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Interviewee: O'Brien, Jerry
Interview Date: June 5, 2002

MMS OFFSHORE GULF OF MEXICO

ORAL HISTORY PROJECT

Interviewee: JERRY O'BRIEN

Date: June 5, 2002

Place: Conroe, Texas

Interviewer: Tyler Priest

Side A

TP: This is an interview with Jerry O'Brien, former geologist with Shell Oil at his home in Conroe, Texas, on June 5, 2002. The interviewer is Tyler Priest.

I thought we would start with a bit of your personal background: where you grew up, where you went to school, how you came to Shell and came to this industry.

JO: I grew up in New Jersey, and I went away to school to be a chemical engineer. I spent two years in chemical engineering and decided that it really did not suit me. I looked around at various things. One thing led to another and I got into geology.

TP: Where did you end up studying?

JO: At Lehigh. Undergraduate at Lehigh and I got a master's at Rutgers. And then came back to Lehigh and taught. As a matter of fact, I was teaching at Lehigh and always thought I would be a professor. Then Shell came and interviewed.

TP: What year was this?

JO: That was 1953. That was at the Geologic Society of America convention. I met two Shell geologists: Gordon Rittenhouse and Don Higgs, who were very well respected in their fields of geology, and I interviewed with them. One thing I heard real loud and clear was the good training program that Shell had. And the more I heard about it, the more I liked it. That was in December and the Shell recruiter came to campus, I guess in the spring; perhaps February or March of 1954. That was the fellow who did the oil recruiting. Eventually, he offered me a job. And what convinced me was the training program. So, I accepted their offer and went to work on the training program in Oklahoma, mapping the arbuckles. I was with a group of 8 geologists mapping the arbuckles.

In the old days, you had four to six months of field mapping, and then you had six months in a division office getting subsurface experience and that was like sitting on wells and working on seismic crews and everything else. And then, you had three months of class work at Shell Center here.

So, when I completed that program I was asked to be an assistant on the training program. I did that for 1-1/2 years. As a field geologist . . . I guess you would say I really loved geologic field work. I mean, most

geologists do. They want to be outside. They are outdoor people, typically.

I always thought that I would map work in the field up in Alaska. My boss, who was in charge of the training program at the time, said, "Jerry, you've been mapping out in the field as a field geologist for," I guess by that time it was three years or so. And he said, "The only way you are going to learn the oil business is to get into some organization where there is a lot of exploration going on and drilling wells and everything." And he said, "The best place to do that is in the offshore."

At that time, most geologists, especially geologists that were educated outside of the south - big 10 universities or eastern universities they wanted to do field geology, in the classical sense of the word; not work in Louisiana or the swamps or whatever. So, when I told my friends that I was going to go voluntarily work in the offshore, my immediate friends thought I was crazy! But it turned out that my boss was right because I was thrown into . . .

TP: Who was your boss at that time?

JO: His name was Pete Vantile who was totally aside from the offshore . . . a fine geologist, but he never himself worked in the subsurface. Well, that is not true. He worked in java but he was a darned good field geologist.

When I took that job as assistant, most people had the feeling that if you took these kind of side jobs you lost a couple of years in your career. They promised me at that time that I would have my pick of assignments, which was really nice.

TP: When was this?

JO: In 1954.

TP: It was right after the Tidelands issue, so the companies were starting to refocus on the Gulf?

JO: Right. I got to New Orleans. It was not the marine division, it was the marine exploration group. We did not call ourselves a division. It was in the building on Barone Street - a relatively small office that we had there.

I had a couple of really top notch guys that I studied under for the first year or so there and learned the Gulf

of Mexico.

TP: Who were they?

JO: John Sudoff was one, who left the company maybe back in the 1950s, possibly as late as 1960. Joe Broussard, who is dead now. Joe was a great role model. And Don Dessitel, who just died about one month ago, as a matter of fact. I thought those three guys in particular were really good role models to learn the Gulf Coast geology.

In those days, everybody had sort of a piece of the geography. I had been assigned to an area. I think I was doing the Eugene Island area. But at that time, there really was not a lot going on in the offshore. It was still sort of drilling wells in shallow water or in the bays and things of that sort.

TP: This was when Shell had the East Bay . . .

JO: Right. That was South Pass Block 24. We had some fields onshore and that is a story I will tell, but there was not much going on in the offshore. One thing sort of came out at that point. When we would try to get acreage or do something like that, the person who was the exploration manager in the New Orleans area at that time,

was Freddie Out. He reported to Beaux Dykstra. Freddie Out, kind of like Beaux Dykstra, spoke with a heavy Dutch accent. When we would take a prospect to Freddie out, if it were a salt dome, he would say, 'no, he did not want to have anything to do with salt domes! As a matter of fact, I still remember his words. The final kiss of death on any prospect that you brought in, if it was a salt dome, he would say, "You don't want another white castle, do you?" And that was the end of a salt dome project because, at the time, Shell had white castle field and at that time it was a dog. It really was a dog. But a really good production geologist by the name of Jessie Rafiti took white castle and it eventually became, and is today, a very good field. But at that time, that had everything bad that Freddie Out ever wanted in a salt dome, so he could point to it, you know, and say, "You don't want that."

Ronnie Knecht asked me to look at all the salt domes and get some ammunition that we could talk to Freddie. So, that was the beginning. And I cannot tell you what year that was … I would guess maybe like 1959, 1960, or something like that. And I started on a project to look and study, to a certain extent, all the salt domes in south Louisiana. I had some help for that. Claude McMichaels, who was in Lafayette, had done something

similar to that. I talked with Claude a lot.

Anyway, the gist of it was we looked at every salt dome and we looked at every field, and we divided fields by structural type; they were basically salt domes, non salt domes, and deep uplifts. Well, don't you know, when you took all the salt domes together and just did a simple mathematical average out of, I think there were 432 fields as I remember, the salt domes came out way ahead of everything else. And not only that, the piercement type salt domes, where the salt came virtually up to the surface, they were even better than the average salt dome. So, we took those things. Ronnie Knecht said, "Come on, Jerry. We are going to go talk to Dr. Out." So, I picked up all these papers and went up to Out's office and went through this . . .

TP: What position was Ronnie Knecht in at the time?

JO: He was the division manager. I do not know when that name changed from marine exploration group to marine exploration division, but I think around 1960 maybe or something like that. But anyway, Ronnie was for sure the exploration manager. So, we took that up to Out's office. I cannot remember whether Dykstra was there or not, but we showed him all these figures and that the

salt domes were better . . . just taking a simple average … they were better than anything else. Freddie looked at that. He was quiet and he finally said, "Well, God damn!"

