SHELL OIL COMPANY

ORAL HISTORY PROJECT

Interviewee: Lloyd Otteman

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Bio

Lloyd Otteman began his career with Shell in 1954 after he graduated from the University of Washington with a B.S. in civil engineering. Throughout his career he worked in various capacities including mechanical engineer for the Technical Services Division, Bellaire Research Center, and New Orleans area, marine. He became manager of Mechanical Engineering Research in 1966 and moved to head office in 1968. He then served as Chief of Mechanical engineering for the Southwestern Region in 1969, and he became Division Production Manager for the Offshore Division in 1974. In 1980, he became the General Manager for the Offshore division, eastern operations, and in 1982 he became President for Shell Offshore Inc. Finally, he became General Manager for Health Safety and the Environment- E&P in 1987. He retired in 1990. During his career he worked on the problems of underwater soil movement and laying pipelines in deep water in addition to his service as an administrator for Shell.

Summary

Interview contains discussion of Otteman's research efforts on laying pipelines in deep water, and the problems associated with underwater soil movement. Excellent information on some of the efforts to deal with regulators and the press regarding the safety and environmental record of the offshore industry. This segment had extensive anecdotes about visitors to offshore platforms, mainly Cognac.

Tape #1, Side A

TP: This is an interview with Lloyd Otteman by Tyler Priest. The date is May 17, 2001. We are at Lloyd's home in Houston.

LO: I have done two things: one, I have looked through the two chapters you sent me, Chapters 6 and 11. I have some comments and observations on what you put together. First of all, I am very impressed with the documentation you have. And then secondly, I just made a list of notes of what I thought were interesting experiences in the offshore over the years.

Well, I started with Shell in 1954 after coming out of college. I was going to school at the University of Washington - very cloudy and rainy. I had been working part-time when I was going to school outside and I was kind of tired of all of that rain . . . I got a job offer from Shell Oil in Los Angeles. I thought that might be as close to heaven as I was ever going to get and I'd better take it! So I went to work as a trainee and after one year of working on the oil fields, which we did back in those days, lo and behold, I got an assignment to work with the area office to be the Shell technical contact with the CUSS group. And that was a very interesting experience because the CUSS group had done punch core-type sampling and rigged up the *Submarex,* which had a full drilling rig extended over the side in order to drill deeper and get deeper punch cores from the Santa

Barbara Channel floor. And we are just in the very early stages of thinking about a full-fledged drillship and had bought the YF barge in Beaumont, Texas, which they were going to tow through the Panama Canal and rig up with the drillship.

TP: What year was it that you went over to work on this?

LO: In 1955. The summer of 1955. The setting in California was quite different than the setting in the Gulf. First of all, there were very prolific fields along the shoreline of the Santa Barbara Channel, some of which were actually drilled from piers constructed out in the water. But the geology was very complicated, and the California State Lands Commission would allow you to take core samples, shallow near surface core samples, in the offshore in order to get a better understanding of the geology. So that was one of the main reasons that the CUSS group was put together, and they rigged up this old wooden hull Navy surplus vessel with a great big rubber hose on it on a drum, and on the end was a heavy piece of pipe. And they would lower that over the side and they would drop it onto the ocean floor and retrieve a punch core. And then, the next time, they would jet it down maybe 10, 15, 20 feet, and repeat the operation and get a core back. But that was pretty limited. So that was the reason they rigged up the *Submarex*, which had a small drilling rig and could actually drill a hole, drop a wire line core device down the center of the bit, through the center of the bit, punch a core, retrieve that on the wire line, and drill some more, and continue to

do that until you think you are about ready to get stuck and then you would move on.

They had one proviso and they had the liberty to keep a representative aboard and that is, that you could do this so long as you didn't encounter hydrocarbons. If you encountered hydrocarbons, then you had to cease, could not continue on. There were a lot of oil seeps in the Santa Barbara Channel. It was a very lucrative place to be getting cores. But they were more and more concerned about well, "what would happen if we did bump into an oil zone on the flow?" So that was one of the reasons why the thing about the *CUSS 1*, we wanted to set up a full drilling capability, return mud and control in case there was a flow. So, when *CUSS 1* was built and put into operation, by today's standard, it was crude, but it did work.

TP: When did *CUSS 1* first begin drilling?

LO: It first began drilling . . . I was assigned in 1954, and we were probably about one year . . . I don't remember exactly but I would estimate we started drilling about 1956. In 1957, I was transferred to BRC or the Technical Research Division, TSD.

TP: So what kind of stuff were you doing yourself on this project?

LO: Well, my main responsibility was to write a weekly report that went to head office to tell them what we were doing and why we were doing it. It couldn't be longer than one page. And we had to tell them where we stood on funds. Were we within the budget or not. And so, my main responsibility was to talk to the Union people which it was a Union Oil Company staff, later became Global Marine, and learned from them and from the technical people they had working. And then, once we got in the yard and started doing things to be primarily observant and try to understand what all we were doing so we could keep our own head office informed.

TP: Did you have much contact with Robert Bauer?

LO: Robert Bauer was the head man, and he was a very outgoing, very, very forceful, very dynamic person. And you had a lot of engaging conversation whenever you got with Bob. Hal Stratton and A.J. Fields were two of the key people. And they had another engineer whose name I don't recall offhand, who was a very dynamic sort of guy and very willing to look into these concepts. And one of the concepts was to put a hole through that YF barge and mount the rig over the hole, the so-called moon pool. That engendered a lot of discussion about how best to do that and was it really the right thing to do, to put a hole through a vessel and have water slopping up inside the vessel? But we concluded that was far better than

having to rig over the side.

TP: All right, so you were saying, you moved in 1957 to BRC?

LO: Yes. John Haber had been a young engineer in California and he was developing automated equipment for handling production on the wells, a very progressive young engineer. He got transferred to TSD, and not long after he got down there and I knew him out there, well, I got transferred down there. I don't remember for sure but I think there was John and myself, and I guess we worked for Bob Carter, and we might have been the first two down here. I don't recall for sure. Ron Geer came in later. Frank Poorman, about the same time. Ron Geer. Ed Lagucki. A little later, John Lacey. The staff was built there.

TP: All the people who worked on RUDAC?

LO: Which became RUDAC, yes. And we all had our own areas of responsibility. We were trying to figure out how to do all this. And, of course, a lot of it had never been done before but we were trying to figure out how to do it.

TP: What kind of marching orders did you get when you were brought down to BRC and incorporated into the group? You said you and John were the first . . .

LO: Well, we were among the very first, yes. John was there before I was. We were to develop a floating drilling and an underwater completion system. Something that we could go out and drill real wells with and produce real oil and gas with. And there was a lot of debate within the company and among ourselves about how best to do these things. And, of course, at that time, we didn't have the benefit of looking back on all the technology that is available today. We didn't have the benefit of all of that. And we didn't have the benefit of the computers that we have today.

One of the interesting assignments I had was to figure out how far off the rig we could be and still drill without damaging the drill pipe. And that was pretty important because we were trying to develop a floating drilling system and we had to have some idea how far off we could be without hurting that drill pipe. Now, you have to remember, that drill pipe was rotating, so it is in the fatigue situation. So, every time you rotate, if you have bend, it goes through a complete stress cycle just because of the rotation. And then, we were also very concerned about the tool joints. Would the tool joints be as strong as the drill pipe? And how far off you could be is darned important if you are trying to figure out a mooring system and what the forces are on the rig and all the things that go with it. I couldn't handle the mathematics of the situation but we had a University of Texas professor by the name of Lyman Reese that was an expert in soil mechanics and structures, that worked as a summer hire at the lab. In fact, he worked four

summers and he got two weeks vacation. He was always an interesting guy to talk to, and so I told him about trying to figure this drill pipe analysis problem out. He said, "Well, maybe I can help you with that." So, he worked on it and he worked on it quite a while and sure enough, he solved the mathematical equations and we set up the matrix and figured out how far the rig could go off location depending on the quality of the pipe, and a lot of different things. But the most interesting part about that is that the distance that it could move horizontally is a function of the water depth. In other words, you can tolerate, say, two percent horizontal drift, the water depth moved two percent, which was damned fortunate because when we got into deeper water, we were allowed more tolerance in how far the shift could move and still be within safe stresses on that drill pipe.

TP: Were you on *Blue Water 1*? Did you go out on *Blue Water 1* for its initial drilling?

LO: I've got to think about that a little bit. I remained at the lab when the first group left the lab and went to New Orleans to set up the engineering team that put together the RUDAC, and put together *Blue Water 1*, the semi-submersible. And one of the things I picked up responsibility for was the underwater tree that was being designed and built that Ron Geer had started engineering work on, and then when he left, I took that over.

Back to the *CUSS 1*. As I recall, the primary purpose of the CUSS group was to do this sampling. And then, as we got into building the *CUSS 1* and once it became operational, it became clear that it was becoming more of a drilling contractor's operation than an oil company engineering project. That is when Global Marine was spun off and the key people from Union became the key people in Global Marine. And then, they proceeded to build a series of drillships subsequent to that.

