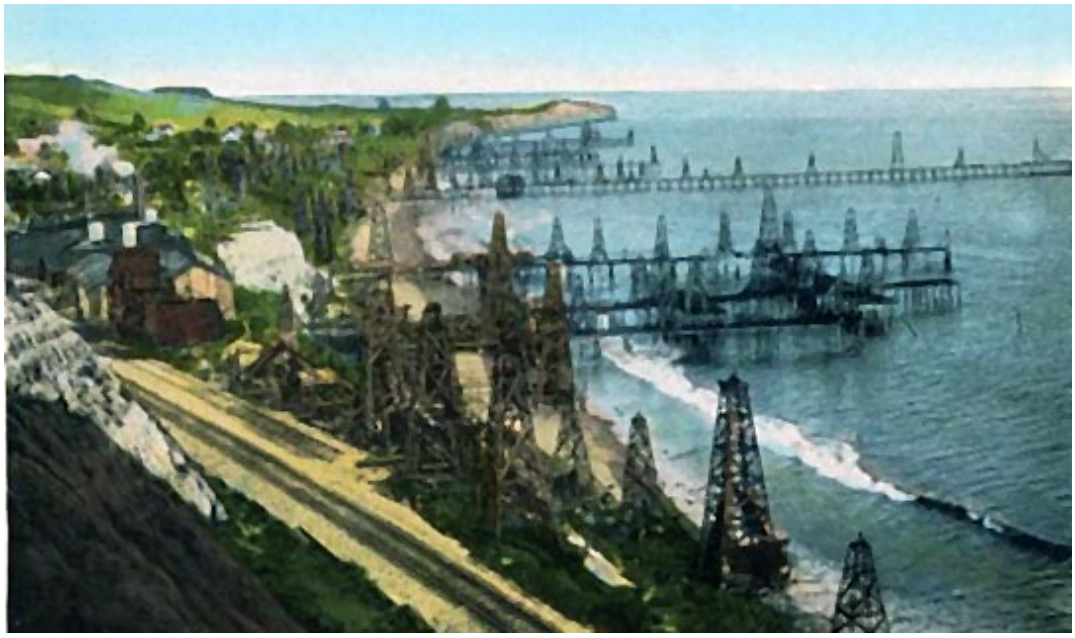
The events following the Deepwater Horizon oil disaster in the Gulf of Mexico last summer were probably the first times that most folk realized that there are not only seeps of oil on land which have been used to show where oil might be found, but that these also occur out in the Gulf and in the ocean. Part of the discussion last summer was about identifying some of the plumes of oil found in the Gulf, to ensure that they did come from the Macondo well, and not from the natural seeps that continue to flow to this day. These seeps are also found off the coast of California, with the most famous being those around Coal Oil Point just off Santa Barbara.



*Seeps off Santa Barbara (Bubbleology – the COP Seep Field )*

The presence of the seeps is detected onshore through the oil slicks that appear on the sea surface, and the tar balls that wash up on the beach. And without seeking to defend the oil industry, they were coming ashore before there was a well offshore CA, and will continue to come ashore long after the wells are abandoned. (Not that this will stop the protests). Natural gas can often also bubble out from these seeps, and with recent concerns over climate change, this is helping drive additional studies of them.

As oil exploration spread up through California from Los Angeles, it reached the town of Summerland and the early wells were drilled onshore. However, producers noticed that the wells nearest the coast were the more productive and so, in 1887 H.L. Williams ran a jetty out into the sea some 300 ft, and sank an oilwell from it. It came in as a producer and, as the postcard below shows, before long there were several such piers running out into the sea, with the longest being some 1,200 ft. Other companies tried to access the oil offshore through slanted drilling from onshore wells.



*Tinted postcard of the oilwells off Summerland CA*

The first fully offshore drilling platform and well was carried out in the Gulf of Mexico in 1947, a region I will come back to later, but it provided the tool to help further develop the resources off-shore in California. The first offshore well in California was drilled in 1956. (Platform Hazel) (which seemed to attract fish ). It was removed in 1996). Unfortunately those early wells were plugged and abandoned as the oil ran out before current regulations were in place. And so there is some concern at present that the 400 wells that lie along the coast from Summerland to Santa Barbara may have started leaking – as there has been a recent increase in oil coming ashore.