That did not change Dykstra's problem though. Dykstra's problem was it was almost a case of Columbus falling off the edge of the earth. He had a belief that verged on that. And he was not the only one, by the way. I mean, there were other people in industry who thought the same; that as you went offshore, you would lose objectives. That was the main concern that I believe they had. I do not know whether there was any serious concern about there not being any structures.

TP: The costs would never be able to be recovered until you found oil?

JO: That is right. And that was another problem. Even if you did, by some strange lucky coincidence, you could not get your money back out of them. And that was a serious problem because first, Freddie disagreed with Ronnie. Ronnie took the study to heart and, by the way, I was not the only one. All the guys in the division were helping me with this by this time. By this time, it had become an idea; this is a way that we can evaluate prospects in

sort of a unified manner. When you have a lease sale and you have 5 or 10 blocks, it is pretty easy to say, 'well, I'll take this one rather than that one, and so forth.' But if you have a huge lease sale.

TP: That raises a good question: were you doing a study in preparation for the 1960 lease sale?

JO: It was well along for the 1960 sale, but the whole focus later on or by that time was to get ready for the 1962 sale.

TP: They put up every tract that the industry nominated, right?

JO: Right. I do not remember the numbers. I guess you have the numbers. But it was an immense number. And the idea was how can we look at a huge sample and arrive at some sort of a value which is not based on hysterics or not based on whim or some old theory that somebody had? Of course, we tried, at that time, to say, 'O.K., lets study these salt domes or study all prospects and find out why certain of them were better than others.' And regardless of what we did, we had nothing . . . this was back in 1960, 1959 or so . . . we had nothing that would say the reason that that one is better than that one is such and

such. We did not really have a good reason. Now, we could associate some things and we learned that you needed a good objective section. In other words, you needed a good sand shale section. It could not be all sand and obviously could not be all shale. If it were all sand, you would not have a trap, and if it were all shale you would not have a reservoir. So we thought we could see the areas where there were good sections. Now, it turned out that the geophysics fooled us at that time of what was a good section and what was not a good section. But, generally it was pretty good.

The other thing that we found that was important was the area of uplift around the salt dome. Now obviously, we would have liked to have known what was the size of uplift when oil was migrating into the trap, but we did not always know that. The one thing we could measure was how big is it, in square miles, at the present time. Well, we made a chart . . . I cannot remember which was which but I think it was area of uplift on one side, across the vertical side, and quality of objective. So, we had three areas of uplift and quality of objectives, three kinds there. So we had a box that had nine subboxes, right? You know what I mean?

TP: Yes.

JO: If you took all the salt domes and put them in each box to the box that they fit in . . . these are other domal uplifts . . . sure enough, they came out a big uplift with high quality objectives. It had ultimate recoveries of, on average, like, and I do not remember the number but I will say, 300,000,000 barrels. In this box over here, with a small area of uplift and poor objectives, it had something like 30,000,000 barrels. It was 10 times the difference between that box and that box. Well, that concept was the beginning of how we evaluated all these huge numbers of prospects that were going to be put up . . .

TP: How is this understanding in relation to the industry? Are other big companies arriving at the same understanding about the same time of year?

JO: There is no way of me knowing that. There was one fellow who had written a paper that was similar in idea of that. He did not break down this box like we did, but he had just kind of measured them all in a similar way. And that was published, as I remember, either in the AIPG or the GCAGS. His name was, not Spoolhoff, it was SP something . . . I cannot remember the rest of it. I may remember that later. The information contained in those concepts was, of course, something that nobody would want

any competitor to have. And those sheets were never formally drafted. They were hand-drawn, with the average numbers in so that each geologist, as I remember, in his province that he had, was given one of those sheets and they were locked up at night after people used them. And, to my knowledge, those were never ever formalized by drafting.

Well, that is how the 1962 lease sale was attacked. There is some more to that. The paleontologists, and you ought to talk to Ed Peaku (?) or Jim Lampton, or Blair Parrott - one of those three . . .they were all there at the time and that they could predict the age and the environment of deposition which was a step up from what we were doing. So, it was not simply a matter of correlation. You would have to know the environment of deposition in order to make use of it and to predict. If you could forecast the environment of deposition, you had a chance of predicting what sort of sand shale section you were going to have. The paleontologists deserve a lot of credit for that. That was a big thing.

There was one other part and that is if you have a lease like this and you had a salt dome that was located over there, you had to decide, one, what was the potential of the whole salt dome, and then you had to say, well, how

much is going to be in that block, and how much is going to be in that block, and that was very tricky. That was the next step.

TP: You may not be able to afford all four blocks, or you may not get all four blocks?

JO: That is right. So you had to say which blocks would be worth how many million barrels and how much were you going to bid on that. So, not only the whole structure - you had to work on each portion of the thing.

After we came up with a number in the depth of the pays and so forth, then it was turned over to the production department.

TP: I talked to Don Russell. He came down to New Orleans and helped put some numbers behind these.

JO: I think he had been up in New York in economics up there. Don was the one that … not the one, there were a lot of people working on that. After we came up with the idea of what was the whole structure worth, what was each individual tract worth, they took those things and analyzed them for profitability and how much you ought to do. And then, there was the really fuzzy number of well,

who do you think is going to know this? Do we have to bid the total value or the total discounted value? There was always a discount because, 'well, maybe this salt dome is not going to be as good as we think it is or maybe that tract is not going to be as good.'

TP: Prior to this point, in federal sales or even state sales . . . I think there was a big federal sale in 1954, and then there was sort of a hiatus when you had the challenges by the State of Louisiana stuff . I think there was another one in 1959 . . . your analysis was not as thorough and scientific as it was at this point.

JO: No. I would say that was getting close, but was not evem there in 1960. And when we had a few blocks, you could sort of handle it on a one-to-one basis. But when you had a 400 box, you really had to be specific.

[PAUSE]

We were talking about the economic analysis. I would say that the production people, particularly Russell and fellows that were working with him, did the economic analysis.

There was still a feeling . . . I guess McAdams was one

who wanted to look at each prospect. And I remember that Ronnie Knecht's office had a large conference table in it, and Mr. McAdams was sitting next to him . . was sitting on one side of the table, and one by one, the geologists were called in to bring their prospects in. Everybody had stacks of maps.

TP: And he looked at every one?

JO: He wanted to look at every one. I do not know whether you heard this or not but most people were terrified of McAdams. Me included. Especially a young geologist. It was a gut-wrenching decision . . .

TP: What was so terrifying about him?