It was subsequent to that that there was actual leasing made available by the State Lands Commission. In California, the state owns all the land from the shoreline to beyond the Channel Islands. So, all that in between in the channel is owned by the state. And it was some time later that they first made it available. So that was subsequent to my being out there.

TP: You worked in New Orleans for a couple of years there between 1962 and 1964, is that right?

LO: Yes.

TP: And that was after the landmark 1962 lease sale? Do you remember that at all?

LO: No, I wasn't involved in the lease sales. No, not in those. I got very involved

later but not in those days.

TP: Do you have any memories of Bouwe Dykstra and some of those people down in New Orleans?

LO: Oh, yes.

TP: Everybody seems to have a story . . .

LO: He was a formidable person. Long after he retired, we would see him on the streets of New Orleans with his buddies in the morning for coffee or whatever and he was still Bouwe Dykstra. He was still the commanding . . . a lot of respect for Bouwe Dykstra. The boy was set in his ways! You didn't want to slip up with Bouwe!

TP: Yes, well, he was largely responsible for moving Shell into the early offshore, getting the contract for *Mr. Charlie*. But he didn't think deep water was going to be economical.

LO: That's right, and he was very adamant about that. I am a little vague on talking about the underwater trees, and I am looking for where you were talking about

putting that first tree down in the Gulf. I had my notes here someplace.

TP: On the RUDAC system?

LO: Yes. I remember the dry land testing at Weeks Isle when we set the tree up over there when we had the Gasmer test facility.

TP: Were you involved in that Shell School for Industry?

LO: Yes.

TP: That seemed like a strange and interesting project.

LO: Yes. A lot of debate whether or not we should do it, and then once we decided to do it, the whole emphasis on everybody involved was to make the very best technical presentation in the most professional manner that we could. We really wanted this to be a quality type experience for everybody - for ourselves and for the participants. And we made an attempt to answer all the questions and talk to people after the sessions and make sure that they understood what we were saying, why we were saying it, what we did know and what we didn't know. We really made an all-out effort to communicate to the people who attended. There was, in here, "in December of 1960 after making necessary improvements,

engineers took the equipment aboard *Blue Water 1*" . . . I am looking at page 214 . . . "in 56 feet of water, lowered the guidance line with the structure at the bottom. Five guy lines connected to the column of the guy structure." John Lacey and I had designed that guy structure. It was a pretty interesting technical problem because you were trying to lower this very, very heavy equipment down and had to come in line with what was already down there, and it had to be in the right plane, and it also had to be in the right attitude. So we came up with this guidance alignment structure using guy lines, which later proved that you could do everything without guy lines which was a tremendous accomplishment for getting into deeper water.

Anyway, I don't remember that first tree going offshore. I am vague on that. The tree that Ron left behind. And I am sure that I finished working on that tree after I went to New Orleans. The guys gave me this when I retired, so this is the only reason I know what years I did what. And I went to New Orleans in July of 1962, and I am sure it was after that, we set this tree that Ron left behind for me. And we had tested that tree in Cameron Yard, the Cameron test facility here in Houston. Many, many hundreds of times we had operated those valves and operated the controls. And it was a hydraulically-activated operator on the tree valve. And it was a wedge-type tree valve made by WKM. And what you did, you put hydraulic pressure on the piston to close the valve to make sure it was closed. And when it did, it had a wedge in there and it wedged and provided a

pack off in there. And then, when you relieved that hydraulic pressure, it contained a big, big spring inside this operating unit, and that spring would return the valve so the valve would open. We exercised that, like I say, hundreds of times. And I knew from looking at the control panel just exactly what was going on the tree by observing the needle on the pressure. And we ran that tree . . . it took us much longer to run all this equipment. We finally got the tree on bottom. I was over on a remote platform where the control unit was to operate the tree. We ran the tree with umbilical cord set on bottom. And when I went to operate that valve, I could see the pressure wasn't responding properly. Here we are, after 13 days - all these months and months of building this damned tree and it wasn't working! Now, you're talking about bad news?

So, we had to pull the tree . . .

TP: This was late 1962 at some point?

LO: I think it was in 1962. We had to pull the tree and come back to town, and I had to go in and see my boss Jack Gordon, who was the division production manager, the next morning and told him what I thought had happened was that we pressured up that valve and those wedge gates opened, I mean, the switch activated, and because it had sat there for quite a long time before we allowed the spring to return it, the darned thing actually developed a little friction there and

the spring wasn't on enough to return it, and we didn't have a way to put hydraulic pressure on the other side of that operating piston, so we couldn't return those valves and we couldn't operate those valves. He said, "Well, O.K., let me give Pittman a call." He called Pittman, the area manager, and said, "Well, we think we know what happened." There was some conversation about whether they were going to fire me or not, but they didn't! So, Jack Gordon and I made a trip over to WKM, talked to them about their multi-valve design. And some time later, we rebuilt the tree and put it back on the bottom. I don't remember the sequence of events that ties into what you have here. Now, Ron probably would remember.

TP: That is a good anecdote. But you did get it working eventually?

LO: Yes. They redesigned the valve with the slab gate valve. Cameron had one. I forget if we used Cameron's or if WKM built one. And all the trees since then all have that new type of valve.

In observation about your bright spot technology and the technical evolution of that, there was a significant contribution made by the petrophysical engineers in helping the geophysicist tie those seismic lines to well logs.

TP: Right. That was mentioned by Mike Forrest but I have never really talked to

anyone in detail about it.

LO: O.K. The most knowledgeable person on that is Sam Mitchell, and his name is on this. He did a lot of work. He was in the small little cadre - nobody could talk to anybody except the guys working on it, but he was in that little cadre working with the geophysicists on developing, typing the type of shale so they could make the right calibrations, understand what the seismic responses really meant.

TP: I called Sam about that. He was, I think, extremely modest, that his part was not that significant.

LO: Well, it was.

TP: Forrest said the same thing.

LO: Yes, so I certainly want to give him some recognition.

TP: In following up your period in New Orleans, you went back to Los Angeles for a brief period in the Marine Technology group?

LO: Right, well then, Ron got transferred to Los Angeles to head up this new central Marine Technology group. And it wasn't long thereafter that I found my way out

to California. Ron got me transferred out there. One of the primary responsibilities I had was trying to figure out how we were going to lay pipelines in the deepwater and also, how we were going to make the connection of the pipe to the well head or to another underwater manifold or another underwater facility.

TP: What kind of water depths were you thinking about at this time?

LO: Well, we were thinking hundreds of feet, but the question was, how were we going to lay the pipes? You have in here the use of the stinger which helps support the pipe as it comes off the lay barge, as it swelled and comes off the lay barge. And then, the stinger goes part way down, and then there is a span of unsupported pipe. But the question was, also you hold tension in the pipe so that as it comes off, it is being held in tension and that helps release the stress so it doesn't buckle. So, we tried to figure out the mathematics of that and we didn't have anybody in our group that could handle it. I couldn't begin to handle it. We had Bechtel under contract up in San Francisco, and they had some mathematicians they said could solve this problem for us. And also, they helped us with some other things. So I made many trips up to San Francisco and it was an unstable differential equation. We just couldn't solve it. We couldn't solve it. It was kind of frustrating.

One of the things we did do was, Roloff . . . I forget Roloff's first name . . . he had

been working on this connection problem when I got out there, so we worked together on it. And he was out in the desert laying pipes out in the desert, attaching the wire line to them, and then pulling them some distance up through a cone. And the idea was that if you had the pipe laying out there with a lot of excess pipe, you could pull it and it would arc itself around, and you could actually pull it up in the cone and then make the connection, remotely. So, he had done a lot of work on that, and he did a lot of empirical work with different sized pipes and figuring out configurations and what would be the critical combinations to cause the pipe to crimp and become useless.

Anyway, then I got transferred to BRC, and that was in . . .

TP: What kind of conclusions did you come to about laying pipeline in deepwater?

LO: Well, it was still an unsolved problem. We didn't have the mathematical formula to tell us what we could do. And all we knew was what people were doing, what they were getting away with and whether they were getting into problems. And we didn't have a mathematical formula.

TP: Did you have any dealings with Brown & Root? We wrote the history of Brown & Root and they told us a lot on pipeline development of the stinger and the first big lay barges. It was sort of trial and error.

