MMS OFFSHORE GULF OF MEXICO

ORAL HISTORY PROJECT

Interviewee: ROBEY CLARK

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Bio

Robey Clark went to LSU in 1939 and joined the Navy before graduation. However, they still gave him a diploma. After serving on the Gulf Coast during World War II, Mr. Clark got a job with Magnolia. He worked in various locations throughout the Southern U.S. in geology, mapping, and analysis. He became heavily involved in Offshore Gulf of Mexico and served as head of E&P for Mobil. He left Mobil in 1971 to work for Diamond Shamrock where he also enjoyed success. He finally retired from corporate life in 1982 only to start up a consulting business.

Summary

This interview covers a vast amount of information. Discussions of his time at Magnolia include early techniques for finding oil fields. Included was a comment on Lynn Morrow and the idea of offshore oil. He covers in only minimal detail some of the early state and federal lease sales. Some information on bidding with competitors as well as industrial fraternization. An excellent discussion on the discovery of bright spots, Mobile Bay. Quite a bit of geologic discussion as well.

Side 1

TP: This is an interview with Mr. Robey Clark. The date is June 25, 2003. The interviewer is Tyler Priest. The interview is being conducted at Mr. Clark's office in Amarillo, Texas. Let us just start off with a little bit of background on yourself.

RC: Well, I was born on a small cotton plantation in Madison Parish, in the flood plane across the Mississippi River from Vicksburg. My father died when I was 10 years old. Those first 10 years were really marvelous years. I led kind of a storybook life. It changed abruptly when he died abruptly in my sight, in May of 1932.

My mother was able to get a job teaching public school at the little community of Mound, named so because of a small Indian mound at the town. So I went from originally a very comfortable life with all the dogs, guns, horses, and all those things that went with such a thing in those days, to living in a shotgun house that only had one wall. It had no inside walls, only outside walls. It had good rough Cypress lumber and could see daylight in six directions! Not everyone has lived in such a place!

My mother taught school in the little town of Mound. had many adventures, which I do not have time to go through it here. I have had

many adventures of growing up in a redneck rural area. The redneck and tenant farmers at that time were about 50/50 good, solid English-speaking rednecks and about 50/50 good, solid black citizens. I had friends and playmates with both. Am I talking too much?

TP: No, this is great. This is perfect. How did you come to your eventual career in geology? You were also in the Navy during World War II?

RC: Yes, we will get to that. I have to get through high school, I guess. What was the question? Well, there was not any money. Mother made about $70 a month. I remember specifically. Let me rephrase it; she made $700 in one year. So, the house I lived in had been a laboratory for the United States government. When they were after Panama, they were real interested in malaria and mosquitoes. This was a laboratory for research in the mosquitoes and malaria in the Delta. That was not the true Delta, but it was Delta by road usage. So, I learned about anatomy from a book that they had left behind that made any disease incredibly frightening! You were always getting blue balls or something, and the time of the disease would be, "And then in three days, you are dead."

TP: That must have made an impression on a young kid at that time.

RC: Right. We were right square in the middle of the Depression. Mother was

Eastern raised and had a college education from Swarthmore. She was a Quaker. With Quakers, education is a requirement. No matter what your situation, you were going to get an education if you had a Quaker background. So, I wasted a year at a junior college in Monroe and then went to LSU in 1939, I guess.

I had a false start, thinking I was going to be a chemical engineer. I knew that was not going to work because the professor told me it would not! So, I decided that I wanted to be outdoors, and I went through the catalog and I came up with forestry and geology. I knew a couple of foresters and they had to struggle to make a living, so I chose geology. It was a never-lived decision, and have never been sorry. I got a great education at LSU at a time when it was at its peak with a faculty of Howe, Russell, and Fisk. All three of whom became famous in geology. Because the studies of the deltas and their shoreline coastal geology, the pleistocene, and the terraces resulting from various glacial incursions and recessions were set up in such a permanent way, that has been a natural part of my geologic career. So, I was very fortunate in that.

TP: So, those faculty members you mentioned – Howe, Russell and Fisk, were they all sedimentary trained geologists?

RC: Anybody in the geological profession knows all three of those names.

Fisk probably is best known because his publications for the Mississippi River Commission Corps of Engineers are still the defining publications. Can I give you an aside?

TP: Sure.

RC: I will show you one of 500 copies that exists later on. So, I did not quite finish school because I had signed up with the Navy in the deal where I could go to school until they called me. Well, they called me in March. It is interesting historically that LSU had just landed me a degree. I was not failing any courses. I had taken more courses than was required and they just granted me a degree. So, I physically did not graduate.

I went to midshipman's school in Chicago . . .

TP: LSU granted you a degree at the time?

RC: While I was in midshipman's school, and I had not even had gotten around to figuring out what grade I might have because there was still three months until school was out. So, while I was at midshipman's school in Chicago, I got a letter from the registrar and from the dean saying that I had graduated. At the time, I thought that was awful nice. And so, it has made me realize that going strictly by the rules is not always the best way!

TP: You were showing a lot of promise?

RC: Well, I was a better than average student but nothing special. Anyway, that is the way it went. And then, I went into the Navy, went into midshipman's school in Chicago, and was made an ensign right at the end of August of 1943. I was given a couple of weeks to go home and get ready to go in the Navy for a time. Which I did, and I reported to the LST 242 in St. Andrews Bay, Florida, near Pensacola. That was the first ship I had ever been on and, within days, we left there and went to New Orleans sailing up the river. And for a geology graduate, that was a great experience. I managed to do that in daylight hours, so I first saw that true delta from the bottom up.

TP: You had never been down . . . was that your first time?

RC: No, I had never been down there. At that time, LSU did not do that with students. Grad students did that but undergrads did not do that. So, I saw delta close up. I still remember details about that trip.

Anyway, after they had left . . . one thing or another. We were getting it shipshape, we loaded it up with all kinds of cargo. We created an LCT, a vessel that was loaded to be used offshore in Louisiana in the early days of

the adventures in the Gulf of Mexico. Anyway, the LCT was mounted on deck, which was labeled to be unloaded at Tarawa.

So, when we got down to the mouth of the river after leaving New Orleans, there were three LST's. We were supposed to go to a rendezvous point and wait for a civilian convoy to make up. There were still submarines in the Gulf of Mexico. So, they went and to our point of rendezvous and gradually, merchant ships showed up. A whole bunch of merchant ships and three LSTs. But a merchant ship held the convoy, Commodore. He ran up a flag hoist, and no one could read it. The captain was running around shouting. It was not in the book . . . all the guys were new. Nobody had been to sea . . . frantically summoned to the book to find the flag hoist and finally, somebody said, "It's merchigs." Well, immediately, everybody started digging for the merchig's book. Merchigs is the short for merchant signals. And that is standard throughout the world, enemy or no Germany and the U.S.

So, we had a message headed due course. We found out what the convoy, a Brazilian ship, if I recall, was asking us to do, and we got in our station and headed for Cuba.

TP: It was a Brazilian ship?

RC: That is the way I remember it.

TP: Do you remember what it was carrying?

RC: I have no idea what it was carrying. Brazil was kind of neutral and they did not want to be blown out of the water.

TP: They were supplying a lot of strategic minerals. They were supplying a lot of strategic minerals to the U.S.

RC: It was a large, bulky looking, but not like an oil carrier. It was a general cargo carrier. At any rate, we fell into a routine except that the Navy would want you to have 300-500 maximum spacing between ships. But all those merchig ships, of several nations, they did not trust anybody. So it turned out to be more like a mile apart. They did not go for this close order drill. But, at any rate, we got to Guantanamo Bay. Guantanamo Bay, to this day, remains the ugliest place I have ever been in my 80 some odd years! If we could just leave our enemies there long enough, they will all drown trying to get away. And that is true. It is an aside, I guess.

It does not rain there. It is at the far eastern tip of Cuba, and I do not know the mechanics and the weather aspects, but it does not rain. It is rock.

I will tell you of a terrible incident that happened. We had all these . . . we had 100 some odd sailors that we were taking to the South Pacific. Most of them were right out of boot camp. So, they all went ashore and got drunk. When they came back, one of them, climbing the ladder from the small boat to the ship, fell between the small boat and the ship and he never came up. We spent 24 hours trying to find him and by then, we were getting messages from military commanders saying, "Get on your way." So, we got on our way and went to Panama.

After a short stay in Panama, we went to Bora Bora and Samoa and then, we prepped for Tarawa and then we went to Tarawa. I just combined all the rest of our operations.

242 had a good career at Saipam and Leyte Gulf. After we got back from all that, I was given a day-to-day commission and was reassigned to another ship. The war was over, and we went to Hawaii and did what is called roll up duty. We went to all the little bases on islands that might only have 15 marines, or maybe just a lookout place with just 10 marines. We picked up that equipment and would bring it back to Pearl Harbor where it would be reloaded onto barges. They had a bulldozer on them. It was dragged out to 12,000 feet of water and pushed overboard. That is the way it was. I do not know if you want to put that in. This avoided any legal problem with the manufacturers whose contracts said that those

vehicles could only be used by the Navy. So, that was so much for capitalism and all that. They won the war.

TP: Rather than having you repeat this story about how you got to Magnolia, I will just insert this into the transcript - an anecdotal story about how you came to Magnolia Oil that was published in an AAPG publication called Heritage of the Petroleum Geologist. So, you finally got an offer from Magnolia and this is in 1946?

RC: I am through talking about the Navy. So, there is a lapse of time where I had to find a job and whatnot. And I was very conscious of that, as I was waiting to get transportation in San Francisco. So I did know enough to know Standard of Cal was based in San Francisco. But I had not spelled the word "geology" for three years. At any rate, that is where that first started. I think those stories about some of those companies do not exist anymore, but I think, to this day, it is a true story as far as Chevron is concerned. I do not think you are going to see many Texaco people running it.

TP: That is right. So, they suggested you go back to the Gulf Coast?

RC: Yes, so what you added is very true. It is not much exaggeration. It had it all in there, and I did not name any names except the Mobil people.

TP: O.K., well do you want to go on and talk about your first positions at Magnolia, or do you want to go through this . . .

RC: I think we ought to go through this. Just to get away from the personal aspects. I am tired of talking about myself.

TP: Why don't you keep going and then we can go back and talk a little bit more about Magnolia in the early days.

RC: Are you going to record this?

TP: If that is all right.

RC: You are going to have an awful lot of reading to do. Anyway, you had what kind of audience I did this for. Unfortunately, I do not have a printout and it was shown on an overhead projector, so that was fine but you try to make a print of that and get some and it is a mess.

TP: Talk as you would have talked . . .

RC: I am. Here is slide 1. I do things like this. Every valley shall be exalted and every mountain and hill shall be made low. Good geology. And the

crooked shall be made straight. And the rough places, plain. And the glory of the Lord shall be revealed.

TP: Isaiah 4 and 5.

RC: Verse 4 and 5 . . . I told you earlier that gravity was everything. This is North America. The northern Gulf of Mexico, that part of it that comes out of the United States, the little piece right at the mouth of the Rio Grande, is shown in these colors, from practically Washington, D.C. or so, all of Florida, all of the Mississippi Valley . . .

TP: Missouri Valley.

RC: All of Minnesota. A little bit of Mexico. That is the river systems and the arrangement of material that is moving down hill is moving down hill over 1,575,000 square miles. That is a lot. What is moving it?

TP: Gravity?

RC: Gravity. You have geological forces of erosion, both chemical and physical weathering which cracks it up, but it's gravity. Rain falls on it and loosens things up, the ice breaks things up, but gravity pulls it downhill. It would just pile up like an ant hill if we did not have gravity

pulling that ant hill downhill. And so, this should give you a sense of scale of what is going into the Gulf of Mexico. This shows that area again just in the United States. Today, the Mississippi River takes it down into the Gulf of Mexico, but one can think of the coastal plane, even though it gets smaller as we go east towards Florida, and your sediments begin to get limestoney as you do not have great masses of dirt detritus coming in. The scene is true, and when you go down the horn and you get to the Yucatan, it is carbonated province. I do not know anything about it.

So, the main influx, back to the scale here . . . this other thing is about scale . . . That versus That . . . Maybe I am reading things wrong, but at any rate, the point is, that the Mississippi River Valley furnishes the overwhelming bulk and has through geologic time contributed the bulk of sediments in the Gulf of Mexico - where the Gulf of Mexico is today.

TP: 781,000 cubic feet per second is the average.