JO: Well, there were vice-presidents who had this power of life and death, literally, because not many people fired you outright but McAdams had. He had fired, I do not even know who it was or what the occasion was but there was the reputation that if old Mack did not like somebody, you are out of there, you know! So, I think that was in the back of everyone's mind and I could never get feeling comfortable in talking to him. Although he was a good geologist and everything, but he asked very pointed questions. Boy, when you came in to see Mr.

McAdams, you'd better have thought about all the potential questions before he asked them!

TP: So, he went through every prospect?

JO: As I remember it, he went through an awful lot of them if not all of them.

When all was said and done, I guess - and I was not involved in this - but I guess Dykstra told Ronnie and Mr. McAdams, "I am not going to have anything to do with this." The numbers were so large, and I do not remember what the total number was eventually, but it was a big number. It was so big that this was more than just Shell Oil Company could handle. The material had to be shown to the people in The Hague. So Ronnie had a folio with all the key maps and seismic profiles on it; rather large. I remember getting Ronnie ready to go to New York with this folio. The thing had some kind of clasp like a handcuff, that handcuffed those drawings to him and he went off to New York. And then, over to The Hague with those maps that way.

TP: I figured that Shell spent $45.5 million on 58 tracts.

JO: That seems incredibly small now, doesn't it?

TP: Yes, it does. Industry spent $446 million.

JO: Well, even that is not all that great.

TP: I mean, by the 1970s, that would have fallen by about two tracts; you know, $440 million.

JO: I was involved in the North Sea and one tract, Shell U.K., bid $50 million. One tract!

TP: That was a lot for them . . .

JO: Oh, yes.

TP: So, he had an attache clasped to his wrist?

JO: Right. He couldn't have had all of the drawings . . . I guess just the ones that we were talking about putting "big money" on compared to the others.

Ronnie was a good technical manager. He never seemed to forget that he could piggy-back on individual's talents. So when you were in his office, he always would say, "What do you think?" And I always liked that, as a manager. As a matter of fact, that was my modus operandi when I became an exploration manager: make sure you find

out what the person thinks because, for one reason or other, he or she may not tell you what she really thinks. Like with McAdams, people were so frightened, they couldn't say anything, you know. But Ronnie was very good about that. He would always get you to say, "What do you think?" And that was good.

We had a very small group there. I am trying to think of the number of geologists. Tom Fails. Bob Brockhouse, who was later replaced by Fails. Don Dessitel. Myself. And Joe Broussard. So, in effect, there were five working geologists and about the same number . . .maybe not as many . . . maybe four geophysicists, and about four or five paleontologists. And that was it. It was a very small group. I mean, compared to later groups that were established, which were huge. Well after that, when you get into the 1970s, you see the numbers are really big. But we had a small group. I think that was a good thing probably. At that time, I do not believe there was ever any leak of information or something. The bigger your organization gets, the more chance that you are going to somehow accidentally lose information or something like that.

TP: So, you stayed in New Orleans for quite a while? Were you in New Orleans continuously?

JO: From 1957 . . . that was 1966. I was transferred to Midland in 1967. I was there 10 years, almost to the day, in New Orleans. And then I went to Midland. We were working on the Viking uplift, the Devil's River uplift, which was a huge thing in the Valverde Basin. I guess I was the district geologist doing that and then I became division geologist.

And when I was transferred overseas to work in the North Sea. I spent four years working in the North Sea. That was exciting. And then came back to Midland and worked in Michigan. I was the manager in Michigan and later division exploration manager that was handling Michigan, which, if anything, is almost more interesting than . . .

TP: I want to get to Michigan . . . is there anything else you can tell me about your time in New Orleans in the early 1960s? After the 1962 sale, what were the big things happening?

JO: Well, there were some breakthroughs. Geopressure was a big thing. There was a drilling engineer or production engineer . . . Stewart was his name. I cannot remember his first name. But Stewart had done a lot of work in understanding geopressures.

TP: Was it Leighton Stewart?

JO: No. Leighton Stewart was probably there at that time. This fellow was Stewart . . . I will have to look at that chart. Joe Broussard did a lot of work on this, and the paleontologists, too, because geopressures were related to the environment of deposition of the shales. Understanding what kind of shale you had was very important. It was very important because, I do not know whether you have heard this . . . in addition to a salt dome, which might stand up like that, frequently there was what was called sheath. And it was like a sheath of shale that went around it. Those things were very important to know when you drilled into them and to know what environment you were in. The paleontologists and Joe Broussard - he was not a paleontologist, he was a geologist but he did a lot of work on this problem. And That was a technical breakthrough because we finally were learning how to set casing and change your mud weight and drill the holes without losing it or without washing out the hole and so forth. That was a very important thing.

TP: This was in the early 1960s?

JO: Yes.

TP: What was your relationship with Bellaire and the research department in all of this? Was this breakthrough in geopressure done in the operating division?

JO: That was done in the operating division, really. I think Joe did it . . . I guess he had talked a great deal with Stewart. There must have been, but I do not remember anyone working on the geopressure problem at Bellaire. And, as a matter of fact, when we were talking about very confidential things -- concepts, size of domes -- there was a feeling in New Orleans that you did not really talk too much to people over in the lab because somebody over there might go off to a technical meeting or write a paper or something like that. I would not call it antipathy, but I do not think everybody was as forthcoming as they might have been at that time. Particularly within the New Orleans area . . I never did understand why it was that even the people in New Orleans did not go to as many training programs over at Bellaire. I think there was just, I would not even use the word mistrust, but maybe people did not feel comfortable talking about certain things over there.

When the bright spots came along, I was gone. Mike Forrest and others were involved with that. I do not know how that was played out with Bellaire.

TP: There was some screaming over who gets full credit for all of that: the work they did at the lab or the work that was done in the office. But they worked together eventually on all of that.

How about the relationship between the geologists and the geophysicists, or the relationship between the geology and geophysics at Shell? I know, towards the later end of the 1960s, at least in the research at Bellaire, there was a bigger push because of the increase in computing power and the growing importance of geophysics, the geologists sort of took a back seat.

JO: I do not think it was because the geologists were not dealing with something that was important. The problem was, in my perspective, that geophysics and especially data processing became so complex that even some geophysicists, let alone geologists, who did not understand exactly what the processing would do and so forth, and how important it was. I know I did not.

When we finally talked about amplitude anomalies and so forth, I finally understood it, but I think in the early days it was rather difficult to understand exactly what the geophysicists were doing. I think we had a good relationship with the geophysicists in that group because

basically we had three things: we had the well logs and we had the samples, but mainly the paleontology. So, we had the bugs and we had the seismic data, and that was it. You had to use all the data. I mean, a geophysicist working without the paleo, they just could not exist because you would have to know that the environment of deposition of a certain group of beds, whatthat environment was. And you did that with the paleontologists. So, I thought it was a good working environment.