LO: Yes, it was, and this was before that, although the stingers were in existence. It was about that time, in the early 1960s. Well, I got transferred back to the research center in 1965, and I was to head up a group there, a technical group that was to work on marine technology problems. And so, one of the problems I brought with me was this pipeline problem because we didn't have it solved. And it was really perplexing. And we had a whole matrix of things we were working on. But we had a mathematician at the lab by the name of John Chapelier (sp?). John Chapelier was a very gifted mathematician and he worked on a number of different things in the basic research group. I got talking to him about this problem. He said, "Well, I think I can handle that." I said, "You can? You think so?" He said, "Well, I don't know, but let me work on it." So, John worked, and he worked and he worked. And, I'll be darned - he solved that problem, the mathematical problem. And with that, we developed a whole analytical approach for laying pipes in deep water - how deep you could lay it, how long a stinger you needed, how much tension you needed on it, what size pipes. I mean, the whole works, we had laid it out. But about that time, Shell Pipeline got involved and we transferred all that to them. They became responsible for the bigger lines. We just retained the smaller sized lines.

One of the interesting things about this laying them on the ground and pulled into a tube . . . another company, I think it was Humble, had come up with the idea of

putting a curved pipe in the platform fluted on the end when you built the platform. And that curved pipe would be bigger than a future pipeline to be pulled up in there. And so, when you went up to lay a pipeline, the lay barge could get near the vicinity of the platform, they would put a wire cable with a connection to the pipe on the end of the pipe and as they made up the pipe, they would pull up through that and had a wench up on the platform. Well, that was great for the first end. The question was, what are you going to do with the second end if you want to go from one platform to another platform? Well, we said we thought we could solve that problem. We could tell you where to lay it on the ocean floor, the second end, attach that wire to it and then pull it up through the tube. But if you are in, say, 200 feet of water, you had to have about 220 feet of insertion. So, the line laying on the ocean floor, just laying there with the wire pull line attached to it, has to change its physical configuration sufficiently that it will accommodate this 200+ feet of insertion length.

Well, we were out there, and I forget which company it was - one of the lay barge companies. I don't remember if it was Brown & Root or McDermott, but Lane Phillips was a Shell superintendent . . . Lane was a Shell superintendent, and a Shell pipeline man, Wilkerson, was out there. And so, we told this seasonal lay barge captain where we wanted this pipe to be laid out on the ocean floor. And he looked at us and he said, "Well, the platform you want to put it on is way over here. If we lay it out way over here, it is not going to get there. “Trust us." So,

we laid that pipe way out. We had to lay out, you know, a lot of extra length of pipe, hundreds and hundreds and hundreds of extra feet of pipe. And when the lay barge got done, over on the platform, we started up the wench and started pulling that pipe in. And man, we all had our fingers crossed because we were afraid it was going to sink in the mud and develop a lot more resistance. And we kept pulling and kept pulling and kept pulling, and sure enough, we got the end of the pipe up through the second tube, and cut off the bull nose on it, had the wire line attached to it, and Lane and I headed out into town. Lew stayed out there to pressure test it and peg it. And when we got to the beach, he had the good word for us that it pressure tested and it pegged. So, we hadn't collapsed it. That was interesting. And subsequent to that, that was done very routinely.

TP: What did the captain of the lay barge say about this?

LO: Oh, I don't know! He couldn't believe we wanted to lay that line out there like that.

Well then, I became the manager of the R&D group there, the mechanical engineering group at the lab and continued to work on a number of offshore engineering problems in addition to other problems - tar sands and that sort of thing.

TP: Production engineering problems?

LO: Yes. But one of the really interesting technical efforts that we undertook . . . was looking at the question of underwater soil movement. And we were concerned about the stability of the soils near the mouth of the Mississippi River. And there is an interesting phenomena that occurs. When the sediment is picked up from upstream, you have two components in the turbidity in the water. One is sand, and the second are shales. And the shales are flocculated and they are in platelets. And they stay suspended in the water pretty much independent of the velocity. That is why Lake Houston looks brown, even though the water is just standing there still. It doesn't settle out. The sand particles will fall out as a function of velocity. As the Mississippi River dumps into the ocean, this turbidity pattern is very extensive, because the fresh water is lighter than salt water, so it fans out. If you have seen aerial photos of the mouth of the river, it fans out tens and tens of miles to the east and some to the south, and some to the west. Not too much to the south because of the current flows. It follows the current flows. Now, the sand all drops out as the velocity decreases. That is why they are constantly dredging South Pass. But these platelets have an ion exchange when they get in the salt water and they begin to coalesce. And after awhile, they start dropping out. And when they drop out, they eventually settle on the ocean floor but it is a very, very unstable, very soft material. And in some areas, this material is built up in hundreds of feet of thicknesses. And then, as you go off the mouths of the

Mississippi River not too far out, there is a drop off in the water depth. A very significant drop off.

Now, the phenomena that occurs is that when a hurricane comes in, the pressure differential under those waves between the trough and the crest is felt on the ocean floor. Now you have an ocean floor that has a small tilt to it but towards the outer edge, it has a very large drop off because, as these waves work on that very unstable flocculated soil, it causes it to actually move and go downhill and slide off. Well, if you put a piling through there, then as the soil moves, it puts pressure on the piling. So, we were looking at this South Pass 62 because it was an area where a very significant amount of this material had built up prior to putting the platform out there. And we had done a lot of work, and Bob Bea had done a lot of work . . . he is now a professor at Berkeley . . . he was one of our key technical guys in the offshore, platform, soils, risk analysis business. He still is. And we had made some predictions about that area. We thought the chance of losing the platform due to soil movement took a less severe storm than the same storm forces that would create wave forces and wind forces and current forces to destroy a platform. So we went ahead with installation, knowing that there was a possibility of these severe soil movements in that platform location.

Of course, the granddaddy of all hurricanes hit - Camille. It went right across that area. And as you have documented in here, the platforms were lost due to the soil

movement. We took measurements, water depth measurements, in that general vicinity, within several miles of the platform, and in some places, the water had increased in depth by 40-50 feet. That much soil had slipped off. In other places, it was shallower by a few feet where soil had actually moved.

TP: I don't remember where that was. I remember writing about that. So, you had predicted it?

LO: We had predicted this. It is so uncanny that it happened just like we predicted it. And nobody had developed any concepts about this, to my knowledge, prior to Bob Bea and the guys working on it.

So, where we had set the platforms, the soft soil was in the order of 100 to 110 or 120 feet in thickness. But the oil field was up against the flank of a salt dome. And there was a surface expression of the salt dome where the water was a little shallower over this big surface expression of the dome. And the dome was hundreds of feet surface expression shallower. So, the question is what are we going to do about replacing those platforms? And then, we weren't confident we could design a platform that would withstand that much mud slide against the platform, 100+ feet. But we got to looking.

This sediment was only in the order of 20-30 feet on top of the dome because it

tended to wash off. The dome was a little shallower and it tended not to build up there as much. So, we went out with the *Blue Water* and we drilled several wells to better define whether reservoir sands were up against the salt dome. And then, we picked a new location which was on the very edge of this dome where the soil was only 20-30 feet deep, and located a platform there. And then, we were able to directionally drill the wells into the reservoir without having to go through the salt. Drilling through salt is challenging. And relocated the new platform where the soil thickness, the bad soil thickness, was much less.

TP: Was there any problem installing the platform on the salt dome? I mean, it is hard to drill through salt but is it hard to drive piling . . .

LO: There was enough sediment above the soil where you didn't encounter the salt.

TP: Those hurricanes in the 1960s were devastating, but they did provide a lot of data about soil mechanics and other things - wave mechanics that really launched the industry technologically.

LO: And there was another very key technical advance made by a fellow by the name of Bill Foster who passed away at a very early age, but he developed a wave staff that was an inductive-type wave staff. Always, the problem before was these wave staffs would be destroyed in a hurricane, so they wouldn't end up with

anything. But he developed this inductive wave staff that consisted of two wires that had a spreader bar between them. And so, he could suspend those in the platform and the waves would easily pass through it. And Reese Patterson had installed a number of those before this hurricane, and that is how we got a lot of good wave height data.

TP: So, what other things did you work on when you were manager of mechanical engineering?

LO: At the lab?

TP: At the lab.

LO: Well, the main thing was keeping Tom Barron happy. That was a challenge.

TP: Do you have any anecdotes about Barron that you can tell?

LO: Probably best left unsaid!

End of Side A

Tape #1, Side B

LO: . . . particularly mathematical problems. Once a week, you had to take one of your professionals in to his office, eight o'clock in the morning, and he would have to explain on the blackboard what he was doing. And then, if it was anything involved with mathematics, Tom Barron would get directly involved and he could give you a lot of suggestions! So that was always interesting. And everybody dreaded being the next stop on Tom Barron's review list. But he had a lot of ideas and he was a great mentor for me and a good supporter of mine, so I was able to deal with Tom, I think, effectively.

Well, then I went off to head office for one year.

TP: It was still in New York?

LO: In New York. Right. I was responsible for staff planning for the mechanical engineering organizations ion New York under Steve Siebenhausen. And then, following that, I got transferred to the Southwest Region here in Houston. And soon after that, Sam Paine came in as my boss. He became the area manager. And so, that is when I first started working with Sam. And most of our activities were onshore. We had a little offshore but not a whole lot. A little off Texas. We had the Buccaneer field, and we had a little activity over here. Not too much.