RC: O.K., so the Gulf of Mexico is 20,000 feet deep in water? I would have to look that up on a bathometric chart, but that is close, close enough. So, we had this bowl down here and it is . . . So the river, the Mississippi River today, if you would go back to its past, has built this for a while. Eventually, it will silt up the mouth of the river, so the river breaks through somewhere else as it is today at Atchafalaya and/or Lake

Ponchartrain, or both. Probably both over time. And so, you do that over and over and over again. Gravity keeps pulling it down trying to get it to the bottom of that 20,000 feet. And so, with a little earthquake, miniscule seismic shakings of nature, storms, and the consistent pull of gravity, you get the Gulf of Mexico as we see it today. Except that the floor of the Gulf of Mexico was salt because that big round thing was not always open to, or was intermittently open to the refill of water from the Atlantic and/or the Pacific. And so, you have salt, of various thicknesses at the base of the sediments being explored today, and salt is a plastic. It is a plastic substance under continued pressure. At any rate, we can see from maps like this . . . you can see the salt history and then in a qualitative sense and a quantitative sense, in this diagram . . . This great business here being the salt that is down at the bottom of the Gulf. This is not guesswork. This is where it is. I mean, we have gravity, we have wells, we have . . . this is a picture to show you how it looks like when a geophysicist plays around with it. They color it up and you can see the mini basins. In between all these salt things are little basins. I originally used to call them bassinettes. The term did not catch on. So, mini basins caught on. But I still think bassinettes would have been nice.

So, as you go further out, your sediments keep pushing down. Also, they keep wanting to slide. So, the combination of the two gives you the classic, down to the basin, normal fault . . . you know normal versus thrust

faults? . . . normal fault pattering. That is how we find oil in the high sides, the hot pads, to some extent, that that type of faulting induces. The mini basins that are formed by movements of the river to another spot . . . You fill up a hole but that will create another hole and the salt definition, you get this. And so, that is what we shoot for and we use geophysics to eliminate the detail of a structure. We look for something that appears to have the physical capability of trapping fluid that is forming. As you get deeper, you get hotter and ultimately, you turn that field into grease spots.

TP: When you say “deeper,” do you mean deeper in water or deeper in . . .

RC: I am talking about weight. The fact that we can go out in 7,000, 9,000 feet or whatever we have now tells us that the depth of the water is a detail. It may be a significant detail. If we did not have deep water, we would not have those sediments out there. They would find some other place to go. But we do have the Gulf of Mexico on a basic salt platform, and that is plastic. And then, they have this current . . .

I used to have to go to New York to sell prospects to Mobil. There was always a problem with the bankers and the lawyers and the accountants and folks in trying to get them to grasp something . . . I think the best I ever did was to say, "Imagine yourself down below New Orleans" -- they had all got drunk in New Orleans -- "with a gigantic Paul Bunion. You

had a gigantic hose that led all the way to Minnesota and was being filled with trash from New York to the Upper Rocky Mountains. You pointed the hose everywhere, to South Texas for awhile, and then bring it back. Finally, you would find it over here towards Florida. Maybe you would point it longer in one place than some other. Maybe the guy filling it up at the other end would give you glacial gravel at one time, and lake bottom sediments at another time. " So, I had gotten to demonstrate that physically. Later, the head of the research department said, "Robey, I think you came closer than anybody ever has to explaining why we are up here." So, I thought that was a great compliment.

TP: Good story.

RC: Gravity is pulling. It never stops, does not sleep, and you know, the sedimentation can stop temporarily, but the gravity never stops. And really, I think that is so important.

TP: The communities in south Louisiana are experiencing that, right?

RC: Right. I think it is just not emphasized enough that gravity is why we are out there in the Gulf of Mexico, and that is why we are out there in 9,000 feet of water. That is enough about that. So, maybe I ought to say this results in a series of pods that parallel the coast, more or less. And these

pods of sediment have different ages. I still do not have that right, do I? So, starting closest to . . .

We had a worldwide revolution at the end of the Cretaceous. So, this chart represents what has happened since the Cretaceous. We start and we have Wilcox and we had those enormous pods, varied in size and thickness, but mappable by age by fossils. And all the little critters that die at certain times and disappear from the record and are replaced by some other kind of little critter which we used as time markers. And that is the science of paleontology and micropaleontology which are real small critters. It has been particularly useful because they are small. In one little scoop of a sample, you can get hundreds of those little critters, and with skill and study, you can build a time column based on that. And that is how the early . . .

TP: Most of the samples come from just corings?

RC: Most of the samples come from cuttings, not corings. I mean, corings are great, but they are expensive. But the mud is coming up all the time, so you take your samples traditionally by when they break. You can get hurt less if the samples are taken when every joint is put on. A roughneck is supposed to go down there to the shale shaker and take a sample. And 30 feet later, he is supposed to take another sample. And then put a depth on

it, tie it with a string, and that goes to Shell's paleo lab. They take that and wash it through screens, break it up if it is chunky. Then, they dry it and pack it to the little paper sacks and send them the guy with a microscope. And that is your paleontologist in Shell's . . . I do not know whether Shell has a central lab or how they do it, but that is what they do. And so, that is how you come up in the Gulf Coast with all these names which are still in use today, and most of them came right out of LSU or the University of Texas. The study of Heterosteginas and Uvigerinas and Bigenerinas and so on, as a specialty, has been critical to the advance of knowledge of the sediments in the Gulf. Also, they tell you something about not just the age but they tell you about the environment. Because some of those critters live in certain depths of water and use certain chemical makeup that tells you about the sea water. So, you learn an awful lot and the average geologist though working on a prospect does not really appreciate all that work. Many companies do not even use it because they have electric logs locally, and they have gotten so good that they can bypass some of the paleontology. But I assure that in those deep wells out there, at least I sure hope they are taking samples . . .

TP: Well, I know in the late 1950s and early 1960s before those big sales, Shell's work by the paleontologists was critical to them . . . the work that was done by Shell Oil's paleontologists was critical.

RC: Yes, and Shell was always considered to have had the best paleontologists there were. But so did Humble. And Pan Am used to say . . . well, Pan Am does not exist . . . Pan Am was very strong. I will not say that Magnolia was the strongest, maybe not even among the strongest, but they were their competent and they had good friends. And so, between them . . . that and also, people in the state surveys.

Let me just draw something for you here . . . 10,000 feet, 5000 feet. So you keep going out here until you fill it up. And there might be an occasion that has yet to come; where they build a basin and it will go all the way back to here and start over. Depending on what happens to the Gulf of Mexico and to the uplands. . .

I have described this. Have you ever worked in a dairy?

TP: No.

RC: Well, how do you get rid of all that crap? Have you ever thought about that?

TP: No.

RC: O.K., well, most dairies are built for the . . . concrete slab, vertical slab

that makes a deck. You have one where they milk the cows, but that is raised . . . They walk in somewhere and it is easy work. But anyway, to a platform . . . Well, at the end of that milking platform, there are troughs down there and crud flows down. The last guy on the totem pole has a swab and a push broom or push something, and they would push it out over a lip. And it falls 6, 8, 9, 10, 12 feet to the ground, and that collects. And it starts making methane. If you do not believe, go drive into one. It starts making methane. Then we have the cow. And here, we have the stray lot and really have a drop-off. And there is this excrement. And, at this point, somebody has to go get a truck and haul it somewhere else and scatter it as fertilizer or something on a field. The field is where he is raising corn to feed his cows to milk the cows to get the . . . and so, explelling these pods on a grand scale and reduce this to something that a person can imagine. Anybody. A child can imagine it.

If you have a bad weather situation and it dries up, you will find that cracks develop right there in the manure pile. And as they slide down, gravity is pulling this. This is pulling down. This will actually come down and you will get this kind of shape. And so, you get oil here and then you go down a little ways and you get oil here and that is there. So, you may have a section that is productive over a period of a zone of thousands of feet, or maybe only 20 feet . . .

End of Side 1

Tape #1, Side 2

RC: . . . And so, variations in loading and variations in the thickness of salt so you get a situation for the salt to rise from the original dome. As we had gotten out into really deep water, we had these floating salt masses that were drifting around in this soup.

TP: Sub salt plays are a big focus now.

RC: That leads you to the subsalt plays and that is why the subsalt plays were forming when I last did any geology. But they are for real. It is hard to understand. I would not know exactly how to go about interpreting the geophysics, but somebody else you will talk to will know. It has taken us older fellows . . . it has been tough for us to visualize salt floating around, and they talk about sutures and seams. What do they call seams? They do not call them sutures. Anyway, I think I have worn this out.

TP: One question I have is, I am interested in looking at how the industry moved in exploration from South Louisiana which I guess is the area of the Miocene. In the late 1930s and early 1940s, according to Owen, people were talking about late Miocene and finding success at much deeper levels. This led them to think, well, there might be something to

look for in the Miocene offshore. Can you talk about how the industry gained this knowledge about these sorts of Tertiary sediments and began to think about what they might find offshore? I am trying to get to the question of why did they started drilling. Why did they start surveying drilling in the water? What kind of geologic knowledge did they have to lead them to think . . .

RC: The basic geologic knowledge was simply like the guy in the boat: 'What is going to be different out there than is behind me?' And he says to himself, 'Nothing. So, I can go out 50 miles and I am still in 50 feet of water or 20 feet of water. That is virgin. This has been picked over. That is virgin. Let's go there.' 'What are you going to find?' 'Well, I am going to find the same thing that they have on land.'

TP: Yes, the same thing but there was not the idea that well, the sediments might be thicker out there?

RC: Well, you do not know what they are but you do not have a reason because you can start way up here in the late Paleocene continuously with no real substantial time gaps, but your structural changes . . . you had the fossils that tell you . . . They give you and environment and they find that they may have different fossils than they do there but a lot of them have the same environment. And so, you have got biostratigraphy forms. I do not

know whether I have answered your question or not.

TP: I guess it was basically were they thinking that there was a difference between the earlier Miocene and the later?

RC: Well, there certainly does seem to be, and I do not have a good answer for you, but there are certain pods, massive pods, or mini basins . . . Some pods were formed during a time when the sediments that gravity was pulling down were of a different composition than the mother zone. Okay, your wife makes your cake. She does not use any sugar. That is one kind of cake. A kind that is not so sweet. And so, you tell her, 'The doughnut house has better,' so she puts more sugar in it. So it is better. But you say, 'I have really got a sweet tooth and I do not really like cake. I like lemon meringue pie or chocolate pie' – something super-rich. And it is that simple. I mean, the basic understanding of what is in the rocks affects what can come out of the rocks. And that varies. Of eons of time as the feeders into the Gulf changed . . . That is my mail. All I get is ads and magazines.

TP: You mentioned the guy in the boat. Could you tell me the story again that you told me over the phone about the Magnolia guy who you saw as the person who really started thinking seriously about offshore exploring?

RC: Lynn Morrow. The man was a Magnolia geologist in Lake Charles. But first, I need to say something about Magnolia before Lynn Morrow. Magnolia was founded by, as were many oil companies, founded by people out of West Virginia, Kentucky and Pennsylvania who go back to the historic finding of oil at what is New Bradford, Pennsylvania. As the demand grew all the time for oil, because automobiles and things that used a lot of oil were invented, the demand for oil for something other than lighting candelight in your house for a lamp got to be big business. And they were finding less and less in the Pennsylvania, West Virginia, and Ohio oil fields. So, where can we find rocks kind of like these? I have to make this up because nobody has told me! I can see them saying that: 'We are going to starve to death up here. We have got to go find something like this somewhere else.' So, they wind up in Oklahoma, roughly. They went to Kansas, Oklahoma, and extending then on down, going further south. So, Magnolia was founded by those kinds of folks, drillers coming out of the upper Midwest, upper Mid-continent. And they went as far as Oklahoma and you might have the Oklahoma companies. Magnolia got as far as Corsicana, and that is where they were formed. There is a little oil field in Corsicana. It did not amount to pins, but somebody had refined oil there. And Magnolia was kind of a driller and a refiner almost from the beginning.