TP: Downey has credited Bert Bally as someone who forced geophysicists and geologists to get together and understand what each other was doing. Did you know Bally or did you get any sense of that?

JO: Yes, I knew Bally quite well. He was, at one time, chief geologist of the company. I think Bert wasa paleontologist, by training, in Canada. His understanding of geophysics . . . I guess he was what you would call a self-taught geophysicist. But yes, Bert was a big one for integrating all kinds of data. At that point, the seismic data that we had was not very good. Let's face it, we could not pinpoint where the salt was. That was an early problem. In other words, is the salt like that or is it like that? And if it slopes gently

down there, you are liable to have accumulations way out here in a flag. If it is straight like this, you are liable to have things right here. And that had a very practical effect. Well, it had an effect on which block or which portion of a block you bought because maybe the oil was shallow or stuff . . . if it were there, it was going to be in this block, and if it were out here it would be in that block.

TP: The seismic data was not good at telling you where exactly where.

JO: We had a problem with sheath and we had a problem with the interface of the salt and the sediments. I am certainly no geophysicist, but there was an area, kind of a halo, where you could not really see what was going on. In the data that I have seen, 30 and things like that which came later, you can see the salt coming right there. But in our case, we would see something going towards the salt and that might be the last time that you would see it. You did not know whether the sand petered out, which it did sometimes, or if that was just a problem with the seismic. And there was a lot of work on that. Geophysicists were doing research on all sorts of arrays and processing and everything else which a lot of geologists, of course, could not really appreciate. But

they filled in a big blank which existed in the early days, especially the relationship of the salt to the sediments. That was an important thing which we had a lot of problems with. They do not have that problem anymore.

TP: When did you start resolving those problems?

JO: I think that was in the 1960s after I was gone. It started early but when it became an everyday part of a whole prospect, you were involved with processing and everything else. Now that is where Bally's idea was, that you had to integrate everything very carefully because it was not just a simple matter of, 'well, here's a seismic profile!' It was all a matter of processing how the lines were shot, and everything else to give you this integrated picture of what was down there. And that evolved through the 1960s into the 1970s. And, of course, with bright spots, it reached tremendous success.

TP: What about some of the other figures and people in the New Orleans office? I see Glen Robertson and Tom Hart. Did you know those guys very well?

JO: Yes. I worked for Hart . . .

End of Side 1

Tape #1, Side 2

JO: . . . the Tulsa group. They wanted to know where was the source rock and what was the migration story.

TP: The Tulsa group being?

JO: The Tulsa area . . .

TP: A group started in the Tulsa area?

JO: Well, yes, to a certain extent, started there, and I cannot name names here, but Tom was certainly one of them.

TP: Jack Threet might have been one of them?

JO: Jack Threet, in his early days, I think was part of that group. But he left it early and he was down in the New Orleans area. It was all very nice to say, ah yes, like any geologist would like to say: What is the source rock? What is the migration path? What is the reservoir? And if you cannot answer all those questions, you know, you cannot do business. Well, in the New Orleans area, we were doing exploration there and nobody had ever seen a source rock in the whole south Louisiana,

ever. And it was not until many, many years later that we really. . .and again, I was gone . . .understood the source rock picture. Quite frequently, the New Orleans people were criticized because when we would have meetings with these beautiful view graphs and everything, the Tulsa people would have these marvelous fat stories of this is the source rock and blah, blah, blah. And we could not do that.

TP: Was it because it was a much more complicated story?

JO: No, it was not all that complicated, as it turned out. It was just that the source rock was much deeper than we had thought and it was entirely different than what we thought. People were saying, oh well, the source rock has got to be close to the sands. Well, that was not true. It was considerably below the sands and it migrated up through the sands and related to fault motion and everything else.

TP: There was a guy at Shell who did a lot of work on migration. Was it Ted Felipe?

JO: Felipe, but also Ervin Allen. Did you ever hear of that name? Ervin was in the offshore, come to think of it. Ervin Allen put out a marvelous story about how the sands

would intersect faults and the oil would migrate up a sand across the fault into another sand and migrate in a very complex way. And Ervin Allen did that. He deserves a lot of credit for that.

In the early days, our understanding and my understanding of the source rock story was pretty pathetic. We simply did not know where that was. And we got a lot of heat from people, Bally and others, for not knowing that. That did not come until much later. Nobody worries about exploring in a basin once you have oil. Once you have oil almost anywhere in the basin, it is not your high priority to learn where the oil is coming from. It would have been nice and it certainly was not without trying, but in the early days the understanding of that was not good. Not good at all.

TP: I have heard a lot of stories about Tom Hart.

JO: Well, I have butted heads with Tom and I am probably not a particularly good person to go on record.

TP: Well, you are not the only one.

JO: We butted heads particularly in the carbon dioxide situation.

TP: In west Texas?

JO: No, in southwest Colorado, in the Four Corners area.

TP: That is what I meant.

JO: Yes, the Four Corners area.

TP: It was for the Watson field in west Texas?

JO: Yes. I do not know whether you want to hear that story or not.

TP: Well, sure, however you would like to proceed. Do you want to talk a little bit about the North Sea? You mentioned that earlier.

JO: Yes. I can tell the story real easy on C02. I was manager of Midcontinent at the time. The production department came to us and said, "Hey, we've been doing a research project on secondary tertiary recovery using carbon dioxide, and what experience we have had is that it works and there is a 50% chance that it would work on all the fields in west Texas." Now, as an exploration manager, that was much better odds than I had in anything else, right? I mean, anybody that had a 50% chance! I

said, "Man, this is wonderful!" We weren't doing anything in the Midcontinent. And so, as a result, I was all gung-ho.

Actually, it started with a summer hire who did a project that reviewed where was the C02 in the United States. we did some more with that and we came up with a map, a source, and we said, the best place to get it is McElmo Dome. And McElmo Dome, of course, was in the Denver area's valley work. But they did not want to; they said, "We're not interested in that. That is the production department's business." So, I said, "We'll do it in the Midcontinent division." Well, Tom was dead set against it. He said, "Let the production department do it."

Well, we finally got an LPA, a lease purchase authority, to buy some leases on McElmo Dome where there had been wells drilled they and were producing C02. But we had no idea of how big it would eventually be. We did seismic work there in the Denver area, and we finally drilled some wells. I do not know what the ultimate recovery of C02 eventually came to. I think it was well over 10 trillion cubic feet of carbon dioxide a huge, an unbelievably huge number.

