

Lower Lower Miocene Progradational (LM1 P1) Play

Lenticulina hansenii biozone

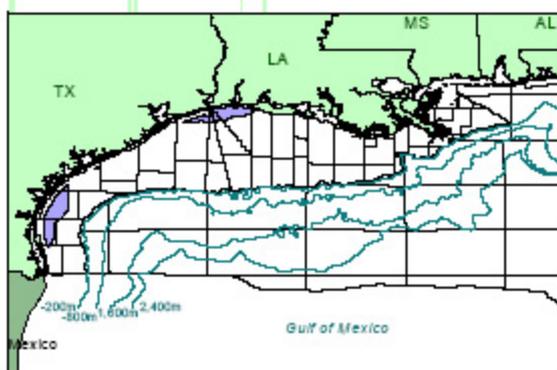


Figure 1. Play location.

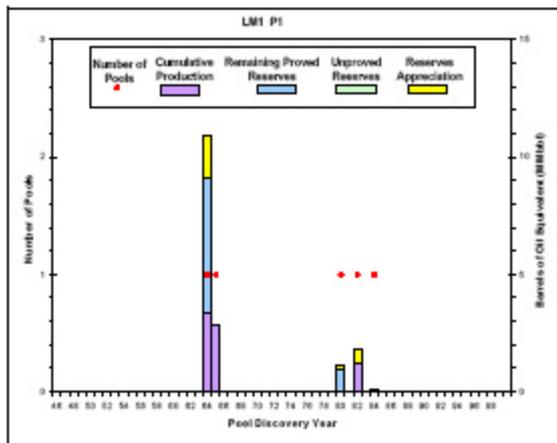


Figure 2. Exploration history graph showing reserves addition and number of pool discoveries by year.

LM1 P1 Play		Minimum	Mean	Maximum
5 Pools	15 Sands			
Water depth (feet)		17	30	37
Subsea depth (feet)		11024	11530	11915
Number of sands per pool		1	3	9
Porosity		21%	26%	31%
Water saturation		21%	30%	35%

Table 1. Pool attributes. Values are volume-weighted averages of individual reservoir attributes.

Play Description

The established Lower Lower Miocene Progradational (LM1 P1) play occurs within the *Lenticulina hansenii* biozone. The play is located in two separate regions: a western region extending from the North Padre to Brazos Area offshore Texas and an eastern region extending from the High Island Area offshore Texas to the East Cameron Area offshore Louisiana (figure 1).

Updip and along strike in the western region, the play continues onshore into Texas, but is nonproductive in Federal waters. Downdip, the play grades into the deposits of the Lower Lower Miocene Fan 1 (LM1 F1) play. Similarly, updip and along strike in the eastern region the play continues onshore into Texas and Louisiana. Downdip, the play grades into the deposits of the LM1 F1 play.

The locations of the two regions of the LM1 P1 play are a result of sand deposition in two separate delta systems during LM1 time, the North Padre Delta System in Texas and the Calcasieu Delta System in Louisiana. Because both delta systems were located largely to the north of Federal waters, primarily only LM1 progradational and deep-sea fan facies extend into the Federal OCS.

Play Characteristics

Sediments in the LM1 P1 play represent major regressive episodes of outbuilding on both the shelf and upper slope. Because only the distal parts of the delta systems extended into Federal waters, productive LM1 P1 sands were deposited primarily in delta-fringe environments. Rare reworked retrogradational sands with a thinning and backstepping log signature locally cap the play and are included as part of LM1 P1 play. The sand-rich

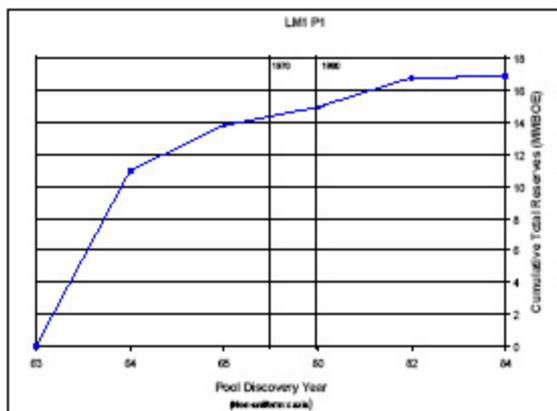


Figure 3. Plot of pools showing cumulative reserves by discovery order. Note the non-uniform x axis.