Anyway, that is where Magnolia originated and other companies had a

similar history. If you go to the big people, the presidents, the vice-presidents in the mid 1930s, at the very top, there is a good chance that every one of them came out of Ohio, Illinois, Pennsylvania. They just followed their nose, because they were also coming from the other direction, from the salt dome country, which goes back to the same time period at the turn of the century. Basically, when the Spindletop and Jennings and a least a dozen of them were found in about two years time. The Gulf Coast industry was started. And then, a lot of this geology since then has just been filtering geology. You had the Pennsylvania and Cameron and for that matter, Silurian, Mississippi. You had all of those, the oil bearing formations, in the Midwest in Kansas. At some point, they figured out the salt and the oil went together. And so, they had the industry founded. I do not know whether that satisfies you or not but it is kind of that simple.

What we had in Magnolia, we had old-timers that did not finish high school running the company. I am not going to try to document that, but I know it is so. But that shifted as we began to use subsurface evidence. Originally, we drilled on top of the highest hill. My grandmother would find an oil seep in a creek, a creek that was oily, and they would drill there. Then that turned into the anticline theory, and the way we learned about all this trap and the kind of rocks that comes out of it. A lot of that was done by people that could hardly sign their name, but they could drill

a well. And so, you had the wildcatter invented who just drilled holes in the ground like with a water witch. But, bit by bit, those folks learned by observation, and became geologists whether they knew it or not. Because they learned what the rocks gave up, and they concurrently were learning how to drill.

TP: After World War I, you had new geophysical techniques.

RC: Right. As far as I know – I am no expert – I have not written any books on this. But in a loose way, science came under the search probably getting on to the 1920s. And then, true science, you know . . . well, maybe before that because by the time the 1930s came on, true science was big – both geology and geophysics. The observations that told them about structures. And so, well, how do we find the structures when there is nothing on the surface? Well, you have got the torsion balance, you have got the gravimeter and eventually, we had seismic reflections. A lot of them came from Europe. Europe did not have the oil seems we had. You read the history and it sounds like the oil came from . . . the U.S. invented all the science. But you got Art _____ who did all the gravity stuff and you got magnetic things. Maybe he was a magnetic man. I get mixed up myself. You began to use forces. All this just evolved just like growing up as a child. It was just evolution. You just grow up. You do not know how you grew up. And so, the industry just, bit by bit . . . this fellow

tells . . . it is a great book. He knew so much and he knew all these people personally. Hell, I even knew him. A good man. A very fair man. If you do read the book, he plays it straight. He is not an Exxon, he is not a Shell. He is everyone. He knew all the Exxons and all the Shells but he was an independent.

TP: So, how about this guy, Lynn Morrow?

RC: O.K., I am sorry. Well, I get so wrapped up in the generalities that people like you do not seem to grasp very well. In fact, you are the one that brought up this subject, not me.

TP: I am glad to have the background.

RC: Lynn Morrow was a nice man. I knew him slightly. When I first went to Magnolia out of the Navy . . . I had to report to work in a Navy uniform. That is all I had. I might have still had a few days left on my terminal leave. What was I going to talk about?

TP: Lynn Morrow. You were talking about the first day you went to work with Magnolia, you were still in your . . .

RC: I wonder where I was headed! Well, I do not know where I was headed,

so ask me another question. It led to Lynn Morrow somehow. I worked in Oklahoma and New Mexico for one year. Then, I went to college. Then, when I left Wisconsin, they sent me to Lake Charles, Louisiana. And that was like in March or something like that of 1948. That is it.

Lynn Morrow was no longer with . . . he lived in Lake Charles but he was no longer with Magnolia. He was with a company called Vincent and Welch, which was a strong independent at that time in that part of southwestern Louisiana. So, he was known . . . Lake Charles at that time had a population of maybe 20,000 people. So, you get a scientific group, and everybody knows each other. I knew Lynn and his charming wife and son. As we got into the offshore, I asked the question: 'How did we get into this?' So, someone said, 'Well, people in Dallas began to wonder a long time ago,' but at any rate. Finally, we get to a letter, and the letter was from Lynn Morrow to his boss who was named Phil Jennings. Phil had responsibility of the Gulf Coast generally. They were both out of Houston. Up to that point, Magnolia was not an aggressive operator east of the Sabine. They were heading into Texas, in including all ports, but they were prejudiced. The team would hear them say things about Louisiana-ians. I do not know how to deal with Louisiana lawyers. You do not know when you do have a deal and you do not know when you do not have a deal. And so, Humble and Gulf already got all the good stuff locked up. Anyway, they were not an aggressive operator but they did

have an office and substantial production in southwest Louisiana. So, they all got to know each other. So, people . . . I imagine . . . I am guessing now, and I do not want this to be written this way because I am guessing, but I am guessing they were on a party boat. That is speculation. But anyway, Lynn's letter said that he had come to wonder about what happened to the shoreline. What was magic about the shoreline? He could not see any reason why there was not as much oil and gas offshore as there was onshore. And that about bypasses the story. So, he would recommend that the company try to find oil out there as in the virgin province. So, he drew his map. It was in published reports, just estimates, and they estimated what was there and what was here. They flipped it over and said . . . equal area construction, and said that will be that much less . . . and he did this out to the 50 foot line. Which he said, 'Hell, anybody ought to be able to operate, do something out in 50 feet.' I had to drive about one-quarter mile on the wooden Causeway to a wooden platform in the Gulf just off Cameron. That was not really considered offshore. That was a dry hole. It was not really offshore.

TP: I remember a story about when it actually dawned on Lynn to start thinking about offshore.

RC: The story that is told about Lynn is that he was not feeling well when he reported for the fishing trip to Cameron. And instead of going inside and

smoking and lying to the healthy crowd, he got a chair, a stool or something, went to the fan tail and tried to get away from all that and get a nap. So, as they were shoved off and whatnot. He observed the water and all that and talked to the deck hand, then went to sleep. And when he got woken up, there was not any land. He was just out there. The boat was still churning. They were not to the fishing spot yet and so, he again asked the deck hand, “It is muddier than hell out there. How far offshore are we?” The deck hand told him, "it is within fifty miles I imagine plus or minus. So he said, “Do you mean we are 50 miles offshore and we are only in 15 feet of water, or 12 feet of water?” He said, “Oh, yes, sir, and if we go this way, we can go even shallower.” Something like that. Half of me is making up the story but that is Lynn’s story. That has come down as the way it was and at that moment of time, and I do not have that moment of time. All I know is by the time I got to Lake Charles, Lynn had left. He was a Ph.D. and I do not remember where he came from originally.

TP: So, when you got to Lake Charles, this would have been about in 1949 or something like that?

RC: 1948. I had left Oklahoma and New Mexico and spent 1-1/2 years in Wisconsin. That is when I went to Lake Charles.

TP: So, Magnolia already had this early platform that they used steel pilings. Kerr-McGee had its KerMac. The Tidelands issue was starting to come up.

RC: Was not that the ownership issue?

TC: Yes. Were you charged with exploration offshore expressly?

RC: Yes and no. Originally, in Lake Charles, I was simply a well site geologist. For a month or two, I did not have any area to work. I would go out as a season geologist for about one month or six weeks. Of course, we never quit doing that, not in Mobil. Everybody was subject to being sent out on the well.

I did not get any formal training. I just roamed around the halls and talked to people. Then they gave me . . . There was a feeling right in town . . . a very old salt dome, small salt dome at the edge of a lake. Kind of an ugly place. Old field, dirty. Oil on the lake water. I am stumbling trying to remember the name of it. Anyway, there were lots of wells of all ages. I used some well logs that were pre-Schlumberger and well logs after Schlumberger. It was a drilled up field, old age field, but there still . . . the fresh mapper would come up with new places to drill. So, I became that fresh mapper. I drilled the wells and they made wells. They would say,

'O.K., he is a keeper.' And then, I was assigned Towbin strip [sic].

It ran roughly, the old highway 90, I guess it was, which is the east/west highway connecting Lake Charles and Jennings and Lafayette. Those rocks were mostly field-age rocks. I mapped those domes from public information, publicly distributed logs and I came up with prospects. I do not know whether I made that well . . . one way or another, I got involved in discovering an old segment with deeper rocks, and a new segment, too. It was a big piece of the pie, on the northwest side of the Arbor field. We drilled a whole lot . . . that got us into the Hatbury, which was a pressure change . . ., it had a pressure change from the field to the Hatbury. The well site geologist's major job was to sit on the well and make sure you caught that pressure transition before the well blew out! So, you did that partly with paleo. And so, I would pick up samples . . . it was only 10 miles out of town . . . I would pick up samples and take them in to a paleontologist. On occasion, I would take them out in the middle of the night, because he did not really have to have those sands washed professionally. He could do it in the bathroom and good enough to tell whether we had the breakover fossil, and you only had about 50 feet of leeway and pressure. And so, he did not have much to work with. But that is what I did. And well, you know, the map would change and so, I became a respected member of the staff.

By this time, they had a geologist in Morgan City. They had only one guy in charge and they had one guy that would go out on the wells. So, that made us shorthanded. So, I was the new guy on the block. After I had been there . . . well, all the while I was in Lake Charles, I had made rounds to Morgan City and would go sit on wells offshore. But that was just sitting the well. They would not necessarily expose me to geology. I was just supposed to log the well at a specific depth or something. So, I guess they thought I did all of that all right.

So, back to this exploration business. It did not take me long and it was not even a secret that Magnolia did not really do anything east of Lafayette. They had that little square in southwest Louisiana and that was their territory, so to speak. But that was not any map that that was that territory, so to speak. So, I related the geology on the north side of Lake Ponchartrain with the geology on the south side of Lake Ponchartrain.

I got permission to work on that in Lake Charles. Before I got through, I had prospects in Lake Ponchartrain that were going to be reef prospects like they had in West Texas and New Mexico. So, I was using a model that I had used before I went back to Wisconsin. I was using Oklahoma and New Mexico geology, which was not Miocene, in Lake Ponchartrain. And so, they shot it and drilled it. The geology and the geophysics drilled out but there was not any oil well at that depth. Maybe today, if we had

drilled all the way to the Tuscaloosa, there might have been oil there. But at any rate, on the other hand, that got me moved to New Orleans. They decided well, we find this oil in the Gulf and then we know that they are now drilling all over into the east of the river into the East Bay area and Chandelier Islands.

TP: What year was it you moved to New Orleans?

RC: I moved to New Orleans in 1951. I would have to look it up. I do not think it matters anyway. I was doing the work before I moved over there.

TP: Some time during that hiatus in leasing because of the Tidelands issue, with the Supreme Court challenge . . . the Tidelands legal battle over . . .

RC: I do not know. I actually was in New Orleans before that was hitting headlines. The guys in Morgan City . . . There was a period there where my status was kind of fluid. They were not sure . . . so I was kind of an experiment. After a while, I flooded them with enough prospects and whatnot . . . anyway, the interest became permanent and we found the field in that lake bed. It was not commercial but it made a well. And we got two wells, I think. But, at any rate, they let me join the petroleum club.

So, one thing led to another and bit by bit, I was accepted in New Orleans. I had gotten Magnolia some recognition. Magnolia was in California or something when I moved. They had never had a representative in New Orleans. So, I went up to the meetings and I went to the luncheons . . .

Bit by bit, I met all these Shell people and the Humble people and the Texaco people. Not many because they would not let them join anything.

TP: Texaco would not let them join the Petroleum Club?

RC: If Texaco caught one of their geologists that say had been to the same high school or something, even if they were lifelong friends, having lunch with each other, and one of them worked for another oil company in New Orleans, he was the dime at bottom of the ladder if he was not fired. And checking out a map from a map file, you are talking about in Texaco, you turn those maps in at night – every one of them. They went into a vault.

TP: I heard some of the same things about Shell.

RC: Shell was just as bad at that time. Shell was even worse because Shell, you would never know . . . Texaco basically leaned heavy on LSU graduates. Shell, you did not know where they were going to come from. You did not know what language they were going to speak. We had

Dutchmen coming and going, and Frenchmen. They did not want anybody that did not have a Ph.D. At any rate, I do not know what my point was, but they did not discourage . . .

I did come to know Jules Braunstein. He was different and Shell left him alone. It was impossible to figure out what Jules did except every now and then, he would publish a paper. And everybody else in Shell was publishing papers, but most of it was out of the research lab in Houston. Operational people, that was just a no-no. I have forgotten what your question was but Texaco and Shell did not encourage mixing.

TP: Did any other big companies – Gulf, California . . .

RC: California Company, was probably the most successful operator I know in that period. Of course, I am not talking about offshore. I was talking about on land. But yes, they made their reputation on land, and then it became offshore. They came in from left field and did drill well. They had two or three brilliant geologists and they got money from California . . .