At one of the manager's meetings, the managers were

presenting their division stuff and I got up and gave a talk on C02 and said that the conservative value of the PVP, the present value of profit of the C02, could be something in the order of $7 billion. While I was presenting this, Tom Hart was jumping up and down and saying, "Sit down. Sit down. I do not want to hear anything about that." I had already bought our division . . . I had already bought the acreage. We had the acreage locked up. And he was still mad about it.

TP: So, how did you figure the profit on the C02?

JO: What we did was we said there were two things you could do with C02: one, you can sell it outright and you can deliver it down to west Texas and anybody who wants to buy it from you to use in their tertiary recovery, they are welcome to do it. There are actually three ways. The second way was use it yourself and recover more oil that way, or you can trade C02 for oil. In other words, supply the C02 to a competitor and say, well, we will give you the C02 but you give us half the oil that you produce over your normal amount. And there is an awful lot of oil in west Texas. I guess you saw that Shell sold the whole thing, pipeline and everything, to Kinder Morgan here about six or nine months ago.

TP: They sold their interest in west Texas earlier than that, right?

JO: Oh, yes, that is right.

TP: They kept the pipeline and the C02?

JO: Yes, for quite a while. And it was just recently sold to Kinder Morgan for $350 million or something like that. I could not believe that they did it at that price. I think they could have gotten more for it.

TP: It was a fascinating story.

JO: Really! The fact that we were doing it in some other division's territory, over Tom Hart's . . . he did not want to have anything to do with it. His feeling was that production was going to use this stuff and let them worry about it. They did not have the staff to do what we did and that is basically to set up an exploration program for it.

TP: That is interesting. I heard of the difficulties in building the pipeline and going through the Anasazi ruins and all that.

JO: Right. And the production department did a great job in developing that because they got together with all the Indians and the archaeologists there and worked in preserving and still are. We stopped there, at that museum here, my wife and I, this past year. It is pretty impressive.

TP: Can you talk a little bit about the North Sea? We would like to collect stories on all aspects of offshore history. You were there for 4 years?

JO: Yes.

TP: With the group?

JO: Right. Well, actually, I was on loan to the group for four years.

TP: What was it like going from the Gulf of Mexico to the North Sea? It was a totally different environment; it was a totally different political, natural environment, and business environment.

JO: When I got there, there was only myself and a geophysicist that worked the northern part of the North Sea. Everything was basically down in the Dutch waters,

grown again in the gas fields down there. Shell had taken acreage in 1964 and they had to relinquish half of that acreage by 1970. I do not remember the exact date, but I know it was in 1970 that they had to relinquish half of the acreage. There was a lot that just a small number of us had to deal with to evaluate that acreage. And there are a lot of individual stories there.

The whole story of Awk, the discovery of Awk, has never been told. It would make a hell of a good movie, really. I do not know whether I could tell you that because all the people involved are still alive. Our exploration manager in London came to me, and by that time I had a Swiss geologist that worked with me, and said, "Hey, we need a drilling location for the Stay-Flow." Of course, we had maps with generalized things. Are you taping this?

TP: Yes.

JO: O.K., well, we will talk about what we can talk about after.

TP: Whatever you feel, to your discretion.

JO: I said, yes, here is this big high over here that really

looks good. And the manager looked at it and said, "Yes, O.K., we can do that." There was not even enough time to write a drilling recommendation. We had the acreage, but we did not have time to even write a drilling recommendation.

The first well that we drilled was down dip in the sand that was extraordinarily porous. It was a windblown desert sand and it was a gorgeous reservoir, but it was full of water. So, we said, wow, all we have to do is just go up dip. So, the next well we drilled up dip from that, it was tight. I mean, it was plugged by asphalt. It was black. But it was solid. This Rico Kempter, the guy that I worked with, said, "Look at the pay in this well.[11] Well, the production department - and this is the sticky part - the production department did a petrophysical analysis of that well and they said, and I still have the letter, they said there was three possible feet of pay not worth testing. I said, "That is wrong. You cannot do that." Rico Kempter, he stood up and said, "You know, we've got to test this thing because the nature of carbonates is that there are fuggy pores that go all through it and it may only be in one small area where it shows on the well log."

And here, I am not exactly sure of the timing. I was out

on the well, on the stay flow, for the running of logs there, and there was a big storm in the North Sea. The stay flow was very much like other rigs. It had anchors that went out like that. So, there were 8 anchors and when the wind comes from this direction and the sea comes from this direction, of course, these do not do anything. It is all in these. Well, these two lines parted here and they were held by these two at a very poor angle, and it was decided to abandon the rig. Well, unfortunately, there were 70 foot seas, the wind was blowing 70 miles an hour, and they got, I guess it was British Airway. We had a contract with them. It was kind of like petroleum helicopters here. They did the contract hauling of everybody back and forth to the rigs. They landed two helicopters. The first one came in, and mind you, this rig is going up and down. I think the heave was 23 feet. This guy landed that damned thing in 70 mile an hour winds on that thing that was going up 23 feet. Got half of us on. A second helicopter came and got the rest of us except, as I remember, four guys who I assume were volunteers, left on there. They cut all these lines off and cut these that were holding, and just let her go. And in the course of that two days or whenever it was, that thing drifted all the way down to the Danish waters. It did not hit anything else.

TP: Those guys stayed on it?

JO: They stayed on it. Well, in the meantime, this argument is going really hot and heavy with the production department and the exploration department. We want to test when you go back to the well. You have got to go back to the well to finish plugging it and everything. They do not want to. And there are some very hard, harsh words in there. Well, the general manager said, "Well, it's too bad that we did not have any cores because if we had a core in this thing, I would agree to test. But we do not have enough to test it." Well, in that short period of time that I was in west Texas, we had used a device known as the Tricor. Do you understand coring?

TP: Yes.

JO: You take a core as you are drilling the hole. A Tricor is a device which you can take cores after the hole has been drilled - a pretty ingenious damned thing. It had two diamond blades that rotated out of the body of the device and the diamond saw cut these things. So you ended up with a piece of core, triangular shaped, because it came out of the side and went like this. We got three feet of core.

TP: You used the Tricor?