And then, when we had the big reorganization in 1971, we went from areas to regions. I got transferred to the Southern Region in New Orleans, and Sam was the region production manager and I was his region engineering manager. And then, that is when I got more involved with the broader aspects of the offshore, and particularly, started getting more involved with the government agencies, the regulatory agencies.

TP: Trying to get the government to open up the federal OCS?

LO: At that time, we were dealing primarily with the aftermath of Bay Marchand and several other blowouts, and there was a tremendous effort made to try to convince, particularly the regulatory agencies, that we knew what we were doing and we could do it safely. And then, of course, the environmentalists were becoming more and more involved. And there were two college professors . . .

TP: I guess that was right about the time of NEPA. . .

LO: Yes, and a lot of new input from that side of the House. There was an interesting conference. Two college professors from Oklahoma University had gotten this grant to put together a one-week program in New Hampshire to review the performance of the offshore industry. And this was following Bay Marchand. They invited industry, the state representatives, they invited all the environmental

groups, and quite a cross-section of folks, government folks, and we were to all get together and spend one week together and get to know each other and figure out how to solve all these problems. I don't remember the second professor's name but one I do remember is Don Kash. And they contacted Charlie Blackburn, who was the vice-president in New Orleans. Charlie being an OU grad, it sounded like a good idea to him. So, they nominated Warren Marshall, who was a division production manager, just had finished dealing with Bay Marchand day and night for months and months on end . . . and myself to go attend this conference. I was the regional engineering manager . . . Well, just before we left, we got a draft of their report that we were supposed to read and understand and comment on. Well, the report was so bad, I absolutely had to quit reading it because what they were saying was just ridiculous. Well, that was the setting for a raving in New Hampshire. And all these people were telling us how we were not utilizing the right techniques to train people and manage people. It wasn't our equipment problem, it was our people problem. People were causing these problems. People didn't do the right thing. So it was all a people problem. We weren't looking at the world right.

Anyway, we had a very interesting week up there, between Warren and myself, and I don't remember if there was any other industry person there. If there was, I don't remember any. They were all academic types and government types.

TP: Why just Shell?

LO: I don't think anybody else had a VP that was alumnus of OU! I think that was the problem. They could see through this thing.

So anyway, we had some very, very heated discussions up there and just trying to get people to understand what we were doing and what we weren't doing. We could accept criticism - that wasn't the point. But they didn't understand what we were doing. They had it wrong. They didn't understand the technology involved. So we had a lot of discussion about that and came back and felt like, for the most part, we had wasted one week but, you know, we did our thing.

Well, it was kind of interesting. It turns out they wrote this report. The final report was much, much better than that draft report that we had gotten. They had some credibility and we developed some respect for each other. Well, a couple of years later, Don ends up, he is one of the key guys in the Minerals Management Service in Washington, in Reston, and he took a sabbatical-type leave from the University to work up there for a while. In the meantime, we were doing our things with the regulatory people and the congressional people. All these environmental hearings and we were putting the full court press on many fronts.

I moved in to the division manager's job and we had really three approaches to it: We had the offshore committee, which were oil companies in the Gulf who had

this informal organization. No staff. It was all volunteers . . . to deal with regulatory issues. And by charter, we could not get in to any legislative or political issues. The Offshore Operators' Committee was strictly a technical group. The Department of the Interior would issue new regulations. As a group, we would sit down and go through it with a fine-tooth comb, comment on it, rewrite it, etc. And also, at hearings that were regulatory hearings, we would have a designated person appear and speak on behalf of the offshore operation committee.

I was chairman for a couple of years. Warren Marshall had been chairman. And they passed it from company to company. But I was chairman during a very, very critical period because the aftermath from the Bay Marchand blowout, trying to get in the deeper water, and the government was really, really adding regulations layer after layer after layer.

TP: Were they safety regulations?

LO: Safety and environmental protection. I appeared at a hearing in Washington, D.C., and the Department of Interior panel members up there, one of their key guys is Don Kash. So, there was an issue involving who had the responsibility? Was it the Department of Interior or was it the Coast Guard? There were a number of issues that came up in this hearing - the issue being discussed between

the panel members that I was on and the government guys.

TP: This is the Department of Interior?

LO: The Department of Interior. The question was who had the responsibility?

TP: The responsibility for making regulations?

LO: To cover this technical area. So anyway, we got in this heated discussion, Don and I. I said it was one way, and he said it was another way. And we finally agreed that, well, if we can't agree, then it must be pretty damned complicated. One guy could read it and say it is this way. Another guy could read it and say it is that.

So anyway, over time, we had a lot of contacts with a lot of people. I had a lot of contacts.

TP: What were some of the big issues that you remember as far as environmental regulations?

LO: Well, on environmental protection, the question is what are you doing to prevent spills? And are you doing everything you should be doing to prevent spills?

Mainly, don't have any blowouts. Don't have any pipeline leaks. Don't have any discharges off the platform when the tension releases the hydrocarbons. Big environmental issues. And then, of course, if you do have a spill, what are you doing to respond to it? And we had set up the Clean Gulf Associates in the Gulf to handle that, in part. But it was just unbelievable. And then, we got into air emissions and overboard water discharge. Drill cuttings and mud discharges. Just a litany of things. And every one, you could take issue with if you were a strict environmentalist. Some places, they would just ban, discharge anything. But we tried to show that what we were doing was not harmful.

Anyway, back to Don Kash. After he had been up there in that job for a couple of years, I ran into him one day and, like I say, we testified at a lot of different hearings and Congressional work. He said, "You know, Lloyd, Shell is handling this the way it ought to be handled. You are dealing with the regulatory people. You are dealing with the Congressional people. You are dealing with people on a technical basis. You are dealing with people on a managerial basis." When we testified before Congress, we would make sure that the Department of Interior people in New Orleans . . . John Rankin was the New Orleans manager . . . got a copy of our testimony either before we gave it or as soon as we gave it, because if we said anything in there . . . we wanted them to hear from us what we were saying about things in the Congressional hearings. So anyway, Don Kash said, "You know, you guys in Shell, you really handled it just the way it ought to be

handled. After being involved for a long time, I have a lot of respect for that."

TP: Is Don Kash someone who is still around? You probably haven't had any contact in recent years . . .

LO: No, I haven't. You can check with the University of Oklahoma. I don't know if he is still there or not. And I think it is spelled with a K. Kash.

TP: Do you remember any other government people in particular that you dealt with? Rankin? Did you have contact with him?

LO: John Rankin - we had a lot of contact. We had a lot of contact. Well back, I was explaining . . . we had kind of a three-pronged approach. We had the Offshore Operators Committee, and I was very involved in that. Chairman. And other Shell people were very involved in technical committees. We had the API. Now, the API was basically a Washington-based operation. And we supported what they wanted to do.

TP: So, the Offshore Operators Committee wasn't a part of the API?

LO: No. And very much, by design, separate. But the API mission primarily was political. And then, we had the Shell efforts, separate and apart, over and above

that. And, as an example, there was a coordinated effort between API and offshore operators on handling visitors. And we had a lot of visitors that we would coordinate who was coming, who was going to handle the visitors, and then, put together a trip book and assign a company and an individual to host the visitors.

TP: To visit the platforms?

LO: To visit the platforms. And over the years, we had a lot of visitors. I was involved in most of them for Shell for a number of years. I just made a list of some of the ones that were more outstanding in my mind, you know, thinking back about the challenges involved. So I just made up a list. One was Congressman Dingell. He came down. We spent a day together offshore, and he had several staff people with him. And when we got back to the French Quarter, I am sure we had dinner someplace, but he told me that he wanted me to come back to the room with him because he had a lot of questions for me in things he had seen offshore that day. So, we went back to the room and about midnight, I said, "I've got to go home." He had wrung me out! He asked me every possible conceivable question you could think anybody could ask. I was just amazed by the tenacity that he had. He really wanted to understand the offshore operations, and what was good and what was bad. And he wasn't particularly a friend, he wasn't particularly an enemy. But he just had a great personal interest in it.

Another very interesting group that came down . . . Johnson . . . who was our head Washington man in those days? Johnson?

TP: Jess Johnson?

LO: Jess Johnson. He was always setting these trips up. He was always involved with the API up there and tried to get them in the Shell camp if he could. Anyway, Senate Bennett Johnston, and this is during the energy crisis, he wanted to bring his full committee down, energy committee down . . . take a trip offshore.

TP: This was 1974, 1975, somewhere in there?

LO: I think more like 1977. So, we got to take Bennett Johnston and his group and his group offshore. And I don't remember who all was in the group, whoever was on the committee, but I can remember David Boren, Max Baucus, Malcolm Wallop, Don Nichols, and there were several more. And we had dinner that evening in the club that is in the building that is down on the waterfront. I think it is the Maritime Club. I don't know what the arrangements were but that is where we had dinner. And that was the night that President Carter was giving this fireside chat on the energy crisis.