TP: They did not have the land position that companies like Humble or Gulf . . .

RC: No, Humble, Gulf and Texaco had souped up almost all the domes.

TP: That goes back to the sublease with LL&E, right?

RC: Well, I do not know about the Texaco lease situation. I know they had that state lease that went to infinity to the south.

TP: I have heard about this. Where did this state lease start?

RC: It was Huey Long. I will have to look that up. They managed to hang on to some of that that got under the true offshore and found fields on. But, I am sorry, I do not . . .

TP: I can look it up. I have heard about this . . .

RC: You see it on the map.

TP: Texaco actually challenged federal leasing?

RC: The margin of the lease was a fence seaward. Here you come along here and you are looking on the lease map and suddenly, you do that. And really, it was open ended down there, but people at some point . . . The State of Louisiana did not like that and they went ahead and put the

squares on the map. I think they made some kind of deal with Texaco, but I do not know. That is at least a whole chapter. Texaco state lease something or other.

TP: They got that from Huey Long.

RC: Well, it goes back to Huey or before. But I assume it is Huey, as was some of that Gulf leasing in the bays east of the river on the east bank of the river.

TP: Was Huey connected at all to LL&E?

RC: Not particularly. LL&E, it is in there. LLE& was before there was a Union Oil and had the minerals. There might have been a cozy relationship, but I do not think Union Oil had anything to do with that. I cannot remember anything about that.

TP: We were talking about the California Company's onshore play, and it is pretty impressive since they did not have the same kind of land position that some of these other . . .

RC: Speak louder.

TP: It was impressive what the California Company was doing because they did not have the same land position as Texaco.

RC: It sure was but what California did have, they had some good geologists who decided, 'O.K., they have got the damn domes. The domes come up from all over. So, that means there must be oil between domes.' I mean, it is really a pretty simple line of thought, but because they did not show . . . that meant they were often bound in a hole, you had to come down depth . . . The whole idea of the down side of the east/west faulting, gravitational faulting, was fluid. They just came in and figured out where some faults might be projected to, and pushed them out away from the dome. You would come down off the dome in the syncline and here is a fault coming here. And people used to just draw it out there. California found the way to map it. And then, you kept on in these linear fields east and west, and good rocks, at low cost, with good oil and good porosity. Good fields. You can look them up in the books. The New Orleans Society and the Lafayette Society put out a book on all the oil fields found . . . And since the last book was that . . . So, that was California fields, California Company fields published.

TP: When were those discoveries made, in the 1930s probably or 1940s?

RC: In my memory, everything the California Company did was postwar. I do

not think there was a California Company in Louisiana before the end of the war.

TP: So, they did onshore. And then, they were big offshore, too.

RC: Well, you say Bay Marchand and I see a field that existed before the war. And you think of an offshore field, but Bay Marchand was an area.

TP: In some ways, it is not even offshore.

RC: Yes, it stradles the area but, Bay Marchand just turned out to be bigger than anybody thought it was. It just kept growing.

TP: And the early leasees onshore, they did not find oil. Other companies had been drilling on or around Bay Marchand before California.

RC: Yes, well, there was no doubt that you have a story to write about the California entry and in Louisiana and its emergence as a key producing area for the whole corporation, and I am not sure I can help you with it.

Magnolia had nothing east of Lafayette here except for what we had acquired offshore.

TP: We are coming back from lunch and picking up with the story about Mr. Clark in New Orleans.

RC: Well, in New Orleans, we did not ever accomplish anything to speak of on land. We made some discoveries of minor note. But eventually, the offshore activities west of the Sabine became part of the New Orleans territory. So in a way, my job, which had little to do with the offshore when I moved to New Orleans, grew under my feet.

TP: Even though Magnolia had pioneered some of the early platform piling technology, they still were not that involved in offshore state leases?

RC: They were in onshore state leases. We did quite well in sales but we did not dominate anything. But as your friend with the POGO probably said . . . you said you had interviewed him recently?

TP: Bill Gipson?

RC: Bill Gipson. Well, he probably had some nice things to say about Magnolia if indeed that came up.

TP: I do not think it came up. We talked mainly about POGO and Pennzoil.

RC: Somehow, I had gotten the idea that, or maybe I got a wrong idea. But anyway, we bid quite a bit with Pennzoil successfully over the years, and have had a harmonious relationship with them, at least until the time I left.

TP: So, Magnolia did have a presence in shallow water and the state waters.

RC: I remember finally we found a field in the Lake Misere area in southwest Louisiana. It was quite a large gas field. That was state water, totally state water.

End of Tape #1, Side B

Tape #2, Side A

TP: . . . the first federal lease sale was 1954. The mid 1950s is when offshore really started to take off. I am curious about what Magnolia's position in all of that was.

RC: Well, Magnolia's position was that it got stronger. Part of why it got stronger had to do with the Suez crisis. You are too young to remember this.

TP: I know it was in 1956.

RC: What the Suez crisis told America, the United States, was that it was not in the position to fuel a world war. And also, that the inland fields that were being found in the Midland basin and the Rocky Mountains, while important, some of them very large, were not enough to help much in an international crisis. And also that you could not get the Midland Basin oil to New Orleans or Houston. You had to ship it somewhere else. The Tidewater was the road you used. You could not get it to Tidewater fast enough in case of an international crisis. So, that affected Magnolia's attitude. The determination to improve our situation offshore and onshore, was strengthened. This had an effect on what Magnolia did.

TP: I guess I have always discounted the Suez crisis because I thought, well, you know, the majors had the big fields, Aramco had the big fields in the Middle East, but I guess for companies like Magnolia for the whole domestic industry, it probably did have a big impact.

RC: It had a huge impact. One thing that I think it caused was it caused us to buy a one-half interest in the Lake Washington field south, on land, in the marsh, south of New Orleans. It was a 100,000,000+ barrel field with two owners; John Mecom and a company that had . . . Freeport Sulfur. That was a $100,000,000 deal for Freeport's interest. I am trying to remember whether it included part of Mecom's interest or not. But, at any rate, that is something that happened that I know was truly, well, almost truly, a result of the Suez crisis.

TP: Well, and probably, too, there was a hiatus in leasing because of the state federal . . . the Suez crisis probably accelerated the Interim Agreement which allowed leasing to go forward again.

RC: Well, it is so long since I was involved in any of this, and you are involved in it right up to here. I am not very good on those dates and rulings in the state/federal . . .

TP: I have all that. Well, that is interesting.

RC: Well, I do not think we were the only ones. I think all these companies that relied on big fields in the Rocky Mountains, the Midland basin, New Mexico fields, and West Texas fields, started taking that into account and putting money closer . . . Midland began to decline, so to speak, and the coastal cities had begun to improve in a sense of management of money. Marathon never used to come to . . . They had no presence when I was in New Orleans at all. They were out in the Rocky Mountains looking for another whatever that big field out there is.

TP: That is interesting.

RC: There was a scandal. I do not remember what it was about. The McKinsey people had been in town, widespread through the industry. They said, 'Well, you have got to have your . . . if you are going to preserve what you have got, you have to have your people sign a lawyer deal (confidentiality agreement). That way, when you take them to court, we will slap their ass in jail for the rest of their life. And then, it will not happen again.' So that was the party line in New Orleans.

TP: This is in the mid 1950s?

RC: The mid 1950s. If anything, leaning towards 1960. So, I got a letter from

headquarters, from the president, telling me about this confidentiality agreement and that I have to sign this if I am going to continue to be employed. Well, I did not sign it. Time went by and a vice-president in Dallas called me. This was when Magnolia was moving to New York so it must have been the late 1950s. Anyway, they said, 'Robey, what is the problem?' And I said, "Well, as far as I am concerned, there is not any problem but I am not going to sign it." And he said, "Well gosh, Robey, that can have consequences." I said, "Well, if it is going to have consequences, let it have consequences. But I will write you a letter explaining my position." So, I wrote a letter and I contrasted the number of people on my staff, the number of people on California's staff, the number of people on Shell's staff, and the number of people on Humble's staff. I probably did not mention Texaco . . . and I said, O.K. Now, I go to the Petroleum Club which is in the Shell Building, I should say, for your benefit, 3rd floor. Anyway, I felt that when I met with these people, I came out with more than I ever gave. And also, I do not know how you do any business if you do not talk to your competitor. I made a page out of it. That is basically . . . I never heard another word. So much for loyalty. I did not sign it. It did not hurt my career. It may have helped it, for all I know. But anyway, I got that little story out of the way.

TP: That is good. Industry, especially facing the technical challenges offshore, they could not afford not to talk to each other. Facing the daunting

challenges offshore, the companies could not afford not to talk to each other about what they faced as an industry, right?

RC: Right, well, of course, this is why you have industry organizations . . .

TP: The OTC convention in the late 60's.

RC: Yes, and producing, something or other America . . . production side of the game, their conventions. I just cannot think of their name particularly when I am trying to think of the biggest producing organization. But what I do see, and this probably does not have anything to do with this interview, but what I do see is that exploration information is being published almost as fast as it is happening.

TP: These days?

RC: These days, yes. You can pick up, if I can find one, any of the trade magazines. *Oil and Gas Journal* . . . if you read all the ads from all the seismic companies and you have got anybody that knows any geology or geography of the offshore at all, you can pick out the fields. More likely, they are actually labeled and they show how that oil is trapped under seal and so on, and how they mapped it, how they succeeded and how big the wells are. Anyway, it is public knowledge.

TP: But not so back in the 1950s?

RC: No. There is no doubt that in the late 1940s and the 1950s, there was a serious effort to prevent independents from coming offshore. Brown & Root screwed that up. They and their affiliates strong-armed and bought leases that found big fields. That would have been unheard of a few years earlier.

TP: In the mid to late 1950s, the majors and Brown & Roots were discouraging independents from getting offshore leases?

RC: No, Brown & Root was getting offshore leases under whatever name. One name may come to me. It starts with an H, like Highland. It may have been Highland or Highland Resources . . . was Brown & Root. I may have that wrong but they had a company with a different name from Brown & Root. They worked hard, and they did acquire. And they had good interpreters, and there was actually an . . .

TP: I think it is coming to me that they did actually have some oil interests, but was it very extensive?

RC: I remember one lease that was the one I really wanted and did not get it.

A lot of other people wanted it, too. The whole industry was surprised when Brown & Root walked off with one of the best tracks at the sale and had pulled out that way.

TP: Was it a state sale or a federal sale?

RC: It had to be a federal sale. I think it was Block 207, something or other. But it may have been a south addition. But it has been a long time ago.

TP: I know in the 1950s, the California Company and the Shells and Gulfs, they dominated the offshore. Were you there for the big 1962 sale?

RC: Yes.

TP: That opened it up a little more.

RC: That was a good sale for Magnolia.

TP: Was it?

RC: That 1962 sale, we bought a lot of leases but it was not as good . . . did not find as much as we did in the 1960. 1960 was a good sale for Robey.

TP: I know in the late 1950s and early 1960s, I see in some of the literature, that there was a return to salt dome geology. I mean, companies had started to get away, looking at faults and different kinds of . . . I have seen an article by Halbouty, and some of the Shell geologists I was talking to . . .

RC: If Halbouty ever found a drop of oil offshore, I do not know about it.

TP: Well, I think he was mainly talking about onshore, but also maybe they are looking for more deep-seated domes, I do not know. Was there a new way of studying salt domes in the late 1950s that you can remember, or were you always studying salt domes?

RC: I was going to say, our first fields were Eugene Island 126, Eugene Island 128. Both of those were 100,000,000 barrel fields, more or less and they were salt domes.

TP: So, there was not a different strategy that you took into the 1960 and 1962 sales?

RC: Well, as the information got better and you got bright spots, the bright spots came to be believable wherever they occurred. It may be that simple. I do not remember. I was there, but I do not really remember that

happening.

TP: But bright spots are later 1960s, right?

RC: Well, bright spots were . . . I really do not know. I would have to . . . but certainly by the late 1960s, Magnolia was using them and Mobil, I guess. They were not called Mobil until after 1960. But we had a research lab in Dallas, and had some real outstanding people – not very many but a few. They were as good as any. We were using bright spots.

TP: How early do you think you were using bright spots, do you remember?