JO: We used the Tricor. We chased that thing all over Europe and found it. I thought we were going to have to get it back from the States because no one seemed to know where it was. Well, unbelievably lucky . . . the damned thing was in Europe. I believe it was Schlumberger that said, we can get it there like the next day kind of thing. They got it there. Production was still very unhappy about it. They did not want to do this. And the general manager did not even know there was such a device around. It was almost like, 'well, if you had a core, we'd do it, but you are not going to get a core!' So, we did. Hell, the damned thing was oozing; when they pulled it up, it was oozing this honey-colored oil. It was incredible! Well, he still does not want to test. The general manager now says, "Do it." Well, they did not make preparations for the thing because they said, this is going to be a nothing. Well, they opened it up and they tried to burn it and they could not burn it all. It floated at the rate of 10,000 barrels a day. That is the capacity of the pipe. I may be wrong in the exact number but it was a very large . . . it could be 7,000 or 8,000, or something, but it was close to 10,000, which, as I understand it, was the capacity of the pipe. Ordinarily, you have a choke in there and you can control that

volume. They had one hell of a big flare.

Well, I think everybody in northern Europe knew that we had a discovery there. The production department may be right in that it is not worth testing because it might not be a big enough field. And that is still possible.

The last I heard, the field had an ultimate recovery of over 100,000,000 but not much more. It is not going to be a Brent, let's face it, but it was an interesting story in what people want to do in the way of risk that the production guy . . . I cannot remember his name . he was an Australian, I knew that . . . that story was even worse than the argument with Tom Hart on testing the CO2. But I worry about relating that because how are you going to tell that story? It is one of those things you cannot. But that is the truth about how that got discovered. It was over a lot of objection from this one guy, particularly, the production manager.

In the case of Brent, I spent three weeks with a guy who was the geophysicist there just recently. That is where we were, in Arizona; they are bird watchers and we are, too. And we talked about this . . . almost every night after dinner if we were at some lodge or something like that, we would settle down and talk about how things went

with Brent.

The same exploration manager did not think that there was any objectives below the paleo scene. This is one of the major objectives in the offshore Gulf of Mexico. We had an area like this, a high, that looked like this. And then there was, much shallower up in the paleo scene, there was a closure . . . I use the word loosely . .. in the paleo scene. Well, this geophysicist that I am talking about said that he made the map. And literally, he had to almost force the data to make a closure up there. This was the thing where we went. Well, Miles said, "All the oil". . . as a matter of fact, in the North Sea, up until that time, all the oil was in the paleo scene. I think that statement is correct.

TP: So, you were projecting what you thought was below the paleos?

JO: We said it was below it, right. Jurassic. Here is the surface and basically, the paleo scene is all shallow like that. And down here, there is this inconformity like this and here are these beds like that. I mean, that is a marvelous trap right there because the jurassic was definitely the source rock. This stuff right here was the source rock and it is below this inconformity

right here. I mean, it was absolutely perfect. We drilled that hole about there, I think. Maybe here. Miles wanted to be sure that we tested this right here. Well, we came in that structure about right there and the oil was all there and we caught just the corner of it right there; caught 90 feet of it. If we had gone down dip another 100 yards, I think we would have missed it. That turned out, as you know, to be a two billion barrel field.

TP: Did you almost miss it because you wanted to test the paleo?

JO: Yes. Well, there were no sands, there was nothing in the paleo scene. George had to admit that this was the objective and that was the objective for all those wells in this area, is this same jurassic. The whole area . . . I have some of this data downstairs because I am writing that chapter in my personal . . . this was the discovery, and this was another discovery, and this was another discovery. And that was based on that well there. And that was drilled in 1971, I guess. The rest is history. There were two billion barrels at least, plus a lot of gas.

TP: That is an interesting story.

JO: There are an awful lot of disagreements that you get. It seems like I have been involved in an inordinately large number of them, but this and the Awk story were pretty interesting, I think. I mean, we could have lost that very easily. The Awk was one guy, Rico. Since we were on loan, we did not have authority over the people, but Rico worked for me. I did not have personnel authority for him. Rico was absolutely livid. He was out of control. I could not control him. He was really angry that we were going to walk away from this and not test it.

TP: What was his name? Rico?

JO: Rico Kempter. I think Rico is working as a consultant now. I forget who he works for, but I know he has worked around the world as a consultant.

TP: I do not want to take up too much of your time but I wouldn't mind hearing a little more about the Michigan story. That was the most profitable single play that Shell had.

JO: Well, do you know the geology, more or less?

TP: Yes.

JO: In northern Michigan, the pinnacle trend goes along like this. And we had a lot of very talented geologists, research labs, everything, tell us that what we were going to have . . . if you draw a cross-section, here was a refront like this. Any diver would recognize this. A well was drilled up here on the shelf because people thought, us included, that this was going to be a shelf play. Well, Amoco came in and they went all the way across the state and they got there first. We were right behind them. They got most of this acreage right here.

TP: That is the map of Shell's working interest in production.

JO: We went in to buy this up and we bought like this. Now, mind you, Amoco got like that.

TP: They had some overlapping . . . there was an overlap in part of it.

JO: Yes, right here. Well, guess what? All of the damned pinnacles were out here and the oil was not in this shelf margin or on the shelf; it was in the pinnacles out here; mostly where we had bought. In all honesty, you would have to say that we were forced into buying some of that

down dip acreage down there. Now, there are a number of steps, of little triumphs here.

TP: So, you bought the acreage before you drilled any exploratory wells?

JO: Oh, no. There was a particular well . . . I think we had put up money for it. What the heck was the guy's name that drilled it? It was an independent up in Michigan. Anyway, he drilled it and we could see, wow, there is reef there. Up to that time, we did not know exactly what it was. And we realized then that that was reef. Us and Amoco, I guess, agreed that it was reef and we brushed it. I mean, this is the kind of thing in west Texas, O.K. . . . You have got a shelf margin; it is typical geology. Any geologist would do it again. But we are not seeing these pinnacles out there. You would get good reflections going across, and that was it. You would get these dim zones. And it turned out that those were the pinnacles. And hell, then we started drilling on these dim zones. And those were just where the pinnacles were.

TP: Did you drill before you got all the leases down?

JO: Not very much. No.

TP: You drilled some?

JO: Yes. I think it was kind of in the southern part of the trend. If you look at the trend here, I think most of this acreage was right around here because we did not know how far east and west it was going to go. After we found this discovery, we kept on going all the way up to here and all the way down to here. And we tried to get permission to run seismic lines offshore and the state of Michigan would not let us. The environmentalists went crazy. We wanted to see what happened offshore. Even when we promised that, O.K., if we see it and we are not going to drill them, we just want to know where does it go.

TP: Most of my story, the way I wrote it up, had to do with the geophysics and Jerry Persig's filtering technique that he developed to see through the pinnacles. I guess that was the real challenge.

