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THANE H. McCULLOH — Biographical Review



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Dr. McCulloh received his B.A. from Pomona College in 1949 and his Ph.D. from UCLA in 1950. He was

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McCulloh's professional career began as an Assistant Professor at California Institute of Technology in 1953-1954. He then joined the faculty at University of California, Riverside from 1954-1963. In 1963, he joined the U. S. Geological Survey. This paper is being presented as a part of an AAPG Distinguished Lecturer tour.

GEOLOGY OF THE DOS CUADRAS FIELD, SANTA BARBARA CHANNEL, CALIFORNIA AND ITS ENVIRONMENTAL PROBLEMS (Abstract)

by: Thane H. McCulloh

Six years have passed since the submittal of the findings and recommendations of the Special Presidential ("Dunbridge") Advisory Panel regarding the blowout of an offshore well in the Santa Barbara Channel, California (well A-21 on Federal Tract OCS P-0241) and the consequent oil spill, underground formation (rock) damage, and sea-floor seepage. A principal recommendation of the Panel was that the accumulation of hydrocarbons from which the blowout occurred should be produced as rapidly as possible to abate the sea-floor seepage by depressuring the reservoirs and extracting from them as much as possible of the mobile gas and oil. Toward those goals, development drilling was authorized by the Secretary of the Interior of all wells originally planned from the two offshore platforms that were in place at the time the blowout occurred on January 28, 1969. Approval also was given to emplace another drilling platform near the west edge of the adjoining tract (OCS P-0240) to permit drilling of additional production wells at and near the east end of the accumulation. The goal of producing the field has been pursued diligently and safely by the operators of the two lease tracts and the results are summarized here.

A total of 138 development wells has been drilled from the three platforms without a single untoward incident, and a much larger number of remedial, repair, or recompletion operations have been performed. On January 4, 1975, cumulative production from the field was 105,784,151 bbl. of crude oil and 51,961,459 Mcf. The official estimate of proved remaining recoverable reserves is 72,977,000 BO, making the field 56th among the top 100 fields in the Nation. During a pilot water-flood and waste-water-disposal operation, 4,867,503 bbl. of water had been injected safely and effectively.

As the field has been produced, uncontrolled seepage has steadily abated from the sea floor oil and gas seeps activated at the time of the blowout. Several natural offshore seeps in the channel now release far larger quantities of crude oil to the sea than do the seeps created by the blowout. Careful monitoring for signs of localized subsidence induced by production of fluids from the reservoirs has yielded negative results thus far, and evidence is lacking of any fault movement or seismic activity that might be linked to the oil-field operations.

Information available about the geology of the Dos Cuadras offshore oil field at the time of the blowout was limited in quantity and kind. Development drilling and exploitation operations since the blowout provide a basis for a greatly improved model of this structurally complex multizone giant field. These operations serve also as a demonstration that current offshore drilling, completion, and producing practices and regulations are adequate to permit safe and environmentally acceptable exploration for and production of offshore oil and gas.