> . . . (the wells) were left for dead, with a wide variety of rather inadequate capping techniques such as using logs, trash, telephone poles, and rocks to block up the oil-spilling sea-floor sores.
>
> Acknowledging this situation, the county's head of the Office of Emergency Services, Michael Harris, told the supervisors "The wells were either just abandoned or capped

> inappropriately ... really whatever they could do to stop the leaking was used."

The ongoing questions as to where the oil is coming from (old wells or from natural seeps) is therefore a continuing concern along the Western Seaboard. But it was not the leakage from abandoned wells that has had the greatest impact on American oil production. That came on January 28, 1969 in the Santa Barbara channel, when the third worst oil spill in American history (after the Deepwater Horizon and Exxon Valdez spills) occurred on the Union Oil Alpha platform.

> . . . pipe was being extracted from a 3,500 foot deep well. The pressure difference created by the extraction of the pipe was not sufficiently compensated for by the pumping of drilling mud back down the well, which caused a disastrous pressure increase.
>
> As the pressure built up and started to strain the casing on the upper part of the well, an emergency attempt was made to cap it, but this action only succeeded in further increasing the pressure inside the well. The consequence was that under extreme pressure a burst of natural gas blew out all of the drilling mud, split the casing and caused cracks to form in the seafloor surrounding the well. A simple solution to the problem was now impossible; due to the immense pressure involved and the large volume of oil and natural gas being released a "blowout" occurred and the 1969 Santa Barbara oil spill was under way.

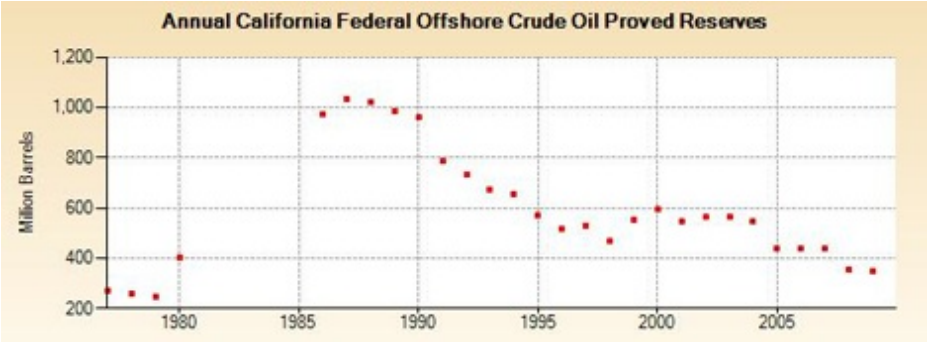
Around three million gallons of oil escaped before the injection of mud stopped the flow. Because the flow was so close to shore the oil reached nearby beaches along 35 miles of the coast, layering oil up to six inches thick onto them, and causing a catastrophe to local wildlife. Public outrage was immediate, and the Environmental Movement was given an immediate boost with the creation of the National Environmental Policy Act of 1969, and the formation of the Environmental Protection Agency (EPA) followed in 1970. Within California the Coastal Commission was formed, and the State Land Commission banned offshore drilling in coastal waters for 16 years. The first Earth Day was held that year.

However, further offshore (beyond 3 miles) the Federal Government has jurisdiction and the first Outer Continental Shelf (OCS) well had been drilled in federal waters in 1967 (Platform Hogan). By December 2009, that platform had produced 20.4 million barrels of oil and about 20.8 billion cu ft of natural gas, with 12 wells in production on the platform. In 2003, 23 of the 27 platforms offshore were in Federal waters and all supported multiple wells.

Drilling multiple wells from individual platforms is common in this region, and, among other things has the advantage of limiting the obvious visual impact of the rigs on the view. There is considerable concern over new drilling in coastal waters, and even drilling slant holes from existing wells to reach oil has been frowned on by the Lands Commission. There are moves in the US Congress to encourage more development off California, but it remains very controversial. Further the recent controversy over the impact from hydraulic fracturing of gas wells has now reached Santa Barbara and is raising concerns, even onshore.

It is difficult, at this time, to predict the future for this region – environmental pressure is great in restricting further development within the coastal areas under State control, and there are a number of known fields that lie within that limit. Beyond it lies the OCS where the pressure of rising prices might help encourage further drilling; sadly, emotion may have greater impact there than reality. At the same time, with all this potential activity, the reserves offshore are seen by

the EIA to be falling. (H/t jjhman )




However, as JoulesBurn noted in commenting on my last post, 77% of Californian production now comes from Kern County, and so we'll have to wander up to Bakersfield next before leaving California.