JO: Not really. It was Jerry Persig all right and it was seismic. We were drilling holes about 50 feet deep. If we did not shoot them before the weekend, we plugged the hole and put the charges in afterwards because we typically did not like to leave holes with charges in them in case of vandals or kids fooling around. As I

heard the story, and this was long before I got there, so I do not have any ax to grind here at all . the way I understand the story was that they were shooting this seismic line. And then they go in here and here and here. The data was not very good. They stopped for the weekend and it rained. The hole was already drilled. When they loaded those holes that had been drilled before the weekend, they were in the water. Previously, they would drill down some arbitrary number, in effect, and they would load the hole at the bottom. Well, that was basically in a dry hole. What was different about the holes that they loaded after the weekend was that the hole had filled up with water. And they loaded them in there and Jerry Persig realized that what they were doing was getting much better data back if they put the charges in the water. So, everything after that was loaded that way. They would drill down into the water. You can check with some of the geophysicists to verify that, but I believe that was the right story.

The guy who deserves the credit for making this play work was Ronnie Knecht.

TP: He was the general manager in Midland, right?

JO: Yes. That was a different organization. That

organization only lasted a short time, of a general manager who really had power and was involved. And Ronnie took that so that basically he had the power over the production manager, the exploration manager, and the land manager in particular. Those three. And legal.

Shell history was such that it had long been decided that Shell was not interested in anything that was less than 100,000,000 barrels. So, the first thing that happened was that after the couple of successes they drilled the wells and the damned things only had 1,000,000 barrels in them. To a lot of people, that was the end of Michigan, that it was just a bunch of small fields. And Ronnie said, "No, that's not the end. We have a field here which has something like 500,000,000 barrels. It is spread across the state and it is in 1,000,000 barrel patches. And all we have got to do is think about it as one big field." That is not rocket science, but that play was going to die. The Shell mystique was that the company doesn't fool with anything less than 1,000,000 barrels. So, Ronnie got his production guy, who I think was Bob Howard at that time . . . I came later . but I overlapped with Bob Howard for a while . . Ronnie told the production guy, "You know, we are going to develop this just as though . . . forget that there are places where it doesn't produce." Our success ratio at

one time was like three out of four. It was unbelievable! After we got the geophysics right, the success ratio was mind boggling. And with a good success ratio, what you could do was to treat it as one big field. That was a major step in making Michigan go.

TP: Over 400 producing wells at one place. That is wild.

JO: Really! This is a marvelous story. This was the pinnacle trend right here, and right here was Montmarency County. Have you heard this story?

TP: No. This isn't the Pigeon River?

JO: No, the Pigeon River is right next to Montmarency County. We were kind of working our way this way and we got to Montmarency County. Well, the courthouse had burned down and all the records were lost; all the property records. So, the land people said, we cannot drill wells unless we cure these titles. And they had to redo the titles. I mean, they interviewed people all over the world who had some one-eighth interest in these little damned leases and everything. And they cured the title for, as I understand it, all of Montmarency County. It cost Shell a fortune to drill that. They said, all right, let's get on with this. We drilled a well here. Shoot! It was

dry. There was no oil there. It was dry. I do not know whether something has happened since I have been involved. The last I heard, there was not a producer in Montmarency County. The God damned oil stopped right at the county line! It was unbelievable! Absolutely unbelievable!

TP: And then, the Pigeon River was right next to that.I know it took a long time to overcome the environmental position to drilling in Pigeon River.

JO: Oh, the stories! This was the time when they were interviewing people; especially, they loved to get oil people on there and make a real fool of them. Employee relations set up a training program for anybody in Shell who might be interviewed. I was one of the ones that was interviewed. What the heck was this guy's name? There was a local radio announcer who used to tear up people, a reporter . . . he would crucify them. They hired him to set up this training program. It was one week long. Their thing was that they would get a camera angle to make you look really bad.

End of Tape #1, Side 2

Tape #2, Side 1

JO: It must have been 1974. That was terrible. I mean, that guy was so bad. But anyway, I had a really happy experience. The people in this area right here basically lived in this area. What the heck is that? Near Ludington. I believe that is right. What else is over there? Montmarency. It could have been Montmarency, in that area. I gave a little talk. They wanted to know what were the chances we were going to have oil in Montmarency County? I told them it was pretty darned good. They were pleased about it. They wanted us to tell them what we were doing about environmental concerns. I had no problem there at all.

The people over here in the Pigeon River Forest and in that general area, they were mostly from Detroit. They had summer homes up there. You have to understand that this area here, Pigeon River Forest, was probably quaternary forest. The original forest was cut down years ago, and a second forest and a third forest. It was an old regrow forest. It certainly was not primitive. These people up there who thought they were real environmentalists really did some crazy things and said some crazy things.

We knew that we were drilling on pads which were 300 feet by 300 feet. And they said that we would destroy the elk population. The guy who was the head of the . . . I do not know whether he was the head but he was reasonably high up in the Michigan Fish and Wildlife, said, "Well, I do not think you are right" (talking to the environmentalists). He said, "We have been cutting out pieces in the forest and we find that the elk love them. As a matter of fact, the elk go out of their way to go to these areas here." And they really made the environmentalists look pretty stupid when the environmentalists were saying that these were so bad and the Fish & Wildlife Department was going out of their way to cut these units. Anybody who knows what an elk is, for crying out loud, knows that an elk is a prairie and a grass animal, and not a woods animal. They really were made to look very bad.

The guy . . . I cannot remember his name, but he was good. He did not tolerate any nonsense from the companies, from us, but he told what they were doing and what this was all about. And they had to eat crow on that. We were running our seismic lines and using especially narrow vehicles. We had special drills. And then after a while, we were using hand holes in there. So, we had to cut down very few trees along that thing.

The Pigeon River environmentalists were saying that we were making paths that were causing problems in the forest. Well, what do you mean? The snowmobilers were using these clearings like that and they were very narrow. And we said, "Well, hey wait a minute. You do not have a problem with us, with the oil companies. You've got a problem with the snowmobilers." And again, the Fish & Wildlife people backed us up on that.

To a certain extent, we had made an error, but we had some lines that were not able to be shot on the Friday before Memorial Day weekend. There were just a few that we had not shot. This crazy science teacher pulled up the charges that were loaded but not fired! He pulled them up by the wires and brought them back to his class! He was saying, "Look at these dirty oil company people loading these holes with dynamite," on and on and on. Well, it is true, we ordinarily did not . . . we made a point of firing all the shots before a weekend in particular, and we just missed that. But this jerk pulled up . . . I do not know who it was but somebody commented that this guy was . . . he said, "I hope you are a better teacher than you are a scientist because that is the stupidest thing I ever saw in my life, to pull up these" . . .you know, you had a one-pound, sometimes two one-pound charges on them on the end of the

wire. Live! They were live!