LM1 P1 Play Marginal Probability = 1.00	Number of Pools	Oil (Bbbl)	Gas (Tcf)	BOE (Bbbl)
Reserves				
Original proved	5	0.001	0.074	0.014
Cumulative production	–	0.001	0.039	0.007
Remaining proved	–	<0.001	0.036	0.007
Unproved	0	0.000	0.000	0.000
Appreciation (P & U)	–	<0.001	0.015	0.003
Undiscovered Conventionally Recoverable Resources				
95th percentile	–	<0.001	0.035	0.007
Mean	5	0.001	0.044	0.009
5th percentile	–	0.002	0.053	0.011
Total Endowment				
95th percentile	–	0.001	0.124	0.024
Mean	10	0.002	0.133	0.026
5th percentile	–	0.003	0.142	0.028

Table 2. Assessment results for reserves, undiscovered conventionally recoverable resources, and total endowment.

sequences in the LM1 P1 play are often overlain and underlain by thick marine shales that are a few hundred to a few thousand feet thick.

Fields in the LM1 P1 play are structurally associated with normal faults, growth faults with rollover anticlines, and rotational slump blocks. Seals are provided by the juxtaposition of reservoir sands with shales, either structurally (e.g., faulting) or stratigraphically (e.g., lateral shale-outs, overlying shales).

Discoveries

The LM1 P1 gas play contains total reserves of 0.001 Bbo and 0.089 Tcf (0.017 BBOE), of which 0.001 Bbo and 0.039 Tcf (0.007 BBOE) have been produced. The play contains 15 producible sands in five pools (table 1; refer to the Methodology section for a discussion of reservoirs, sands, and pools). The first reserves, the largest pool, and maximum yearly total reserves in the play were discovered in 1964 in the West Cameron 17 field (11 MMBOE) (figures 2 and 3). The most recent discovery, prior to this study's cutoff date of January 1, 1999, was in 1984.

The five discovered pools contain 19 reservoirs, all of which are nonassociated gas.

Assessment Results

The marginal probability of hydrocarbons for the LM1 P1 play is 1.00. The play has a mean total endowment of 0.002 Bbo and 0.133 Tcf (0.026 BBOE) (table 2). Twenty-seven percent of this BOE mean total endowment has been produced.

Assessment results indicate that undiscovered conventionally recoverable resources (UCRR) have a range of <0.001 to 0.002 Bbo and 0.035 to 0.053 Tcf at the 95th and 5th percentiles, respectively (figure 4). Mean UCRR are estimated at 0.001 Bbo and 0.044 Tcf (0.009 BBOE). These undiscovered resources might occur in as many as five pools. The largest undiscovered pool, with a mean size of 2 MMBOE,

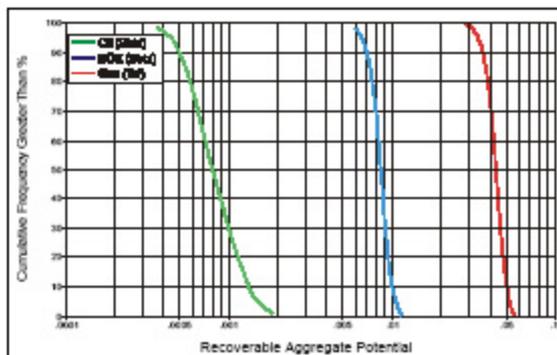


Figure 4. Cumulative probability distribution for undiscovered conventionally recoverable resources.

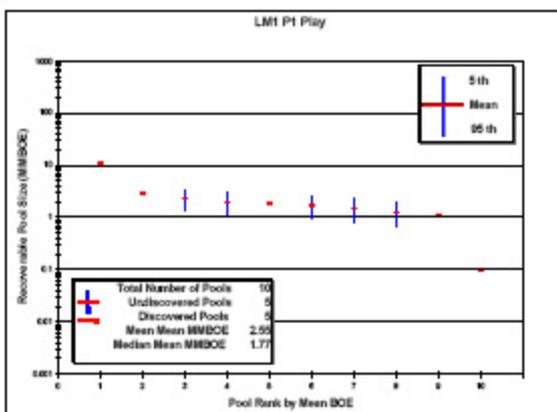


Figure 5. Pool rank plot showing the number of discovered pools (red lines) and the number of pools forecast as remaining to be discovered (blue bars).

is forecast as the 3rd largest pool in the play (figure 5). The forecast places the remaining undiscovered pools in positions 4, 6, 7, and 8 on the pool rank plot. The mean mean size of undiscovered pools is 2 MMBOE compared with the 3 MMBOE mean size of discovered pools. The mean mean size for all pools, including both discovered and undiscovered, is 3 MMBOE.

BOE mean UCCR contribute 35 percent to the play's BOE mean total endowment; however, only a mean of 9 MMBOE is forecast to be discovered from a few relatively deep reservoirs (table 2).