RC: Well, I cannot remember exactly but I remember the . . . you need to know this anyway. From 1955 up to an arbitrary date, but from 1955 on, analog began to be challenged by digital. But to do the digital, you had to have enormous computing capacity, which most of the companies did not have. And so, a temporary lead was probably . . . Processing was probably in existence until about 1961, 1962, 1963 maybe. It depends on the company. I do remember, and I want to say it was 1960. I could be wrong on that. A big conference was held. Our lab was in Dallas, our research lab and the geophysical lab. It was a lab that was just devoted to geophysics . . . going to a meeting and the basic discussion of the meeting was whether to join Texaco in 50/50 in building a newest state-of-the-art

digital computer complex to apply to seismic work. Which, as far as geology was concerned, as far as exploration was concerned, digital did more for seismic than anything else.

TP: Was it not Texaco and Mobil who contracted for the first digital recording by GSI, right?

RC: Yes, I think that is right. I think that that was done in the mid 1950s. And then, at the end of the decade, they saw that they had to make a leap or they would be falling behind. And I remember that they grudgingly said, "Well, we are going to go." And they did go. But I do not remember much about that because . . . Well, I guess we did go and I just do not have that in my mind. But I wanted to bring out that transfer. The basic point is that there is a change in the scale of work that could be turned out, so that everybody, before long, had as good a data as everybody else. And the interpreter, the understanding of the geology became as important as the data because everybody was getting to do digital. There were always a few holdouts, and indeed to this day, individuals that will say, 'there are some things that analog can do as well as digital and a whole lot cheaper.'

TP: It was the new digital technology that increased the amount of data and provided better data that made people begin to see bright spots.

RC: Because we had the data capacity, you went to multiple channels in your

geophysics. But it is part of the digital revolution.

TP: I have heard from people I have talked to that Shell always claims that they discovered bright spots, and if any company did it before or at the same time, it was Mobil . . .

RC: In my experience, there were two companies that claimed they invented bright spots, and I mean, got angry about it. Most companies would say, 'What is bothering you? Why are you so proud of bright spots? We found lots of fields with bright spots and we were in it.' Well, I do not know what I was going to say.

TP: But Mobil was on to it early, about as early as anybody except maybe Shell.

RC: I thought we were. I can even remember buying leases offshore. We had an electric log expert on our central staff in Dallas. He was a truly devoted, half-blind, and totally devoted to his work and to his company - almost more or as much as anyone I ever saw. But, at any rate, he began to notice that in shallow depths, let's say, 3,000 feet and say, 1,500 feet maybe, he would see a strong velocity contrast that would just go at you. It was so strong, the change was so strong. It did not make sense for there to be oil at that depth . . . in your more conventionally determined, without drilling. But he said, gas in the higher porous sand at 3,000 feet . . . If it

was tight sand, forget it. His words did not count. But if it was in porous sand at 3,000 feet and it has got gas in it, you are going to have a hell of a visible impact on the seismic record. I am trying to think of the seismic terms and they escaping me. So actually, Mobil perforated some of these things or took sidewall cores cause and said, "Well, yes, that is gas." And then, that then led to if you can see gas, why can't you see oil? So, there are reasons why the oil is going to be harder to see than the gas. A coefficient of something or other.

TP: Yes, I have heard that. Who was the guy at Mobil who was on to this?

RC: I was trying to think of his name. Write it down. He was well known in the industry. I was his second student. They sent me to Dallas for six weeks or something to learn how to analytically read electric logs.

TP: These profiles where you saw this, you know, what they called bright spots, were those in the Gulf of Mexico or were they somewhere else?

RC: Well, they were mostly from the Gulf of Mexico. The ones that I saw were mostly from the Gulf of Mexico. But our international people were seeing these in Nigeria. And so, you put that all together and within a very short time . . . we did not call them bright spots. We called them hydrocarbon indicators. HCIs. That was our in-house abbreviation –

HCIs. Hydrocarbon indicators. That was a good name. I always thought to myself, Shell claims all this, and they have got a grade school term for them: bright spots. That does not sound high tech at all to me.

TP: Was it Fred Hilterman who was . . . ?

RC: Fred Hilterman used to work for us. I think by this time, Hilterman was already in academia. Do you know Hilterman?

TP: Well, I knew that he worked on bright spots for Mobil at sometime.

RC: Hilterman did not have a Ph.D. He was in Shreveport, I think. We had a man, an old geophysicist, I mean, an early days geophysicist, who called down that Hilterman was something special. He told us to send Hilterman to college. He was a rare person. And so, that is what happened. Except Hilterman never returned to Mobil.

TP: O.K., I did not mean to interrupt you. You were talking about Mobil's name for bright spots . . .

RC: HCIs. Hydrocarbon indicator. One of our men at the research lab . . . We had one world-class, good as any of Shell's, guy – Albert Musgrave, who wrote a ton of papers and it was one of the best in the world. He got

Parkinson's and died fairly early. He was our geophysical great scientist. Albert Musgrave. Even though he had Parkinson's, his mind stayed pretty bright, and he continued to contribute for a long time, almost to his very last days.

TP: He was not the guy you were thinking of or is that the guy you were thinking of?

RC: He might have been the guy that came up with HCIs. That is why I am saying this. I do not know who came up with it. It just came out in a little piece of paper and said we need to call these things Hydrocarbon Indicators. And not given them some . . . which is what they are, what we were using them for.

TP: But he is not the name of the guy whose name you were trying to think of.

RC: No, not the electric log man.

TP: When did you really first bid using bright spots?

RC: Oh, I do not know. That is kind of a seamless thing. We probably used them before we knew we were using them for that. You know, geophysicists, if they have a big glaring change, they will also bid the hell

out of it. I do not know what it is, but it is not water!

TP: So, probably in 1968, 1970 . . .

RC: Oh, that is in the 1970s. I went to work for Diamond Shamrock in 1971, and I told myself that I knew about bright spots. Diamond Shamrock did not. By then, bright spots was old stuff to me. But, at any rate, I made a promise to myself and to Mobil. I went to New York and had a session with our chairman when I decided to leave because they were concerned because of my length of time in the Gulf of Mexico. And I knew where all the bodies were! So, I was called in to New York and had a very gracious meeting, but our chairman, he brought up the subject and I said, 'Well, I am never going to dishonor myself by doing something that Mobil Oil Corporation would not approve of me doing.' Those were not the exact words but that is close. They said, 'Well, that is good enough for us,' and that is the way it has been.

So, I came to Diamond Shamrock and I told them . . . they had decided that they had to be in the offshore if they were ever going to get out of the Panhandle. You know, they had a very strong position in the Panhandle but the Panhandle was getting close to 80 years old. So, I told them I would not make recommendations at a sale until a year had passed. And I did not. But they had gone ahead and they had bid with Sun Oil. Sun was

very late coming offshore and really did not have a top-of-the-line technical staff. At any rate, they put together a bidding group and Diamond Shamrock had, I do not know if it was 7-1/2 or 15%, interest in it. They went to sale with Sun. I had nothing to do with it. I mean, I watched, but I did not . . . I was just a sideliner. And they were successful in West Cameron and some tracks just across the line in Texas. Anyway, they got a very small piece of, I think, five commercial fields out of there. Well then, after that was over and it was clear some of our partners knew something about bright spots, I turned to their head geologist who was a friend of mine – that was back at LSU – told him that I needed to talk about something new. And I went through some of the bright spots on some of the things they had bought, and told him that I would have known that was production. I will not remember his name. Anyway, he got hold of their research man, and they sent an entourage of their top research people. And I made speeches for two or three hours, and I got puzzled looks and whispers and frowns and all sorts of things. Anyway, from then on, we openly used in the Shell/Sun combine through a couple of more sales where they also had success. And got them in a position . . . The weakest part of their position was they did not take much interest. But, at any rate, their entry into the Gulf of Mexico federal sales out of the swash zone were influenced by what we called HCIs.

TP: Well, companies had to have known something was going on when they

see Shell and Mobil . . .

RC: There was a loop within the industry, yes. Some people could figure out what was going on and others had contacts that told them just enough so they could go figure it out for themselves. It really did not take much. And then, they could go figure it out for themselves. And yes, there was about a two year period of mystery. And after about two years, well, it is common knowledge. But I never got into . . . I felt good about what I had done and so, when they bought other things with Sun later on, we went right ahead. And then, we also built Diamond Shamrock with . . . we were taking it with POGO and made some successful bids. Some of that was reinforced by HCIs, but some of it, we would have been on by structure alone.

If I am remembering right, I would not want you to write this, but there was an industry map that was reputed to be a Gulf map of south Louisiana and parts of the offshore. It was a gravity map. I guess you are aware that gravity does not change. We have started this talk about gravity.

There was an area that close into Shell where I made an analysis of production on nearby fields and area, and concluded that there was an unfound field. The geometry told me there was an unfound field. It was near the change between land and water. That Gulf map which everybody

in the industry had . . .

TP: It was a Gulf Oil map?

RC: It was a Gulf Oil map because granted it does not change, it can be 15 years old and it is as good as a bad Newman. You cannot say that about sites. There are too many new things. But gravity does not change. So, that was, to me, the gravity went out at the wrong place but there was one gravity point. A gravity man would not ordinarily . . . geophysicist ordinarily would say, no at one point. But I said, there is a salt dome there. And there was. POGO bid with us on that.

TP: Do you remember what field that was?

RC: I am not going to say and I do not think you would ever figure it out. You would not be sure. But, at any rate, I just wanted to point out several things. We have not talked much about gravity, but gravity was used a great deal, particularly in shallower water. And then, they went to seaborne gravity.

TP: You had to use gravity because the reflections were not that good in the Gulf. Sometimes, gravity was all you had because reflections were not that good.

RC: Right. But a lot of people discounted gravity. You cannot tell from one point what gravity means. You have got to have a matrix of gravity points for it to have significance to the interpreter. But, at any rate, we have not talked about gravity. But throughout all these sales, many companies used gravity as an adjunct.

TP: Yes, especially in the shallower water.

RC: Yes, because often in shallower water, the sites went to hell, and still does.

TP: Why is that?

RC: Well, you had so many reflectors close together, for one thing. You got the bottom which is, instead of being maybe 100 feet deep, it is 2 feet deep. And so, you just have all sorts of major geoforms across the swash zone. You have just got a multitude of interference that makes it just very hard to precisely configure a structure that occurs in that area. I mean, that is just a natural phenomena. You can keep improving it, but you cannot get over it altogether unless you dig very deep shot holes.

TP: Does it have to do with the water reverberation problem?

RC: Part of that is the reverberation of the bottom itself which is salt. I do not know. You burn dynamite. Anyway, the fact is that it is very hard to cross that, and if you read your ads in the *Oil and Gas Journal* and such, there are people advertising that is our specialty, is we know how to cross the swash zone.

TP: The swash zone refers to what?

RC: Well, that may be my Navy influence coming out there but to me, it is where the water swashes up on the land. It is just . . . and then 10 feet away, it may be swashing the other way. But you have down in bottles in the Gulf now that bears with the tide, which direction the wind is blowing, and how hard. It is tough.

TP: Well, I wanted to maybe get back to Magnolia again. What were some of the most important fields and most important discoveries from your time as an exploration manager with Magnolia offshore?

RC: Lord have mercy!

TP: You asked me to mention Mobile Bay at one point.

RC: I did not expect that question but I must have been involved between

Diamond Shamrock and Mobil. Surely, I was involved in 50 or 60 discoveries. Not all of them were a whole field, you know.

TP: What were your most memorable ones?

RC: Well, I think the one I enjoyed the most may not be the biggest field, but was the one I mentioned. The one where I stood by my guns on the gravity point and wound up buying a salt dome, which I did by a logical procedure. I analyzed all the themes around it, and they are kind of getting an average of what a field ought to have and what caused the field. Anyway, I really do not have . . .

Boone Pickens asked me that one time and I said, “Hell, Boone, I do not know how many fields. I work for a big company." And over my experience, with partners and without, we must have made hundreds of bids and must be involved in scores of fields. By the time it is over, I am looking for the next one. So, I do think that the idea of mini-basins, that we were on the leading edge of the people that played mini-basins. And, you know, I drilled all this stuff going down to the slope. But if you have some underlying salt features so that you can postulate ridges, so that you may have a number of . . . Well, the best way is to have a figure five spot. "One, two, three, four, five spot, make a five spot." If you can see your spots you analyze your thinning and you can find a little basin as part of

an overall big trend. And a great many people will never see it, or fear it is too small. There will not be any production. Well, at any rate, on several occasions, probably with Mobil and Diamond Shamrock, we were able, with the concept that these minibasins are big enough to support a big oil field or gas field mostly -- because mostly there is gas in the western half -- to bid on it. And so, we began to do that, and it worked. And we found some significant fields that got very little bids. So much so . . . These big companies, the chairmen, if they do not have any competition, you fucked up. And so, on some of these, we did not get much competition and people were saying, "You just left it all on the table. Why did you do that?

