

Salt Dome Gas Storage and Brine Production Facilities: Geological, Environmental, and Safety Issues

William H. Schramm^{1,2} and Lewis Donlon¹

¹School of Geosciences, University of Louisiana at Lafayette, 611 McKinley St.,
Hamilton Hall #23, P.O. Box 44650, Lafayette, Louisiana 70504

²Louisiana Department of Environmental Quality, P.O. Box 4314, Baton Rouge, Louisiana 70821

ABSTRACT

Louisiana hosts numerous salt domes both on land and offshore. Many of these domes have been evaluated for oil and gas potential as well as sources for salt/brine/sulfur and provide underground storage for a variety of petroleum based products.

Critical events arising from the use of salt domes for brine production and storage purposes include the 1980 collapse of the salt mine on Jefferson Island and the closure of the Strategic Petroleum Reserve at Weeks Island due to sinkhole development. More recent events including the collapse of a brine cavern on the Napoleonville Dome and the proposed cavern storage of natural gas adjacent to an active salt mine at Cote Blanche.

This paper examines operations and concerns at Napoleonville and Cote Blanche. The Napoleonville Dome is used for brine production and storage of both natural gas and liquid petroleum gas. Underground mining of salt at Cote Blanche presents different concerns with proposed cavern construction and storage situated adjacent to mining operations. These operations emphasize the importance of understanding all aspects of safety and technical feasibility of using salt caverns for these purposes. Most critical is the need for accurate geological understanding of salt boundary and anomalous zones locations.