Wax Lake Delta Outlet
St. Mary Parish, Louisiana

Lafayette Geological Society Field Trip
May 1, 2004

This trip was designed for geoscientists interested in the sedimentology and sedimentary architecture of deltas. The Wax Lake delta is part of the Atchafalaya-Wax Lake bayhead delta complex. These two bayhead deltas started being deposited in the late 1940s as a product of diversion of the Mississippi River down the Atchafalaya River course. These deltas represent the embryonic stage of a new major delta lobe in the Mississippi River deltaic system. The Wax Lake delta has not been modified by man's activities and represents an outstanding natural setting for studying the early stages of delta-building. Dr. Harry Roberts of the Coastal Studies Institute, LSU led the field trip.

Group photo - left to right:
<u>Row 1 (top)</u> Tom VanWagoner, Tim Rynott, Jim Flis, David Domec, Paul Langlois, Dan Ruberg,
<u>Row 2 (middle)</u> Don Rehmer, Mike Quinn, Arden Anderson, Dave Fugitt, Harry Roberts, Chris (our boat skipper),
<u>Row 3 (bottom)</u> (seated) Barry Wawak, Ted Gard.
[not pictured] - Mary Broussard, photographer.

The weather smiled kindly on the adventurous trippers just long enough to do a complete tour and traverse of the delta made by the Wax Lake Outlet canal. The canal is a cut between the Atchafalaya River and Atchafalaya Bay made in the late1940's to relieve flood pressure on Morgan City. Trip leader Dr. Harry Roberts of LSU Coastal Studies Institute (CSI) told us that most of delta has built up since the 1973 flood and is still building rapidly at the present time. The delta is unmarked by human intervention and is a great natural model for the study of sedimentary processes.

The LGS trip moved down the canal from the US 90 crossing in three CSI boats. As we approached the delta we noticed that the water depth of the canal decreased from 70' to 16' in less than a mile. The channels split around numerous depositional bars that are evident from the marsh and willow vegetation above the water line.

The crew cut and recovered a 20' vibrocore in a weedy patch of bar. The core revealed pre-delta laminated gray bay clay capped by a shell layer. Above the shell layer was a 1' layer of pro-delta clay topped by banded gray and reddish sandy sediments indicative of a component of Red River provenance sediments. The pro-delta clay is from the mid-1950's. Everything above is younger up to the present.

We drifted to other parts of the delta, where Harry got out of the boat (nobody followed him) and dug into the bottom to show us the sandy sediments of the emerging distributary mouth bar near the lower end of the delta. Clouds began gathering and we headed back to our launch site and parted company with LSU-CSI. As we moved up US 90 toward New Iberia the clouds let loose and never stopped until we were home.

Many thanks to Harry Roberts, LSU-CSI and their able boatmen for conducting the trip, Stone Energy for sponsorship and drinks and to all the participants for making it a fun-filled learning experience full of cool stuff.

Summary courtesy of Ted Gard.

Patterson, Louisiana (Before the Trip)

Ted & Barry make last-minute checks.

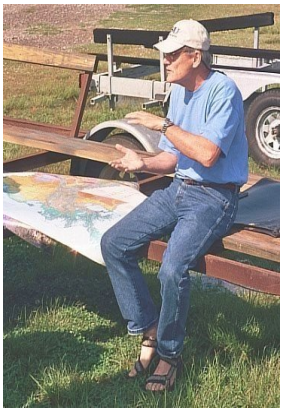
Before the trip: cloudy skies, wet pavement,
"What's the weather going to do?"
"Who's not here yet?" "Where are they?"

Embarking at Patterson, Louisiana

Before launch: Harry Roberts talks about
the geology of South Louisiana.

Harry says,"some beds are 'this thick'".

Harry uses an aerial photo to show locations of interest.



"..and the alligators are only this big."

Patterson, near the dock.

Leaving the dock at Patterson.