TP: You bid on what you thought it was worth.

RC: Well, you would have to bid, yes. Did not use to. In the early days, you just tried to bid what . . . you would try to steal it. Later on, if it got to be a mature enough price, nobody figures you are stealing anything.

TP: In the early days, you had sort of seat of the pants bids.

RC: Yes, well, and also, it was not as picked over as much.

TP: So, when do you think it really changed? When did your bidding have to

become more rigorous?

End of Side A

Tape #2, Side B

RC: I was in Denver, and I came to New Orleans on a visit. No, I was in Houston, and I came to New Orleans on a show and tell. What was the question?

TP: When did you see real change in the bidding, the analysis of . . .

RC: That was 207 Ship Shoal, South Marsh Island. That was a very desirable structure looking there, but it was getting quite a way off shore. And I think Highland Resources, which I think was either Brown's outfit or one associated with it, bid about twice what anybody else bid and bought it. And it was a big field. That changed the industry. That sale, if I could figure it out, changed the industry completely because, from then on, the POGOs, the Highland Oils, all kinds of little consortiums of small companies figured they knew enough to bid and bid high. And the people, I remember . . . I was in Houston, so that nailed it down to the late 1960s.

TP: It was probably the 1970 sale.

RC: It might have been the 1970 sale. I remember speaking with the big companies . . . I am talking about coffee conversation, saying, 'God damn it, we ought to have something to keep those little fellows out. They are just muddying the water. We pioneered this and we learned how to do it and now, we are not getting to enjoy the fruits of our labors.' That is all made up but, I mean, there were people in large companies that were thinking that way and resented, terribly resented the small companies coming in.

TP: Well, a lot of these small companies established their presence in around the 1962 sale. I do not know how much acreage . . .

RC: Yes, but the 1962 sale, a lot of tracks were dry. I cannot remember why but it had a hell of a high percentage of tracks that were overbid. We overbid some of them, and we were not the only ones.

TP: There was so much offered . . .

RC: It was a huge offering. You have got all that information more recently in your head than me because I had not thought about this kind of stuff over the years.

TP: In the tract nomination process, if something is good enough for some company to nominate it, then there is a pretty good chance that it is . . .

RC: People pull up acreage just hoping somebody will bid on it and reduce the competition on what they want.

TP: So, they would put up tracts to sand bag the competition.

RC: And I think that happened in 1962. It was a huge sale.

TP: I do not think there were nominations. I guess there were nominations but they opened up so much . . .

RC: There was a huge amount of acreage for sale, and that meant there were a lot of prospects for sale. Prospects came up in that sale that I did not know about, that our people did not know about, and I imagine we put some up that other people did not know about. In a way, it was too much acreage.

TP: So, you do not see the independent establishing a real presence, becoming a real force offshore until about 1970?

RC: Yes. I think you could . . . Sun Oil Company as kind of a date to . . . That

would have been 1971 or 1972 . . . they never had done anything offshore. And yet, they started out from zero to form a consortium of small companies. Clark Oil was one of them. At that time, Anadarko, which was not a behemoth at that time, was in that consortium.

TP: Forest Oil?

RC: No, not with that Sun Oil group. This was with Sun.

TP: Oh, you are talking about the group . . .

RC: The group, who was in the group. Clark Oil, Diamond Shamrock, Anadarko. At least two companies are missing. Michigan. The Consumers Power in Michigan. I forgot what they called themselves. They were in that sale and at least one other company. There were a whole bunch. And we did real well. I know there were at least three substantial commercial fields that came out of that with the Sun group having the dominant position on the structure.

You need to talk to somebody else about the advent of . . . do you know this fellow John Sneider?

TP: No.

RC: In Houston?

TP: No, I do not.

RC: An old man. Fat old man. Bald headed. I mean, not pretty! Bigot. You ought to look him up in the Houston directory and just have a talk with him. He was a geophysicist and a geologist. I am sure he belongs to all the societies and he has written books and papers and people listen.

TP: Who was he with?

RC: Himself.

TP: Oh, just a consultant?

RC: Yes. He has been with people but I think nowadays, he is just John Sneider.

TP: But he is still active?

RC: Yes . . . That Schlumberger and everybody used, that really found that resistivity of the mud, electric log, resistivity of less than one-half ohm,

was unproduceable. It was negative. It either was just all water; there was not enough oil that produced. Anyway, it was a negative. You did not perforate it. You did not take sidewall cones in it. You forgot about it. And, you know, you can run down logs like that in 1,000 feet and you can see on the resistivity side and see almost nothing. But at any rate, back when I worked for Mobil, we used to have trouble with that. And after I went to work for Shamrock, we still had trouble with it but in our group offshore, the Sun group, we kept pushing and pushing and pushing to get them to test some of those zones. Eventually, they did and we made good wells, good oil wells.

Well, Sneider has made a career out of finding oil in zones that other people say that you cannot produce the oil. He is a smart guy. I do not know how he will feel about talking to you, but the guy is good.

TP: It is worth a shot.

RC: And that is none of my business. It may be none of yours.

TP: We want to get to as many people as we can. So, you asked me earlier to ask you about Mobile Bay.

RC: It is not Mobil. Mobil discovered it. O.K., now this is kind of a personal

story. The Smackover formation is an important producing formation and has been for a long time. That has reached over into that Jay field in the Panhandle of Florida. It is a 100,000,000 or 200,000,000 barrel field, as a primary producing zone. Then, as it curves around into central Mississippi and whatnot, the Smackover has been the producing rock in quite a large number of fields. And also, that is why it spread. It goes down over into east Texas. But it is old. I mean, a lot of the fields up around the Arkansas area are, an old area but, at any rate . . .

It turns out that when I was in Houston in the late 1960s, we had offices in Shreveport, Mississippi, Alabama, and Florida that fed into that office's jurisdiction. But it had gotten left out of some things. But at any rate, there were any number of smallest fields, but good production in central Mississippi out of Smackover. And we wound up with some of those. But it did not suit our top management. They thought we were looking for quail and not turkeys. So, the idea of shooting Mobile Bay came up and the exploration manager of the district . . . in Shreveport, it was the district . . . the exploration manager there was an old, early seismograph man. He kept saying we needed to shoot Mobile Bay, that nobody had done anything down there. And here it was. And the Smackover was down there somewhere. And he knew there was a structure there. Where is the structure? He says, 'Well, you see, there is an island coming out from the east, and you see the island at the edge of Mobile Bay coming out from the

west. It is a peninsula. Both peninsulas. And all that is left . . . There used to be a big surface high there, and the bay had to have a way out so there is a channel there. And right under that channel, right where these peninsulas come out, there is a big structure. And there are Smackovers down there, filled with oil and gas.' Do you have a mental picture of that? 'Well, how do you know, Jake?' 'I can take you to that well on the end of that peninsula, and I can start you a fire with one match.' And he could.

I went there. There is a water well that was drilled on this sandy peninsula and you could light a flare that, you know, would be inches in height and the next big puff of wind would come along and blow it out. You could not keep a flare going but you could start one. So, that was his picture. Pretty simple. 'How deep?' 'Well, it is deep.' So, when the word came in about how much it would cost, management sat on it and nothing was heard of Mobile Bay.

On the other hand, Mobil, at that time, probably the McKinsey Company had something to do with this, they put in a good word for him. They had something called district authority. You could do geophysics and different things up to a district authority of maybe up to $25,000, let's say, without calling Houston. It seems like it was $50,000 to me and not real numbers at the time. So, nothing more was heard of Mobile Bay until they got the seismic picture which they bootlegged on district authority. They may

have shot it at night for all I know until they got the work in and done. So then they brought it into Houston and said, 'This is a big oil field.' 'How did you get that site?' 'Well, we just used district authority. It did not amount to much.' And it did not. It was inside shooting. I do not know whether it was rowboats or what. And here is this mammoth structure. That was the geophysicists. But the geologists chasing the formation around from the periphery said it is 20,000 feet deep and it is going to be totally dense. There is no way we can get any. Some of the geologists said that.

At any rate, nothing was approved by the division, so they slipped around and they got Alabama to put up leases - four leases. I have forgotten what their dimensions are but roughly, the same as offshore - Four and a square. We bought them for, again, I could be wrong but it was into six dollars, or I will say five-and-one-half dollars an acre. So then, that is the first half of the story.

TP: Is this an auction or open bid?

RC: It was an auction. Now, nobody bid. I do not know that it was a voice auction, but you know, bids are due in by such and such a date. And the state geologists and so and so look at them and somebody . . .

TP: When was this about?

RC: This had to be 1966, 1967 or 1968. I am not close to finding a field yet. Anyway, we bought the leases. So, the end then we did really well. I think it was 1978 before they got the oil and gas bored. I wrote those numbers down just yesterday.

1968, we bought it. In 1978, we finally got a drilling permit from the state. 1982, we found the field. I think I am reading it right but before that would be published, that would have to be checked. But that is approximately.

TP: So, it took 10 years to get authority from the state to drill?

RC: Yes. The area surrounding Mobile Bay is a wealthy retirement homes. I do not know if you have ever been there. The west side of the bay is low, but the east side of the bay is a bluff that goes up about 400 feet. It is full of oaks and magnolias, pines, dense forest, old forest, and retired admirals live there and that sort of thing. At any rate, the bay itself is very shallow, just maybe 10 feet in the middle. Great sports area though. And there is a channel where the river comes down from upstream and has a channel down to the Gulf where the peninsula is. But at any rate, it turns out that those wells were up to 25,000 feet deep, produced 25 billion feet of cubic

gas per well. So, a lot of the sales . . . as soon as Mobil found it, then everybody shot it, including Shell, and there were not any state sales for a long time. But Shell found an anomaly just offshore. And we found the anomaly, too, but Shell came in and bid strong. They got two good blocks, and it is actually another field. And it has got about one trillion or two trillion feet of gas. It will be on there. And Exxon got into the act. We did not defend our position strong enough. It was probably 20 trillion feet of gas. So, it costs jillions of money for Mobil and Exxon to put in a gas extraction plant and get the sulfur out of it and the pipe has to be special for everything. There was a huge drilling cost because everything has to be gold-plated protected from sulfur. Of course, it is high pressure and it is a surprising amount of liquids. It may be Mobil's most profitable petroleum producing property in the United States.

TP: All from a guy discovering a flame in a water well?

RC: That is right. That is the story. And this is a true story. I had been to the pipe.

TP: What was the guy's name again?

RC: Jake Menefee. Jake always wanted to be a pro baseball player and his excuse was, 'My hands were too small.' He played short stop for LSU.

He said, 'My hands were too small.' To his dying day, he said the only reason he was not a big time baseball player was his hands were too small! All shortstops and second base men that do not make it but thought they should, say their hands are too small.

TP: Well, that is a great story.

RC: I was planning to tell it, but, you know, I get going on nonsense and philosophy and stuff that is not going to help you. But I have notes all over the place to make sure we talk about Mobile Bay.

TP: Are there any other notes you made, other things you wanted to . . .

RC: Anyway, I think that is the most profitable field that Mobil has in the offshore, if you call that the offshore.

TP: It looks big on the map.

RC: Well, that is not going to show profits on the map.

TP: Oh, I know, but, I mean, the size of the field.

RC: It will not be the most profitable per unit of production because they have

to treat the head out of it and it is deep as a tree and they have to redrill wells every now and then. But they have gone here for years and years and they have not had an ecological disaster.

TP: There are quite a few little gas fields in that area, too.

RC: There is some shallow gas on top on some of this. It covers a lot of map, but it does not cover much production. There is production there at 3,000 feet or so. That makes your trip worthwhile. That has got to be one of the biggest fields in the Gulf, if you call that in the Gulf. Most of that is state waters.

TP: That is interesting. It must have been a long fight to get approval to drill if it took . . .

RC: Oh, yes. That took a long fight because the geologists themselves were at each other's throats. Because some thought truly, honestly, that it would be just like concrete. There could not be anything there. The geochemists said at that depth, the temperature is such that you are not going to get . . . you may get pure sulfur which has happened in southern Mississippi in the past on land. Drilled wells and got liquid sulfur!