TP: The "malaise" speech?

LO: Yes. So, we had a TV set up where we were eating dinner because it came on when we were eating dinner. And so, we sat and we watched Carter. And then, Bennett Johnston, his staff arranged for some reporters to show up. So, Bennett went around each one of the guys sitting at the table and tried to get them to make some comments about Carter's speech, so it would be on the evening news. And all the senators were damned reluctant to say anything, both the Democrats and the Republicans. And Bennett would go around behind them and put his arms around them and ask them a leading question or two, just trying to get them to say something exciting for the evening news! Boy, everybody was sitting there pretty mild!

We took out a number of different governors. One was Mildred Thompson from New Hampshire. You know, he just passed away. The most conservative person I have ever met in my life. We took him offshore Texas here. Joe Foster, who was, at the time, with Tenneco, and I, we took him offshore. And that was interesting because we had taken so many people out that were against everything. And to take a guy like that out who was for everything, it was just wonderful. It was a great day!

There was a governor's conference in New Orleans, and it was decided through

the API and Offshore Operators Committee that we would invite any governors that wanted to go offshore, to go offshore. And I don't remember the extent of the attendance in this conference. I don't remember if it was a full governor's conference or some subgroup. But anyway, we only had one governor who accepted the invitation to go offshore for a day, and that was Phil Noel from Rhode Island. We went offshore and went on the rigs, and he was an enthusiastic Democratic governor. He wanted to know about a lot of things. We just really had a great day.

Well later, when we were trying to locate a shore-based facility on the East Coast to do the Baltimore Canyon drilling, we literally could not get acceptance any place along that coast. New Jersey, New York, down below in Maryland, Massachusetts wouldn't hear of us. Our friend, Phil Noel, said, "Come to Rhode Island." And that is where he put our bases. And he was a real friend.

They had a surplus Navy base there that he was looking for something to go in there. He wanted to generate some money off that Navy base, which he did. And it was great. It was a tremendous facility.

Well, we were running into some snafus with the labor up there because we had all nonunion labor. We didn't have that many people. I mean, it was the service companies. Shell didn't have anybody but our service companies. And the boats

were all nonunion. The shore facility, what few people it had, were nonunion. Crane operators were nonunion. And the union people thought that wasn't right. And we had a hurricane fence around our shore base facility. One morning, bus loads of union guys show up. Bus loads of them. They are outside this gate. They are making all kinds of noise and carrying all kinds of placards, raising all kinds of heck. There were far more demonstrators there than there were in total workers. They outnumbered us by a great number. They proceeded to push the fence down and they wanted to get down where the boats were. The guys in the office were pretty damned concerned. These guys were pretty menacing. But thanks to Phil, he got his state troopers out there and took care of that problem. So, Phil was a real friend.

TP: You were general manager of the offshore division until . . .?

LO: Well, first, I was the division production manager . . . the total spectrum of time, from the time I was division production manager through the president of Shell Offshore, so that would have been from 1979 to 1983. Or, earlier than that, from 1974 to 1983. But we made a real effort to work with the staff and Department of Interior and the Coast Guard.

TP: Did you have problems with fishermen groups when you were out there?

LO: Do you mean on the East Coast?

TP: East Coast.

LO: I don't remember any fishermen groups. They were well-represented at the environmental impact hearings that we participate in, O.J. and I participated in. Just about every one of those. But as far as day-to-day contact or in the field operations, no. We were not involved with them. But we took a lot of Department of Interior folks offshore and Coast Guard people offshore.

In the Andrus administration, they had a lot of folks who had environmental background who were key staff in the Department of Interior. We made a real effort to get to know those people and try to work with them, and have technical discussions with them. And took several of them offshore. And over time, we developed, I think, a pretty respectable rapport with those folks.

Charlie [Blackburn] wanted to go see Secretary Andrus and talk to him about opening up more leasing. So, I made contacts with the Andrus staff people up there and told them what we would like to do, and they set a meeting up for us. And before going in to see Andrus . . . most of these staffers were females, ladies . . . we stopped and we talked to them and told them what we wanted to show him so they knew, and it would give Charlie a chance to talk to them a little bit. And

then, we would go on in and we would see Andrus, Charlie and I. A great big, plush, wood ornate office. And Andrus was pretty cool. Not too many things were said. He said, "How come you've got so many undrilled leases?" He had a list of the leases that we had, and the list indicated which ones we had drilled on and which ones we hadn't. "Now, you are up here trying to get more leases and you haven't drilled half of them you already have?" It kind of took us back for a minute. So, we had to explain that, well, first of all, some of those leases we took after we got them and did more seismic work on them, to this point, hadn't justified drilling the well. Other leases we had, we needed more surrounding leases in order to make it attractive, because the prospect fell beyond the given lease to drill the well. And there were quite a few that were still very much in progress. We were still doing a lot of seismic. You do a lot of seismic before you actually do drilling. But about the only thing Andrus was interested in was why we hadn't drilled all those leases yet. And we were in there asking for more?

It was in that era of time that, Flowers, particularly, Billy and I, went up and we made some presentations showing prospects and how they fell beyond a given lease. I think you've got some of that in there. It was pretty interesting because . . .

TP: So, you actually showed prospects?

LO: Yes.

TP: I remember him saying this was really significant.

LO: So, here the industry people come in and are showing them things that . . . and I think that helped build a very healthy respect between our Shell folks and the Department of Interior folks.

TP: Who were the main people that you were talking to? Rankin and Andrus?

LO: Well, Rankin was the local guy in New Orleans. We had a lot of contact with him and through the Offshore Operators Committee, particularly.

There were two or three female staffers up there, and I just can't remember their names. I can picture them but I can't remember names. One was Barbara, something. And this other one, I can't remember. But she was a mathematician. They made much more broader areas available for leasing than what they had before. Before, they based it on nominations and if more than one company . . .

TP: Area wide? They are called area wide?

LO: Not yet, but they would put up multiple blocks, adjoining blocks, rather than just

a single block, if there was an indication that the structure extended beyond just a single block. Before they were putting up the single block, when somebody would go out and drill it and you find something, when they put the surrounding blocks up, then it would be very, very competitive.

TP: So, you put multiple blocks up which gave companies that had good information an advantage?

LO: Yes, right. And they started doing that. Well, then we had a change in administration and Jim Watt became the Department of Interior. And I don't remember for sure who was in this meeting. I know it was Billy and myself. I don't remember if Jack Threet was in the meeting or not. But we were in a meeting with Don Hodel and a couple of his staff. Don was the under secretary. And, again, like we had done with the Andrus people . . . we were in showing them why we wanted more extensive broad areas put up for lease and how it would stimulate exploration effort. It would make it more attractive. You would get more involvement, etc. And we had laid out a lot of stuff. We had view graphs and maps. Don Hodel gets a call from Jim Watt.

TP: In the middle of the meeting?

LO: In the middle of the meeting. He said he needed to go see Jim and he said he

needed what we got. And he just gathered everything up and went off! And then, he came back, and it wasn't too long after that that they came out with the area wide leasing. So, I can't help but think that we, collectively, Shell, had a positive impact on that major policy change.

TP: This meeting was just Shell people?

LO: Yes.

TP: There were no other industry people?

LO: No, this was a Shell meeting with Don Hodel.

Another interesting offshore trip was with reporters from 11 different news organizations on the same helicopter trip. It was a one-day trip, a full day. It was right during the gas shortage which was, I think, around 1977. We were trying to explain to people what it took to get more natural gas to the market and why the problem had been because we had had a period of regulated prices and the prices were not attractive enough to stimulate the kind of drilling development it would take in the offshore. But that was changing. And the most interesting part about that was getting the write-ups from those 11 different reporters after the trip. And to see the spectrum of what they wrote, between very pro-industry to very anti-

industry. All heard the same story, visited the same location, talked to the same people. And to see how news media can couch things and jump to conclusions.

Time magazine wrote up a one-page article. And in the middle, they had a little box, a little highlight box. In that highlight box, they talked about the pornographic material aboard a rig. And we had gone out to a drilling rig. Now, Warren Marshall was a pretty straight-laced guy, and when he was in the division, we always brought reading material and publications for the folks on the platforms. But there would be no pornographic stuff. And also, there was kind of a taboo on some publications. I was just startled when I picked up *Time* magazine and saw that. Now, where did that come from? So, the drilling superintendent had been out . . .

TP: As if that should be the focus . . .

LO: Yes, here we've got a national . . .

TP: As if that was more newsworthy . . .

LO: Yes. Schools were shut down and factories on the East Coast were shut in, and we are trying to explain to them what it takes to get more natural gas . . . well, it turns out, I had a drilling superintendent who went out with me. And so, he got

back to find out where in the hell they got this from. And it turned out that on one of the drilling rigs, one of the workers out there, contract drilling rig, had said something about pornographic magazines. I guess he was asked if they had pornographic magazines aboard the rig and he said, 'oh yes, we've got some,' or something like that.