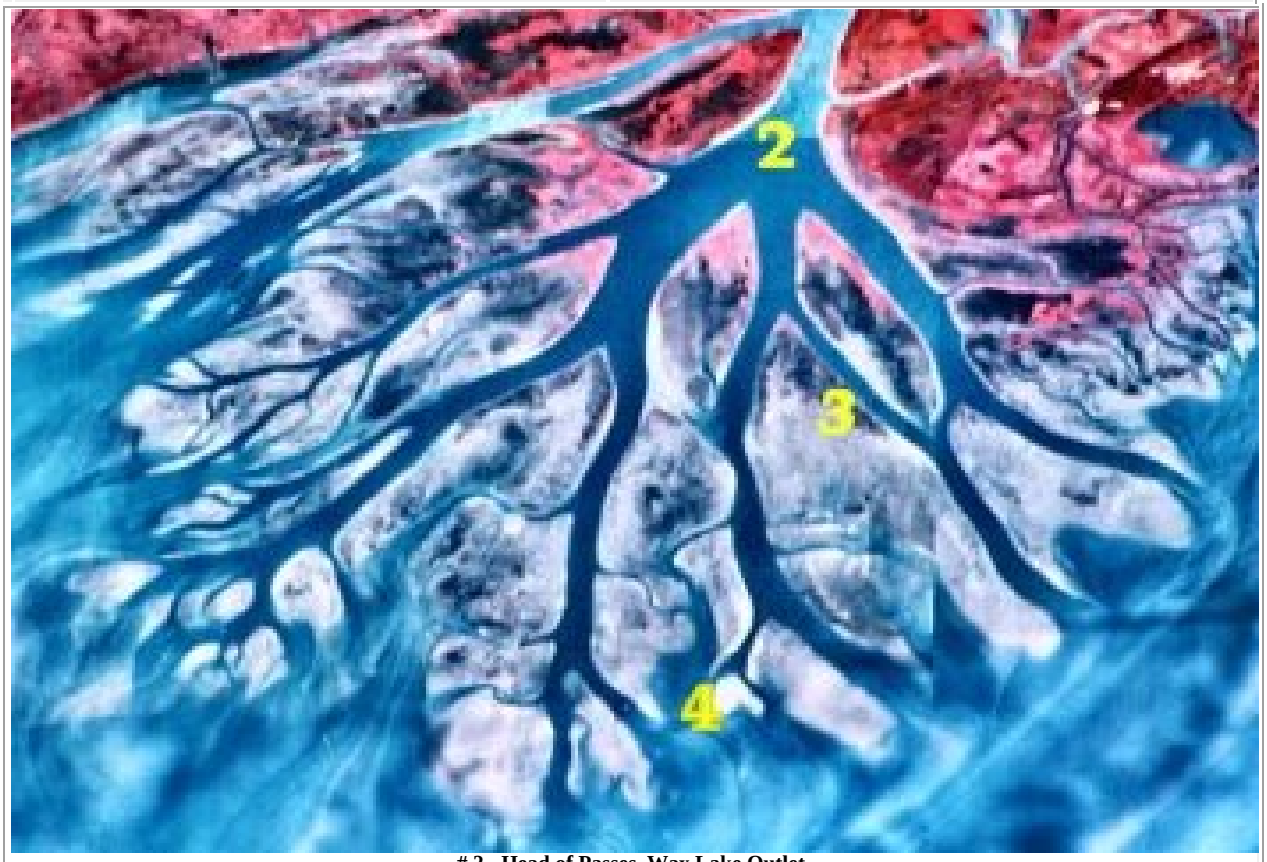
"Are these boats going to hold everyone plus samples?"

Explaining the aerial photograph.

Wax Lake Outlet Canal - pipeline crossings. Outward bound, no clouds.

Intracoastal Canal.
IC canal crosses the Wax Lake canal downstream.

Left to Right: Mary, Mike, Art, Paul, David.



 # 2 - Head of Passes, Wax Lake Outlet
#3 -Vibrocore Location
#4 - Mouth Bar

Site 2: Head of Passes - Wax Lake Outlet.

Approaching the point bar.

Landing on the point bar.

Vegetation on point bar.

Testing the ground, looking for coring site (Site 3).

Paul Langlois joins the search.

Ted and Harry unload the skiff.

Ted Gard hoists the vibrocore. The thick tube is attached to an electrical device which vibrates and rapidly cuts a core in the soft mud.

Dave Fugitt and Dan Ruberg enjoy the wetlands.

Vibrocore injection -vibrocore attached to a thin, 20' long aluminum tube cuts the core.

Vibrocore cuts downward.

Core retrieval process.

Aluminum tube containing core is laid flat.

Cutting the top off the core barrel.

Splitting the core barrel.

Cutting the core barrel.

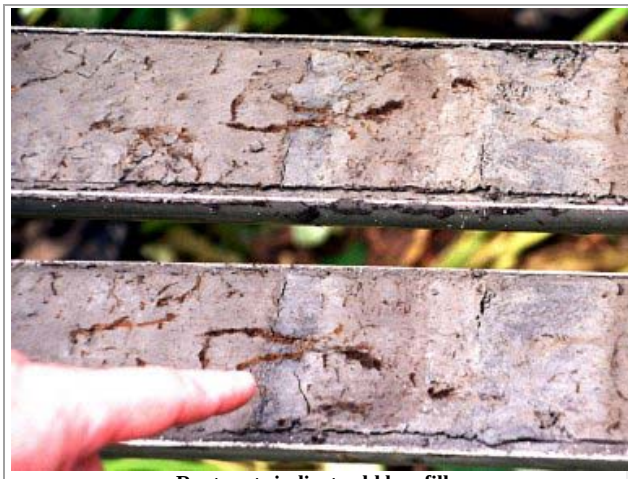
Splitting the core.

Everyone gathers around.

Harry refers to his stratigraphic cross section to explain the sediments we see in the core.

Examining the seds along the length of the core.

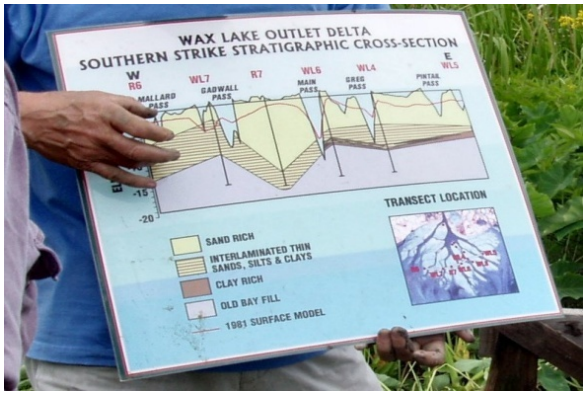
Wax Lake Delta sediments.
Red sediments indicate input from the Red River.



Root casts indicate old bay fill.
Notice the clay / silt couplets;
silt = larger grained storm deposits.

Abrupt change in deposition marks
1952 onset of the building of Wax Lake Delta.

The core reflects a change in sedimentary environments from Atchafalaya Bay (pre delta) to Wax Lake delta. Note the abrupt change in deposition.



Closeup of Harry Roberts' stratigraphic cross section of Wax Lakedelta.

Stop # 4 - Mouth Bar.

Fine sand at the bottom of the Mouth Bar.

***Photos and captions courtesy of Mary Broussard, Barry Wawak, and Ted Gard.**