

August 18, 2008

TO: Board of Supervisors, Santa Barbara County

RE: Statement on oil seeps and drilling for August 26 meeting, “State and National Energy Crisis – Discussion”

The local group Stop Oil Seeps (SOS) has gained a lot of traction lately as alarmed southern Californians react to sharply increasing gasoline prices. Part of the SOS agenda is to promote offshore drilling and oil production as a means of reducing natural oil and gas seepage and their effects in the Santa Barbara Channel. Their premise is based on interpretation of two 1999 UCSB studies^{1,2} on oil seeps offshore Coal Oil Point in Goleta, the location of Venoco’s platform Holly. As a member of that UCSB research team I want to point to several qualifications in this SOS argument.

The relationship between ongoing production and decreasing seepage remains a hypothesis that is not fully tested. The relationship is well established for the Coal Oil Point field under current production methods but not tested by scientific studies elsewhere in the Channel. Many oil reservoirs offshore in fact are not seeping so drilling them would have no effect. Those reservoirs that are seeping, to my knowledge, are discharging far less than the Coal Oil Point field, minimizing any effect of drilling on seepage. Even if drilling were to go forward as a means of decreasing seepage, some seeps are located where oil drilling would not occur either because of non-economic deposits or legal restrictions. Further, any relationship between ongoing production and decreasing seepage could only apply in the early history of an oil field during a phase known as primary production where natural subsurface conditions allow easy extraction of hydrocarbons. As oil fields age more elaborate Enhanced Oil Recovery measures are required, and these could have the opposite result of *increasing seepage*.

The argument is also made by SOS that most of the oil floating on the surface of the ocean today is of natural origin, not industrial, and that therefore our enemy is really natural seepage. It is true that natural oil seepage may be the major source of oil in the ocean: to what degree is uncertain. However, labeling this natural floating oil to be pollution is not so simple. Ecosystems have adapted to ongoing hydrocarbon seepage as they have done at Coal Oil Point. On the other hand, a sudden accidental spill of even a small magnitude is something that natural systems experience as acute stress and could have far greater impact than continual natural sources.

¹ Quigley, D. C., J. S. Hornafius, B. P. Luyendyk, R. D. Francis, J. F. Clark, and L. Washburn (1999), Decrease in Natural Marine Hydrocarbon Seepage near Coal Oil Point, California Associated with Offshore Oil Production, *Geology*, 27 (11), 1047-1050.

² Hornafius, J. S., D. C. Quigley, and B. P. Luyendyk (1999), The world’s most spectacular marine hydrocarbons seeps (Coal Oil Point, Santa Barbara Channel, California): quantification of emissions, *Journal Geophysical Research - Oceans*, 104 (C9), 20703-20711.

The Coal Oil Point field emits gases that are classified as noxious air pollutants and precursors to ozone. These are likely of large magnitude offshore but are highly dispersed once they blow onshore to Goleta. That area is rarely beyond state or federal air quality (ozone) standards according to our county monitoring records.

Our 1999 UCSB studies were made on a special case of marine seeps; one of the worlds' most active. However, these seeps occur over a limited area. To extrapolate the findings of our studies beyond the Coal Oil Point area can not yet be substantiated, and there are many reasons to caution against generalizing our study results to the greater Santa Barbara Channel, much less to the California continental shelf.

Sincerely;
Bruce P. Luyendyk
Professor of Marine Geophysics
UC Santa Barbara