Well, I'll mention one more, and that was Walter Cronkite. Walter, after he left the evening news, he had a special series of programs about new and unusual and different sorts of things. Somehow, they set him up to come visit offshore, and he came to us. I met him at Belle Chasse. We got aboard the helicopter. And helicopters are noisy as the devil, so it is really hard to communicate on a helicopter. But he said that he had a scratchy voice and he didn't want to try to talk. He needed to save it for when we got offshore. So we didn't talk all the way out. I was sitting next to him and we didn't talk. I had the trip book and I had some maps and, as we went by things, I'd show them to him and show him where we were.

We got offshore. He had a full crew with him, camera people, sound people, light people. It was a full crew. And we go in to the office while his crew gets set up. And then, after his crew is set up and we are explaining to him . . . we were putting Cognac in. We were constructing Cognac, the production facility surface equipment . . . we explained to him what we were doing. And then, we took a

walk around. We walked around, the foreman and I, and showed him what different components were on the rig.

TP: You are on the deck of Cognac?

LO: On Cognac, yes. So, we get through doing that. He is standing over on the edge of the platform on the walkway. They had this prepared dissertation for him to give. He is giving this dissertation and in there, he says something to the extent of, 'well, you see, Cognac at the surface, but it goes down 1000 feet below here,' and the camera man tilts down and shoots the water below the rig, and so help me God, there is an oil slick! I absolutely couldn't believe . . . now, we are still building the platform. We hadn't drilled, so it wasn't from a well. But where the heck did that oil slick come from? I got all excited and I tried to tell them, "Well, don't shoot the water." No, they had to because this was program. This was what they were doing, you know! So, I was just devastated. I couldn't believe it. This darned sheen in the sun had just . . . it was a sheen.

So, we got back into the office. That is all we did, was about a five minute deal for Walter. But we go back in the office and Walter is still . . . he was essentially non-communicative. I mean, I don't think he was comfortable being out there. I don't think he really had that much interest in it. But the production foreman had an oil painting of a cat on his wall in his office. And Walter got talking to him

about his cat. Well, it turns out the production foreman, on his seven days off, is a professional cat breeder and shows cats all over the United States, and this cat has won some big award and his daughter or some friend of his had made an oil painting of this prized cat. Walter and this foreman got to talking about cats and I never saw a guy so engaged in conversation!

TP: He was interested in cats?

LO: Yes, well, he was looking for something to talk about that wasn't in the oil business. And then, the foreman got me aside and said, well, what happened - when we were walking around with Cronkite and, of course, all the workers out there, they all had to look and see, and one of the welders was putting diesel fuel in this engine, and when he was looking at Walter, he overfilled it! It happened just before that darned speech or that setting. So, we explained to Walter what had happened. He didn't seem to be concerned about it. We never heard any more about it.

TP: Did he reshoot the . . .

LO: No. The camera man said, "That will never show." I said, "Well, I hope not!"

The most interesting visitor of all was Governor Edwards. We were asked to take

Governor Edwards out and we were asked to pick him up on the lawn of his mansion in Baton Rouge. Well, I had a very adamant order that helicopters land only in designated heliports or airports. Controlled flight. And none of this business of picking people up on the baseball fields and levees. Guys were getting picked up and dropped off all over the place, and there was a concern about it, so nope, he would have to go to the airport, we would pick him up at the airport. And the helicopter was air logged out of Lafayette. Edwards had two cronies from Lafayette that wanted to go on the trip with him. So they get on an air log helicopter in Lafayette and they tell the pilot to land on the lawn of the mansion. Well, I didn't know it until they stopped at Belle Chasse and picked me up. So, I wasn't very happy about that.

Now, the second ground rule for this trip: the media were not supposed to be involved. This was not a publicity thing for Edwards. This was an educational thing for Edwards. So, no media! So, we fly out to South Pass 62, we get off the helicopter. This was the new structure that was being put in. We were installing it. We get off the helicopter and as we start down the stairs, here are two camera men looking up at us. Two TV crews out there.

TP: They were already there?

LO: They were there waiting for us. So, when I got a chance, I got the foreman aside

and I said, "The rules were, there weren't supposed to be any TV people out here. How come these people are out here?" He said, "I know that" . . . but these two television stations out of Lafayette knew that he was coming out, went to the terminal in Venice, and they told them - the helicopter people dispatched Venice that they were supposed to be out at the rig and they were supposed to be there before Edwards got there because they were supposed to greet him out there. So, the guy in Venice said that was what he was supposed to do and we'd better do it. So they sent him on out there.

So, one of the TV reporters was an attractive . . the cutist young gal you've ever seen. We tour the rig out there. and there were a lot of work men out there. Edwards gets out on the deck and he starts talking and waving to people and telling them what a great job they are doing. He was doing a little politicking out there, of course. So, for now, we go over to Cognac. Derrick barge. We were installing Cognac. We go over to Cognac, and we had a big office on the derrick barge where we had all the engineering drawings and all the background support for putting Cognac in. And Pete Casbarian gave a little talk about Cognac and how deep it was and how big it was and what we were doing, and so on and so forth. And Edwards kind of sat there. Then, from there, we went over to the control room. We had to walk across the deck and go over to the control room. We asked Edwards if he wanted to do an interview over there in the control room because we had these TV guys over there on board. He said, yes, sure, he would

like to do that. He said, "Now, Lloyd, give me those numbers again. What are those critical numbers? What are those important numbers?" So, I spew off about one dozen different numbers as we are walking over there. We get up in the control room and he sits down at the master control console with all the gauges and all the printouts. He sits down there and he starts telling the world about Cognac. And he had every number right. He gave the most eloquent description of Cognac that I have ever heard. I mean, it was just amazing! Anything he picked up, he put into that little description.

So, from there, we go back. We go to the galley to eat lunch, and we purposely timed it so all the work men had finished and the galley was essentially empty, except for us visitors. And, of course, one of the galley hands sees it is Edwards. Edwards starts telling a few jokes. One joke led to another and he is standing there in the middle of the galley. Well, pretty soon, I look up and in every danged door, we had people coming in. Everybody was coming in because these Edwards jokes are hysterical. And I finally had to tell them we had to eat and get on because we had a time schedule.

In the meantime, we used up more hours than we had planned with everybody standing around listening to these jokes. So anyway, the deal was, to get back in the helicopter, go to Belle Chasse, drop me off, go back to Baton Rouge, and then to Lafayette. And the TV folks were on another helicopter. There we go, to go to

Venice and they had a plane to get back to Lafayette. They had to be back by five o'clock in order to make the six o'clock news. So, we are getting kind of tight on time. Edwards was on the outside seat of the helicopter and I was the one next to him. This cute, cute young reporter is looking up at him sitting up there and she is trying to ask him a question. The chopper is winding up, making all kinds of noise. And he says, "Well, why don't you fly back to Baton Rouge with us and then fly on to Lafayette?" She said, "O.K." He said, "Lloyd, slide over." So she jumps up on the helicopter and she gave everything to her camera man. She said, "Well, be sure and get it in. I will try to be there before the six o'clock news." I said, "There is no way she is ever going to see the six o'clock news tonight in Lafayette!" So, we take off.

End of Tape #1, Side B

Tape #2, Side A

TP: How about the creation of Shell Offshore and your becoming president?

LO: Well, we were in the era of the windfall profit tax, and because of the regulations pertaining to windfall profit tax, it became apparent that you were in a better position from a tax point-of-view if you had a separate organization. So that was one of the principal reasons for setting up Shell Offshore. We set up as a separate organization. We had a chairman, a president, a secretary and a treasurer that you had to have for a corporation. And then, we had to hold board meetings and do a lot of documentation as you would for a normal separate stand-alone corporation. And when it was initially set up, I was the president and Billy Flowers was the chairman of the board. Things were changed later but anyway, that is the way it was set up. And we had to segregate our offices from the other Shell offices there in the building, just to demonstrate that we were a separate organization. And then, we had to have service contracts for those folks that we got services from. So it was a clear cut stand-alone.

TP: When did you get involved in the leasing side of this as president of Shell Offshore?

LO: Principally when I was the engineering manager back in the region at the time that

we were developing the bidding for Cognac. And, of course, the big issue there was what were we going to do for deep water platform. Could we build it? And if so, how much was it going to cost? What would it take to build it? And that is when I got involved with the exploration group - Tom Hart and his merry men, in trying to develop a bidding strategy for Cognac.

I will tell you a little anecdote story about Cognac. When we bid on Cognac, we didn't have a drilling rig that could drill it. We didn't have any drawings or any plans for a platform to drill it and produce it. But we had a lot of guys who thought we could figure out how to do it. We bid pretty heavy on Cognac. So, if we found something, it was damned important that we were delivering what we said we could do. First, we had to get a rig. So we equipped one of the Odeco rigs to drill in 1000 feet of water. We had to put a lot more mooring on it to get it ready to go out there. No, was it the Odeco rig or was it Pacesetter rig? I forget which rig we drilled the initial well with. I guess it was an Odeco rig. Anyway, at that time when we drilled it, I was the division production manager in the offshore division.