Shell bought a whole square mile or so. The only way they could defend

themselves was to buy everything because they had . . .

TP: I remember they had a big sour gas . . .

RC: A big sour gas problem there in Lake Jackson. So, you probably will not hear much about Mobile, but they turned right around and bought. That took guts I would say by somebody because I think Shell acquired those leases after they had a big blowup at south of Jackson.

TP: It was called the Cox well.

RC: Piney Woods or something like that. Now, that is a good story and a true one.

TP: I notice in your bio, you mentioned Phillip Jennings. He was in Houston, is that right?

RC: He was in Houston. He was the guy that had to go the next step to Dallas to headquarters to get the approval for their next step. And I mentioned him as one of the . . .

TP: Taught you a sense of scale in exploration and the enormity of exploration producing potential in the Gulf . . . do you want to talk more about him?

RC: I can, but let me talk about . . . it does not have anything to do with your visit here, but Carlos Ferguson was my first assignment when I came back was Oklahoma. We were in the last days of surface geology and they had a fellow on the staff . . . I was sent to Oklahoma, and that is a story in itself. I was afraid I would never get out of Vicksburg, Mississippi. The guy would not sell me a ticket to Oklahoma City! I said, 'Well, I have got to go there.' He said, 'Well, do you want one way or round trip?' I said, 'I am going one way.' He turned around and looked at me like I was crazy. He said, 'Son, nobody buys a one-way ticket to Oklahoma City!' So eventually, I did get to Oklahoma City.

At any rate, they had the last best effort at doing surface geology. So they assigned me to work with Carlos Ferguson who was an elder, middle-aged geologist with a similar degree that chewed tobacco and smoked cigars. I do not know whether you know enough of geology but in surface geology, the second guy does the least amount of work. The real geologist, he runs an instrument which he can set up in a section of roads and go all around the country. He sets a plain table up and I guess you know what a plain table is. O.K. Well, it was summer time and Carlos, in southern Oklahoma, would go into those little oak, solid oak . . . It was about that big around, 15 feet high, in dense bamboo thicket. Anyway, we would spread out hack and spread our way through that stuff. I had the best of it because I was on the instrument and just had to watch what he did and

make a site and load it up. But I would guess I was suffering from war time fever or something. I could not remember my reading on the instrument long enough to put it in the book. So, I would make him come back. I would wave him off and realize I could not write it down . . . put him back on the . . . He is 40 years old and it is 105. At any rate, at the end of the day, you make your calculations and you tie in to a benchmark, usually temporarily when you set yourself by site and then on the windmill.

Anyway, he suffered through the entire summer with me on that. By the time the summer was over, I could just about get through a day without him having to go to my notes and straighten them out. He never fussed at me. He just helped me. That is why I say that. He returned me to society.

Jennings . . . The Gulf had no end. He was a known bachelor from South Africa. He got his Ph.D. at Columbia, and was a classmate of Jules Braunstein at Columbia. That is neither here nor there. But since you are working for Shell, that is a tie-in. Jules called him Jasper Jennings. I know I heard him call himself Jasper. He was called Phillip or Phil. Jules called him Jasper Jennings.

Anyway, he was an old bachelor and lived with his sister. I was in Houston. Well, that is mostly what I am talking about. He lived with his

sister who was a lady doctor, gynecologist (obstetrician). And they lived together until he died at age 76. He never made a map in his life that I could find. His letters were never more than one paragraph. And he wrote very few. But he was a good talker. He liked to talk, and he liked to drink! When I was in Houston, by then, I was his boss.

TP: What was his position in Houston?

RC: Well, in Houston, he would have been called something like regional geologist. I do not know. I am making up names. That probably was what he was called – regional geologist. He never was vice-president or anything because of his character problems. He called a spade a spade or if he wanted to emphasize it, he would say, 'a God damned spade,' in whatever the company. He did not shave every day. He wore a corduroy coat for as long as I can remember. I watched him shave one night in his apartment. We were going to go have dinner or something. I think the blade was actually rusted but he would just scraped himself a little bit with a little hard water. No soap. And then, let's go! So, we were out of there.

We would go to some little club in Midland, and this was worth it. Houston is full of these clubs on top of buildings all over the place. He had a little club nearby that he went to. Whenever anybody was from out of town which was almost always, he would have two or three martinis

and get to talking, and that is when you would learn the geology. So, all of us would just hang on to what Phil said. Phil predicted the current . . . I am talking about a man that has been dead 20 years. Ten years before that, he was talking about the organization of oil companies today, and he was exactly right. There would be a management team that was quite skilled, quite small, and that the down-and-dirty geology would be done by small groups of geologists that were hired from little consulting companies of which Houston must have 100. And doing just that.

The man was patient and profane, and almost . . . the closest he ever came to a woman was Rosa Hart who is the mother of Tommy. It is a small world out there. Rosa Hart lived in Lake Charles. Phil Jennings came over from Houston all the time. He spent a lot of time in Lake Charles, but his office was in Houston. Anyway, for years, before I got there, the only woman whose name has ever been associated with Phil Jennings, other than his sister, was Rosa Hart.

Tommy Hart, to get some times right, when I was in Lake Charles, Tommy Hart showed one summer on the Magnolia geophysical boat off Cameron Coast. I cannot remember the date or year exactly, but the fact is that he was . . . I remember him talking about what he did. He would drop things over the side and pull them up. He was a big guy, and so he was the muscle on the geophysical boat. But there is a tie between Phil

Jennings . . . That is the only woman I know of that anyone has ever said anything to me about him ever having anything to do.

He loved to dance but that was in the club, a dance club. He came to New Orleans one time when I lived there and we met in the Roosevelt Hotel with my wife. We went to the Blue Room or whatever it is, what used to be there, and he danced with my wife. My wife is a good dancer. I am terrible. From then on when he would come to New Orleans, he would say, "I would like to take you all out to dinner. Is your wife going to be there?" [Laughter] So much for that.

Phil was a wonderful . . .

TP: He understood the Gulf of Mexico?

RC: He understood everything, including the necessity of sometimes completing a well that did not deserve to be completed because he needed to keep the pay going.

Sometimes, in Cameron Parish, you can get a long shaled section that will have a few stringers of five feet, eight feet. You cannot find them in the next well, but test them and they will make a good test. And so, I used to wonder about this. This attitude that he had that we did not make a well

naked, in the long run, proved commercial. And when you find the good well, you will keep the pay alive until you find the good well, or the good field. He loved to get long-term leases and be able to hold on to them one way or another, knowing that somebody, if not us, was going to find a well and prove that there was gas down there. I am talking about gas province. And if we could hold on long enough, we would have the big field. And that happened two or three times. But other times, I was almost embarrassed at telling people we made a well out of four feet of sand, at 16,000 . . .

. . . my psychological guy. Basically I think he saved my sanity. My military to a career was interesting, but I never got a stretch. But I really was mentally in bad shape and it is hard to know why. But I credit Carlos with putting up with me for one year.

TP: And Phil Jennings as being a mentor of sorts.

RC: Yes.

TP: Are there any other key figures that Magnolia or Mobil . . . are there any other individuals that deserve mention that you can think of in your career.

RC: In what aspect?

TP: Well, as major forces in exploration at Magnolia, Mobil, or other counterparts in the industry who you thought were instrumental in the success of the whole endeavor.

RC: I really did not have a very high opinion of a lot of people that were in Magnolia's home office. I know of no great decisions that they made. I did not like the head man, Sheridan Thompson. He did not like me either but he promoted me. Any time I would go to Dallas to make a presentation, which was the way things were done, we would end up in a shouting match. And I will have to compliment him on that, he did not hold shouting matches against you. No matter how low you were on the pole, if you got in a big discussion and he started shouting and you started shouting back, the next day, it was another day at the ranch. But I did not care for him. He was another Eastern with a Ph.D.

TP: So, is that one reason why you left for Diamond Shamrock?

RC: Well, no. There were several things in there. You cannot write about this. I was in Houston in middle age and I saw some terrible, what I thought and still do think, choices for advancement made by the people in New York. To put it bluntly, they put some absolute thugs in the office. Indeed a couple of the people in Mobil's top management were thugs.

One of them was tough, incredibly tough, in the sense that he thought nothing whatever about closing an office with 50 people in it. He would say, 'Be out of there in 30 days.' And some of the people that he promoted, one in particular, I will not name a name, was named as one of the two nastiest bosses in industry in Fortune Magazine. The other one was the old guy that ran . . . He has got to be dead now. He ran Occidental. He was always playing up to the Russians.

TP: Armand Hammer?

RC: Armand Hammer. He was promoting the guy that came in second to Armand Hammer. That was the nastiest boss of a major outfit in the United States! So, at any rate, I knew I was not going to go to New York and I knew I was not going to go international. And, at that time, if you were given a promotion, it would be one or the other. And if you did not take the promotion, well, it would be oblivion. And that is not an unusual . . . that is a normal oil industry situation. So, I was in the situation where I wanted out. Somebody Diamond Shamrock, who was looking for somebody like me told them that I might be approachable. And so, they approached me through a famous geologist in Dallas, or something, who got me to come up to Dallas and talk to him. I had enough respect for the man that I had to respond to that, and that led in

due course to me working for Diamond Shamrock. But that is not publishable. Promise?

TP: Oh, yes.

RC: Now what do you need?

TP: Background information. You mentioned Charlie Murphy.

End of Tape #2, Side B

Tape #3, Side A

RC: In the original bunch of purchases that Magnolia made on the first or second sale, there was one on ship shoal . . .

TP: The first or second federal sale?

RC: State sale. This would have been in the 1940s. I am going to leave the name of the tracts out. But at any rate, we drilled, I think, about five dry holes on this great big salt structure, but salt was not very uniform. It was hard to know where the top was. Anyway, we had drilled four or five tests and we found a little bit of oil and a little bit of gas. Nothing really commercial, but we had completed a couple of wells. Well, what to do

about it? Management at the top thought we had gone as far as we could go. We had given it the good college try, and our information was not getting any better and so on. And so, somebody at the top, or at least above me said, 'Tell him to farm it out if he can.' So, I will bet it was not two days before Doc LaBorde sent me somewhere or came to the office and said, "Robey, have you ever thought about farming out?" blah, blah, blah. I said, "Well, not really." So then, I talked to the higher up in Dallas and said, "Why don't you make a deal and try to keep a nice override?" So, I called Doc. I did and he did. He found, I do not know, 50 million barrels. It was what we were looking for, but he found it. He has reminded me of it a time or two!

TP: Was it his company, Odoco? Was Odoco just operating the lease?

RC: Oh, yes. They have operated a jillion leases. They have gotten a lot by . . . Laborde has a favored position because he will operate. And not only does he have the drilling equipment, but he has the capability of being an operator. Although he does not particularly like to operate. But, at any rate, he figures that if he finds the oil, he can sell it, and somebody else can operate it. That is not a problem to him. On that, his line of thought would be, "I will worry about that when I need to." So, that puts him in a position to take chances that lots of small operators just will not take. But one thing Doc is, he is brave.

Henry Cordis, who is mentioned in that little thing as the guy who asked me . . . Henry Cordis is a wonderful gentleman. The only thing I am going to say about him is he survived the Galveston flood at 5 years of age. That is worth remembering! Phil Jennings, you have heard about him. Jack Lester had a lot to do with the geophysics, but it is just a name to you. And Al Logan had a lot to do with the gravity work. And Al Musgrave was a great scientist. We have covered him. He is probably the only one. He and Jennings are probably the only ones here that . . . Jennings had great vision. Al Musgrave was a fantastic scientist, and so on.

The start of the offshore oil industry. Right after World War II, all this surplus equipment that a lot of . . . offshore could jump start because it did not have to build all this offshore equipment all at once. LCT's were used to haul pipe out just as they were. Do you know LCT?

TP: Yes.

RC: Some of the LSTs were converted into the drilling barges where they would mount the . . . well, usually the rig on a platform. All the living quarters, the pipe, the drilling sacks, and all of that which is a lot of stuff, would be on the LST.

TP: That is the way Kerr-McGee did it in that 1947 platform.

RC: Well, a lot of people did that. You could buy the things for almost nothing. If they ran down, they would let them run down. At any rate, that worked out.

Schlumberger, you are familiar that they often had to come out on an LCT or something and run the wires up out of that. Which meant the measurements were not that great. But in some places, they would lift them up and set them on the platform or the drilling barge. Those were touch and go situations. Where a mistake was expensive. I was in micropaleontology. We talked about that early on.