TP: *Pacesetter 2*.

LO: O.K., *Pacesetter 2*. We had to equip that rig, get it set up. We had to equip the rig, and then Amoco was going in with us on the well, but they had a provision

that they could have an engineer aboard the rig at all times that could see what we were doing. And we agreed to that. By the time we got drilling it, I was the division production manager. Sue and I and the kids were up at her cousin's place in Adrian, Michigan. We were just getting ready to come back to New Orleans when about eight o'clock that morning, I got a phone call from Larry Smith, and Larry was the division engineering manager but he was filling in for me. He called me and said, "Lloyd, I've got some great news. We just logged a well out of Cognac, and we had 140 feet of pay." I said, "Larry, how many feet of pay did we say we needed in order to go forward with the platform?" He said, "I don't remember offhand, Lloyd, but it was a lot less than that. This well is really looking good." I said, "Well, that's great news." So all the way home, driving back from Michigan for two days, all I could think of is now we've got to produce! We've got to build the platform.

TP: That was an amazing project.

LO: Yes, it was.

TP: It still stands out, I think.

LO: We had a very talented group of people that we put together, particularly Pete Casbarian. But Sam was very much involved in negotiating with McDermott,

with Bill Bailey and the McDermott folks. We had a number of knockdown, drag-out negotiation sessions in Sam's conference room with those folks.

TP: Over methods of installation?

LO: Well, nobody had done any of this before and the question is how much was it going to cost? And, of course, McDermott could see cost plus all over the place. And we got started probably early as far as the design work goes, but on the other hand, because of the money involved, we were so anxious to get going that we pressed forward. We pressed on every front just as hard as we could.

TP: The cost did a spiral on that . . . probably more than you would have liked.

LO: Yes.

TP: Because it was untested terrain.

LO: There were a couple of big surprises. One of the big surprises was in the tonnage. In shallow water, the natural period of the platform is pretty low, it is pretty stiff. So it doesn't get much response. Fatigue, stress, due to day-to-day wave action. But this Cognac thing, being 1,000 feet tall, had a natural response in the order of several seconds. And there is a natural forcing function out there, waves in that

period. So, we got into requirement for a lot more steel. As I recall the number, 40% more steel on that platform, to accommodate the fatiguing because of the natural response of that platform. And everything we did was first . . . it was under water pile driving hammers, the diving. I mean, you name it. There was a lot in there about the measurements . . .

TP: Well, just the mating of the three sections . . .

LO: Those sections standing in the sun - in the daytime, in the hot sun, and then cool at night. Of course, we built over a period of time when the water was colder. Just the temperature differential expansion/contraction of that structure was more than our mating tolerance when we put it together. So everything had to be temperature calibrated on the measurements. It was pretty exciting.

You know, I do have one difference in here from what Sam said regarding negotiating the joint venture with Amoco. I don't know if I can pick that up here or not.

TP: Sure.

LO: Let me get the right page here . . . where you are quoting saying . . .

TP: 415. Where they didn't have a design . . . and Shell had already installed the bottom . . .

LO: "By 1977, when the agreement was signed, Shell was already installing the platform, strengthening the company's bargaining position over at Amoco." They didn't have a design and we already had installed the bottom section of platform. Well, I was the pawn for Sam when I was working with Amoco. And man, we had a lot of knockdown, drag-out sessions. That was not easy going, because Amoco thought they should have a much bigger piece of the pie than what we thought they ought to have. As I recall it, we took the position, Sam and myself and, I am sure, corporate headquarters people, that they could come in under what we proposed, the terms and conditions we proposed, so long as they came in before we launched that base, because we didn't want to have the full responsibility if something went wrong, for them to say, well, we haven't signed the contract - we are not a party to it.

TP: That had to have been in before they actually installed the base.

LO: They had to sign the agreement. And, as I recall, they signed the agreement when we had it loaded out from Morgan City.

TP: That is probably what Sam meant.

LO: Yes, and Sam, I know now, we can't talk to him about it. My recollection is pretty clear on this because of the . . .

TP: We probably should change that.

LO: That is the way I remember it. We had a lot of help in negotiating that contract.

Back in here, on 434, you talk about the different bidding systems that Congress had mandated so they could experiment with different bidding systems.

TP: Yes.

LO: Well, the Department of Interior put out a notice they wanted comments from the industry, and they held a hearing in Washington to receive input on bidding systems. And we had an engineer by the name of Bob Lane that was in our organization in New Orleans, who was very, very creative. Sort of an analytical guy. And we had all these different systems to look at when we were using the sliding scale royalty and the net profits and whatever they were. Bob and another fellow did some really interesting analytical analysis of these different bidding systems, and was able to present them on a chart, on a view graph. So, I signed up for the hearing and went up. And, as I recall . . I may be wrong in this, but as I

recall, I was the only industry person to show up. I don't think any other industry person went up to debate this bidding system because it was very controversial and it was very hard to get your hands on it. What do these systems mean, one versus the other? But there was one other guy testifying and he was from one of these environmental think tanks. And he made all kinds of outlandish statements in his testimony. So then, I had a chance to get up and make my presentation, and I had these view graphs and these charts, analytical analyses of why we said one system was better than the other. Better for the government. Better for the industry. At first, he took some issue with my presentation. And after some fairly short but heated discussion, he said, "All right. You know more about it than we do!"

Anyway, as it turned out, they stuck with the bonus fixed royalty system. Thank goodness! And that profit system, it would have been unbelievable. We had accountants in there all the time - everybody arguing whether or not you could charge something or not charge it.

Do you want to take a break?

TP: Sure, if you want.

LO: That was August of 1983. And it was the last sale that I participated in.

Well, in here, you say it was April of 1983. But there were two big sales close together. And I don't remember for sure which tracts were in which sale. But the reason I remember the August of 1983 sale is, the usual routine was that we had head office people come to the division and we would go over prospect by prospect in great detail. And then, we had one day, we could come in and make presentations to the executive VP. At this time, it was Charlie, and his key staff people here in Houston. And then, following that, there would be a presentation to John. And in this particular situation, we had a presentation to Charlie, and we were scheduled to see John the next morning. And this was a big sale. We had a lot of prospects we wanted to bid on. A lot of money. A big sale.

Doug Beckmann was the division exploration manager, and I don't see Doug's name in any of this.

So, we made the presentation to Charlie and his group and that night, early the next morning, Hurricane Alicia hits downtown Houston. And Billy Flowers and Doug Beckmann and myself, and a few more of our New Orleans folks, were all staying at the Hyatt Hotel downtown. I woke up during the night and I thought somebody was shooting a rifle at my window! And a blind wasn't closed, so I go out to close that blind and pow, pow. And so, I step out onto the walkway. The Hyatt has a skylight at the top and they've got those balconies that the rooms are

off on. I step out of my door in my pajamas, and just around the corner, the door is open and the window is blown out and the curtains are horizontal and the wind is blowing in. What in the heck is going on here? About that time, a tremendous crashing of glass down on the floor of the hotel. And then, pretty soon, a guy comes out with a bull horn and says, "Everybody stay in your room or stay on the inside of the balconies. Don't look over the balconies." And they had a big grand piano they were trying to cover up down there with cloths and tarps, whatever. And the damned skylights were falling out. Well, Hurricane Alicia was blowing through and what was happening . . . it was blowing pebble, roofing material off of adjacent building roofs and they were, in turn, hitting windows. Scaffolding, whatever was on top of any roof was crashing into buildings.

So, things calmed down a little bit and around six o'clock or so, they said, well, gather in the banquet room and we will serve breakfast in there. And bless their soul, they set up and served a buffet style breakfast in one of those big meeting rooms there around the hotel. So, outside, the sidewalks were littered with glass. Fortunately, the hotel had power but the power was out in many places. And the Shell building was closed. So, the question is, how are we going to get with John? John was leaving the next morning on an overseas trip to Japan. So we needed to see John. One of the corporate security guys got hold of us and Charlie got hold of us, and it was agreed that the corporate security guy would pick us up - Flowers and Beckmann and myself, and I don't remember who else but I

remember Flowers, Beckmann and myself - and he would take us to John's house, and we would show him the sale material at his house. John lived in River Oaks. So this is getting pretty late in the afternoon by the time these things were starting to pull together, and Charlie was to meet us there. He lived in River Oaks. So, we tried to get to John's house. The corporate security guy was trying one street after another because streets were blocked with fallen trees. Well, we finally got to John's house. No power. And John is waiting for us. So he put a big white tablecloth on his dining room table and we all go in and sit down, and John is at the head of the table. Doug Beckmann is sitting next to him with a stack of view graphs that were a foot or more high. He can't show the view graphs but he could lay them on the white tablecloth and he could explain to John what the prospect was and what the seismic lines were and what the maps were.

TP: At least before it got dark!

LO: John would pick up a view graph, he would swing around his chair and he would hold it up against the window or towards the window. He would be looking at the view graph. Of course, John being an old explorationist, he was mighty interested in this stuff. I mean, this is good stuff. And we had some big prospects we were pretty proud of. Anyway, John was patient, Doug was diligent, and we got through that whole stack of view graphs. Nobody else hardly said a word because nobody could see the view graphs! But we could comment a little bit from here to

there. And when we get through with the presentation, it was dusk. It was really getting dark. John offered to pour a drink. He got some liquor out and he goes to his icebox and he brings it out and he had about a half dozen ice cubes. That is all that was there! And we were all so reluctant to take a drink and use his last ice cubes that we passed.

Charlie drove us back downtown. We get downtown and by then, they had barricaded a lot of the streets because what they were doing . . . the windows that were partially broken, they had workmen up there with two by sixes and they were pounding out the remainder of the glass and they were all crashing in the street. We found a way we could get in to the parking garage and get back to the hotel.

TP: But it was a key meeting and Bookout . . .

LO: It was a key meeting and come Hurricane Alicia or not, we had the meeting with John.

TP: That is a great story. I know there were two big sales in 1983.

LO: It could well be.

TP: But there were other big prospects around that August sale. I don't remember which ones they were.

LO: Yes, without some sort of a proper recap of what happened, I can't remember prospect to prospect.

TP: Well, that is very interesting.

LO: That morning about six o'clock, Sue called me because she and the girls were flying from New Orleans to Bakersfield to go start our house hunting trip, and the plane was to land . . . it was Eastern Airlines. It was to land in Houston, and then go on. She called me and said, "Well, I don't think any plane will be landing in Houston this morning." So, they got on the plane in New Orleans and they were supposed to pick up breakfast in Houston. Well, the pilot, as they were getting close to Houston, he said, "Well, you can see the hurricane is over here, over the city of Houston. We won't be landing in Houston but we anticipate we might not and if we take on enough food, we can go on to L.A." But we didn't take on any food, so we had to get by without breakfast.

TP: So, you moved out to become president of Shell California in 1983, dealing with the Belridge operations mainly?

LO: Belridge was about half of it.

TP: We have this interview. I think this was done in 1985. It is mostly about Belridge.

LO: Quite frankly, I don't remember it. Maybe I could make a copy.

TP: Oh, sure. I can make you a copy.

LO: Well, I don't remember this. A ghost from the past! Well, I can tell you one more interesting story about California and the offshore. We were building the Eureka platform in Vallejo. It was a proper place for folks to come and take a look at the platform because it was right next to Napa Valley. And so, we had a lot of visitors who wanted to come and take a look at the platform. We rolled the platform out on a big launch barge and we had to do some final tie down and outfitting of the platform to the barge before we went out in the open sea. So, the contractor anchored the barge inside of the San Francisco Gate Bridge on a single point battleship moor. It was a real heavy chained moor. It was to be there for several days while they took care of everything before going offshore. Somebody along the line thought it would be a good idea to put a big banner up there and put Shell on this thing. You know, it was a big structure - 700 feet long by 300 feet high. It was a pretty massive structure. You could see it from all over the Bay

area. Well, I was in my office about 5:30 in the afternoon, and I got a call from our public relations fellow, Devereaux, Bill Devereaux. And Bill said, "What can you tell me about the Eureka platform?" I said, "What do you mean?" He said, "Well, I just got a call from a news person, a TV news person in San Francisco and they said the platform is drifting free inside the Golden Gate Bridge." I said, "What do you mean 'drifting free?'" He said, "Well, all I can tell you is that the TV people are up in a helicopter and this platform on the barges is floating free. And it is headed towards the San Rafael Bridge." Well, we are at 5:30 in the evening and you know how full the San Rafael Bridge is? It isn't going to go under there by itself. I frantically try to get hold of somebody. Everybody had gone. Everybody was either out of the office or on their way home. I couldn't get hold of anybody. I couldn't find out what was going on. And Devereaux was getting reports from the TV people. It was getting pretty hairy!

Well, it turns out, thank the good Lord, there was a little tugboat. I think there was a crew of either two or three in this tugboat, and they saw this barge had broken that mooring. There was a very, very strong wind and the incoming tide, strong wind off the ocean, incoming tide, caused the mooring to break, and then, it just was carrying the platform right towards the darned bridge.

TP: What year was this?

LO: This would have been the year we launched Eureka. It would have been 1984 or so. Some time between 1983 and 1987. 1984, maybe. 1985. And these guys in this tugboat saw what was going on. Now, the platform overhangs the barge, so it is not easy to get up there with a tugboat. They were able to get up to the barge and nudge it on to a barrier sand bar out there, and held it long enough until Crowley, who had responsibility for the barge, could get their big tugs in there and take it back to the moor.

TP: That would have been a disaster!

LO: With that Shell banner on there! They knew who it was! The whole San Francisco Bay area . . .

I'll tell you one more story about Eureka, and that is all for stories. Crowley had the contract to furnish the tugs and everything to install the platform. And Crowley also has people ferries between Long Beach and Catalina Island. They talked to our Eureka management people - Ralph Warrington . . . wouldn't it be nice if we could take some visitors out on the ferries so people could see the launch of this platform? It was pretty spectacular. It was one of these big platforms off a barge. So, the word kind of got around that this offer was out. So, he and some other guys said, "Lloyd, you know, this would really be a great opportunity. We've got a lot of guys working in the office that never get to see

this. In fact, some of the people from the design group, they never get to see a platform launch. You know, this would be nice. They offered to take us out there. We would have to feed them, of course, because we would be out there for one-half day or longer." So, I thought about it some and I said, "Well, O.K. I'll tell you what I will do. If they will furnish the ferry boat, I will buy the lunch." He said, "O.K." I said, "But no booze." "O.K."

So, the ferry is to leave Long Beach at 5:30 in the morning. Well, by this time, wives and kids and everybody and his brother and his uncle who wanted to, was signed up and ready to go. And Sue and our three kids, we were staying at a nearby hotel - we just barely got over there. The ferry was ready to leave. And as I come walking up to the boat, there is some catering guy in a white coat standing out there handing out champagne orange juice. I said, "What in the heck is going on here?" So, we go aboard and they had the most elaborate buffet breakfast set up that you could imagine, and the bar was open! And so, we leave port, we go out and it is foggy. Can't even see the launch barge or the jacket because it was so foggy. We couldn't see it. And we had a drop dead time of around noon. I forget exactly, but it was around noon, because the tides were going to change and we couldn't launch after a given time. So, we are out there in the fog eating all this breakfast. We no more get done with that and they pick everything up and they lay out the most elaborate lunch buffet you can imagine. And the bar was still open.

Sure enough, the clouds start to break up, the fog started to break up. We could see a little more light, a little more light. And finally, it got clear enough where we could go forward with launch. Now, everybody is on this boat trying to figure out what is going on over there and we could hear the communication on the radio crackling back and forth. We hear guys saying things but, you know, it was mumbo jumbo. And everybody was saying, "Lloyd, what is going on? What is going on? What are they doing? What is happening here?" So, I had to get the PA system on the boat and give a narration of the launching activities. We had over 200 people on that boat. Well over 200 people.

TP: Eating well!

LO: Eating well. When we got back to the office . . . that was on the weekend. When we got back to the office the next Monday morning, I said, "Ralph, don't even tell me how much the food and the booze cost. I don't even want to know!" A good time was had by all! But it was something because, you know, guys that had been designing these platforms for years and years and years, never had an opportunity to see this and there were some wives out there. Quite a few wives. And a lot of kids. And a lot of the staff in the office who never had a chance to see it. So it was really an unusual, unique situation that never happened any place else or any other time. But it was really a unique situation to let the people do that.

TP: I've seen photographs and footage of a launch. It is hard to imagine what it would look like in real time.

LO: Well, I'll tell you: keep your fingers crossed. When that thing starts down those rails that, number one, that stays on until it gets off, and number two, it floats when it gets in the water. And number three, you can up end it once it is in the water. And number four, you can set it down where it is supposed to go. That is pretty challenging.

TP: Those are great stories. Maybe we should close here. Is there anything else you want to . . . You made notations on the chapters . . . is it possible for me to take those?

LO: Yes, you can take those.

TP: Like I said, we are hoping to come back to people, so if there is anything else that you have forgotten, you can get in touch with me and we can talk again if you are willing.

LO: O.K. Did you have Doug Beckmann on your schedule to talk?

TP: I don't have him scheduled to be interviewed but I guess I should get . . .

LO: Doug was such a key guy.

TP: He was exploration manager?

LO: Right. He followed Bill Broman when Bill Broman was exploration manager.

TP: I talked to Broman.

LO: Broman is a great guy. And Doug was just a tremendously competent explorationist.

THE END