Secrecy. Shell often said they were the best, but it was not necessarily so. Actually, paleo was widespread. Many companies had excellent paleontologists. I mentioned Magnolia had its own. I do remember one Shell paleontologist that was given special accord by other paleontologists: Frank West. You have probably heard his name.

TP: The other one is Ed Picou?

RC: Ed Picou is alive and well, yes. He is still doing some work for Shell. I have known Ed for a long, long time. He is a wonderful gentleman. A

smart guy. Quiet.

TP: You also mentioned something about engineers and geologists.

RC: Oh, yes. That is an ongoing battle. You must be already aware of all that. I write it down because it is a part of our experience. Engineers want everything to be precise and geologists cannot always say anything with precision. So, the bad thing about that is management tends to expect precision. So, this often means that some of the very best oil finders have never had their day in court, and it has hurt the industry over the years. The imbalance in promotion of engineers over scientists is one of the bad chapters, in my opinion. And I have seen it happen over and over and over. And had the geologists, kind of like what you were talking about at Mobile Bay . . . they had to go around all the engineering management dubiously to find the biggest fields Mobil has except maybe a 70 year old field on the West Coast. I saw it in companies we had partnership with, both with Mobil and with Diamond Shamrock. You talk to an engineer, and he would not have the foggiest idea of what you were talking about. But he would make a decision. Right or wrong, it did not matter. It is what he thought at the time. Or he would not make a decision. And then you would go six months and nothing happens. Anyway, it is bad. It has been bad for the industry.

When I came down to Mobil, people looked at me . . . 'Who are you?' 'I am Robey Clark.' 'What are you doing here?' 'Well, I am your new vice-president.' They said, 'Where did you come from? Where did you go to school?' 'LSU.' 'LSU? You did not go to Texas A&M?' Every engineer in Amarillo that worked for Diamond Shamrock went to Mr. Dunn who founded the company's alma mater, Texas A&M. They said, 'Mr. Dunn hired you?' 'Yes.' It took them years to get over that.

TP: There are a lot from the Texas A&M fraternity.

RC: They are the only school . . . when I was in there . . . they have a muster or something every year. I do not know exactly what . . . I think they all get drunk, but the Aggies have an annual muster. Would you believe it? I am in New Orleans surrounded by Tulane, LSU, Old Miss, and Mississippi State, and I get letters from Aggies in New Orleans wanting me to contribute $200 to the muster.' Aggies are something else!

TP: Well, that is interesting. Well, I do not want to wear you out.

RC: You are not wearing me out. Ordinarily, I go through a day and will not talk to anybody. I make myself have lunch with people every now and then. This story needs to be told. You are doing a good thing.

TP: You said you had sort of started on this or planned to do a history of offshore. What is it, a history of Magnolia?

RC: No. My ambition was boundless. My ambition was . . . the history of the offshore. The story of the offshore is the biggest thing in my professional life. It does not matter, you know. I have lived in Denver. I lived here. I lived in Oklahoma, and I lived in New Mexico. But the offshore is the biggest thing professionally in my life. I got here. I was in it early, and I was in it right up until nobody wanted me. And the technology had . . . as an individual. Isolated with a wife that did not want to move, basically, I got out. But it is still the biggest thing I have been associated. Well, I say it right there, and I was successful.

TP: How would you approach trying to write this history? What would you emphasize if you were going to write this?

RC: Yes, I was going to tackle the problem of the clash about who owns it. State versus federal. I would certainly have some things to say which we have not touched on at all. And, you know, there were some great individual fights. Like headland to headland and how do we do it? When you say you are going to do it, it is still, how do you do it? It may not have been done right, as it is today.

TP: How do you regulate it, do you mean?

RC: No, how do you draw the boundary?

TP: Especially if the Louisiana shoreline is disappearing.

RC: Yes, it is changing. How is it going to be 20 years from now? The damned federals are going to be picking up acreage! And then, my stay would be kind of things like this. And every company has probably got a reason. A lot of those were nice, but then, you have the people like Bonnecarre and the bureaucracy. There is a mineral board. They have got two in Louisiana. They have got two boards to get through. Anyway, a lot of stories can be told. But the gas shut down the offshore for what, three or four years while they argued about the price of gas?

We had crises all over the world and we really needed protection, with domestic . . . I mentioned to you the crisis at Suez which directly affected Mobil Oil Corporation. I know it was not the only corporation that decided they had better beef up along the Gulf Coast and try to find . . . they did find oil off California, but then they are not allowed to produce it. That is terrible.

Certainly, I would try to do certain individuals of which Doc Laborde

might be typical. Where a single individual . . . I know his brother, John, designed a lot of his stuff, but it was Laborde that had the moxy to make things happen. But I guess John was the perfect engineer to work with Doc and come up with what he came up with.

TP: I interviewed John Laborde. He talked mostly about Tidewater and the supply industry, the supply company.

RC: Was he fun to interview?

TP: Oh, yes. A very pleasant man. Very nice.

RC: Have you interviewed Laborde?

TP: My colleague, Joe Pratt, has interviewed Doc Laborde so we do have an interview with Doc Laborde. A short one. He has also written a book.

RC: Yes, he has written a book.

TP: He put a lot of his memories down on paper.

RC: Of course, a book would have to cover some of the things we have actually covered like some of the sales themselves, and the immediate impact it had on the companies involved. Some of them, you know, they

would buy too much and they would panic. They would try to sell and they would mess . . . some of those had a happy ending and some of them did not. But it requires an awful lot of digging to dig all of those 20, 30, 40 year old details out. When I did say I wanted to do this or something like this, as I got into it, I realized I probably could not.

TP: It is a lot to cover. There are some sales . . . it must have been tense being at those auctions, the lease auctions, where people are laying out, exposing hundreds of millions of dollars by the 1970s. And, like you said, leaving money on the table.

RC: Oh, yes. Careers have been won and lost to individuals who made a bad decision.

TP: Does any particular sale stand out in your memory?

RC: Well, the 1960 sale stands out as a good one. The 1962 sale stands out as a poor one for me and my company. And then, later sales with Mobil, the one, I cannot tell you when but there was a bunch. There were several good ones that . . . well, we kept meeting with Mobil. I get mixed up about what is what. We bid with Mobil on one of the first, what was in deep water tracts. I could find it, but it was in several hundred feet of water. I want to say 700 feet. Mobil bought the tract and we had about

20% of it. It was one of the first 12 they had. We had kind of sand that slopped up on the side of a mini basin. It was down near the mouth of the river, south of the mouth of the river. But I have thrown all that stuff away, and I do not even have any good maps anymore. I do not even have a good Transco map.

TP: Yes, I need to come into . . .

RC: You need one with the numbers on it. If you are going to interview people by age, you need one with bigger numbers!

TP: There is something that Offshore magazine published.

RC: We cannot see those.

TP: I would like to get the old Transco map because I have heard that really was the standard that everyone used.

RC: Oh, yes. That was the standard, at my last association. I do not know if Transco exists anymore.

TP: Well, it was bought by Williams Companies.

RC: Nobody is putting out Transco maps anymore.

TP: I thought about contacting Williams to see if they have any Transco maps still around. I do not know if they do. So, you retired from Diamond Shamrock in 1982, is that right?

RC: Yes.

TP: Just as the deep water leases were offered in those area-wide sales.

RC: Well, there was a reason for my retiring. I do not know whether you remember. Boone Pickens was picking off oil companies and, well, two things. He made a run at Diamond Shamrock. I do not remember how they evaded him. They did, but it was close. He was not the only guy that was raiding around. So, I saw an industry developing that I was not sure I wanted to be a part of anymore.

Also, I could see that this company . . . the 10 years that I worked for Diamond Shamrock was the most productive 10 years of my professional life. Absolutely. I made a lot of right decisions. I hired a lot of good people. Our production went up – both gas and oil.

TP: And then the company got into the Gulf of Mexico.

RC: Yes, we went into the Gulf of Mexico. The basic decision to go even before . . . I was hired because of the decision to go, and get something out that had a growth potential outside the Panhandle. That does not mean going to Kansas. So, anyway, I have forgotten the question again.

TP: About when you retired from Diamond.

RC: So, I just opened an office. I had taken a field trip to Mexico, and I saw those big dunes about halfway down there in Baja on the ocean side. There are a bunch of lagoons. On the side of those lagoons, there are some huge sand dunes. There were miles and miles and miles, like the great sand dunes in Colorado, except they were white sand. At any rate, behind them, before we got to Galeo Negro, we went through a basin. It was an old lake bed, that must have been 50 miles across. So, I got to thinking about those sand dunes, and that lake bed, and the ocean, and I came up with a scheme of relationships that told me that windblown sands had been a negative in exploration all my life. But I was seeing a source bed, a reservoir rock, and an overlying rock. It was the situation for that to form and make a huge field of oil or gas in a windblown sand. So, I began to study that. And the Gronigen field, mostly in Holland and partly offshore, was just exactly such a situation. It was one of the biggest gas fields in the world. It goes out into the North Sea and down the shore

there. We were talking about 20 trillion. Try 200 trillion.

I began to look at some of the Rocky Mountain fields where there was that situation. You had the Ten Sleep stand with the phosphate above it and shaled underneath it and the other way around. I made field trips. I had my big idea. By then, I had left Shamrock. So, I went and tried to sell this, to get a contract, come up with a bunch of fields and prospects, on that idea. A lot of people liked it but no go. And so finally, I told Diamond Shamrock why didn't they continue to let me do that on a pay basis? So, they did.

I hired a young geologist from Mississippi and brought him up here. For 1-1/2 years, we worked on that and came up with a whole lot of prospects. I mean, of regional size. I turned in 56 prospects. Within no time at all, Diamond Shamrock had disintegrated, and had run off all the good guys, and hired some charlatans. One of them was an ex-Shell man, as you can maybe figure out. I think his name started with Black something. So, I eventually asked somebody that had survived the bloodletting, what had happened to my prospects? And they said, 'Oh, well, we threw them in the trash.' 'Did the management ever see them?' 'No, he said throw anything you have got from Diamond Shamrock in the trash.' And so, some of those prospects are small scale prospects like some of those small fields in southeast Mississippi and Alabama. Some of them are in

Colorado and so on. Some of them potentially huge in size.

TP: Waiting to be tested.

RC: Why am I talking about that?

TC: Well, we were just talking about your retirement and how you eased yourself out of the industry.

RC: Right. So that got me . . . actually, they paid me as we went along. And so, that got me out of that. It is an illustration of how simple high level science can be, and how rude and crude measurements can give you the right answer.

Dr. Fisk was . . . Mississippi River Commission engineers are always interested in bank caving and things like that. So, somewhere the idea stuck in Fisk's head that he wanted to find out when the water flowed out of the river into the bank and when the water flowed out of the bank into the river. So, there was a piece of the LSU campus that runs from the river to about half or three-quarters of a mile away from the river on the flood plane. And, at that time, it was mostly sugar cane field, but it was property of LSU. And the other piece of it was just like pasture. So, they had drilled, I guess with a hand auger that they could keep adding pieces

but to a water table, it was 10 feet down, 15 feet, maybe 20 feet. They had a little disk of wood about not much bigger than that, covering this hole and there was a pipe like that, a hardware store pipe, that went down the hole. There was nothing on it, just down the hole . . . I had a string, and I had knots in the string. I had a lug nut on the end of the string. Now, that was my measuring device. And my job was to take it from right there, and lower that nut until it touched water. And I had knots in this thing, so I could move it to roughly an inch, one-half inch maybe. And so, my job was to take these 22 holes and every other day, something like that . . . I know it was a hot, sweaty job with black widow spiders under every board! But I was used to them.

At any rate, I did that for several months. The data was then correlated with the river stage and with the barometric pressure. Somebody else did that. So, at any rate, from that, Fisk wrote a paper relating how and when and how fast the water would flow from the river into the flood plain. And that led to recognition that . . . They had taken samples when they dug the holes, so from that came a generalization that told the Mississippi River Commission where their bank might become unstable. That was with a piece of string and a lug nut. That was convincing information to make a big decision about where and how to build levees, and what to avoid on in the Mississippi River Flood plain. I find that very interesting. That was big science with a string, a lug nut, and a whole mess of

backwood with spiders!

TP: Well, this is probably a good place to end the tape here. I thank you for your time.

THE END