That went away. Talk about extremists, you know? These people were crazy!

TP: That is an interesting story. How long were you in Michigan and where did you go after your time in Michigan?

JO: I went to be on Bob Nance's staff, western region. I was there two years or so.

TP: Was that when you were working in Alaska?

JO: Well, that is how I got to Alaska. I never worked as a geologist there or anything. As a matter of fact, in my job with Nance I did not do anything that I could see was constructive! That is how I got up in Michigan. I quite often arranged trips for Nance because, being the area vice-president, he would go out there. There were three of us: a chief geophysicist, a chief geologist, and chief of operations. The three of us ran the region. I hated that job with a passion because you could not do anything.

TP: You were not really doing any field work.

JO: As I said, I never thought I did anything worthwhile at that job!

TP: Did you ever go back to offshore?

JO: No. After that job, I was put in charge of training and recruiting, which I did for a number of years. I did not like that, to start with, but we had a university class situation there. We had absolutely fantastic courses, programs, geology, geophysics and production. I was proud of that organization because I thought we did incredible things. I remembered that that was the reason I started.

TP: What years were those?

JO: I think 1979 to 1987.

TP: Certainly for a few years after 1979, you were hiring a lot of geologists . . .

JO: I hired a lot of geologists. It broke my heart in 1984 when some of these young people were let go. It was terrible.

TP: It has happened throughout the industry.

JO: Yes. You know, you feel pretty personal . . .some of the kids I had talked to, they had bought nice homes out in Katy. They had three-story houses. They were up to here in mortgage, you know, and they lost it all, a lot of those people. I really felt bad about that. But, on the other hand, I got to meet a lot of young people. I liked that. That was great. As a matter of fact, I went to the AAPG meeting this past year and gee it was fun to walk in the door and all the young people I had not seen for 20 years came up and said, "Hi, Jerry!"

TP: Well, can you think of other individuals that we should talk to, especially about the history of offshore?

JO: I think you ought to talk to a paleontologist. You ought to have a serious conversation with at least one of those. You might want to talk to one and talk to more. Jim can explain better than I. I did not explain at all . . . exactly what they did to use the fauna that they were finding, the format, Foraminifera that they were finding, to tie that in with the likelihood that you were either going to get sands or no sands in a particular area. The fauna was tied to whether or not there were going to be sands. I do not know that that was widespread in industry. I think our paleontologists deserve a lot of credit for that.

TP: Well, this is good. Can you think of anything else to add? Any other characters or people you worked with? Stories worth mentioning?

JO: I told you about McAdams. I was so terrified of taking my stuff in to show Mr. McAdams. I talked to Joe Broussard, who was an old-timer. I said, "Joe, how do you keep your cool when you go in and talk to Mr. McAdams?" Broussard, you have got to know that he was a coon ass. In his kind of broken talk, he said, "Well, I just think of Mr. McAdams as sitting there in his underwear." [Laughter] I said, "Does that work?" He said, "Oh, man, it works every time."

The next time I went in to see Mr. McAdams, I knocked on Ronnie Knecht's door. McAdams said, "Come in." I opened the door and went in there. I had my stuff. I look at him and I could see him sitting there in his underwear! I do not know whether McAdams understood why I snickered or not!

TP: I guess we can stop here unless there is anything else …

JO: There was so much in Michigan, but I think if you make it clear that you have got a four million barrel field over

across the whole state; that Montmarency thing, stopping at the line, I still do not understand that. I mean, there is nothing in the geology that said it was going to stop there. It would be fun to find out; to talk to the guys, somebody in Michigan. Did they ever find any wells? I know along this eastern side, it was as sharp as could be. There were pinnacles right there, right along the property line, the county line. It would be fun to find out, has anybody found anything?

TP: That would be interesting. I talked to several people about that. Howard. Marlon Downey. Of course, I never had a chance to talk to Jerry Persig.

JO: I do not think Downey ever worked there.

TP: He was involved . . .

JO: Oh, in the early days, from the Pittsburg office. I mean, he and Pete Lucas.

TP: He mentioned Pete Lucas who was a carbonate specialist.

JO: Yes, and Pete was the one who, like everybody else, thought that this was going to be a shelf margin play and not the pinnacle play.

One other thing. This was a managerial nightmare when that was going on. I hope I get my numbers right. I think at one time in that play we had 7 rigs and 13 seismic crews. I mean, nobody had a life of their own. Honest. If you were a geologist, something was going to happen over the weekend for sure. At the very least, you were going to be called. Or, chances are, you are going to take the company plane up to Michigan. And it was even worse for the production guys. But with 13 rigs running . . .

I remember the story of Henry Taylor, a geophysicist, and that was in Montmarency County. Henry was picking locations. . . the geophysicists had incredible latitude at that time. You know, when you have lots of time the managers get involved with every little detail. When you have got this kind of data coming in, it overwhelms the managers so that the authority trickles down. Henry Taylor was the province geophysicist for this area. I do not know whether he came all the way to the lake here or not. But certainly, in Montmarency County.

Henry came to the division and his first three locations all were productive; seven locations, I think, in a row. Nobody really believed it. We said Montmarency County was one big reef, you cannot miss! I think Henry finally

did, on his eighth or ninth time, miss. But I think he certainly had the record for the number of successful wells in a row. It was absolutely phenomenal!

The other thing. The Michigan leasing situation. They had lease sales which are kind of unlike anyplace else in the world. Our competitors would see who was bidding on an individual tract, and if it was a Shell person they would go in and start bidding. They would bid right next to them.

TP: They do not have a state sale? There would be a state auction?

JO: Yes. They were wild. You could see who was bidding what. It was very transparent if you knew people. So, we had people that only worked for a couple of times. Then you would have to go hire somebody else, that was not known to be a Shell employee.

TP: They knew who was working for who?

JO: After a while, they did. The first couple of times out, they did not. So, we contracted with guys . . . heck, we would bring guys in from California and everything else! There was one case where we were passing the data

underneath the stalls of the toilet! Somebody would meet in the toilet in the stall, and you would not even really know who it was! You would say, this is the lease that we want! I wish you could talk to the land man because that was really one of the funny stories in Michigan. It was a real unusual lease structure the way they did it up there. Usually, they are sealed bids, more than anything.

TP: But they used to just walk up and give your bid aloud or something like that?

JO: Yes, right. That was a tragedy. We had a guy that was a land man. He was the head land man. He had a drinking problem. And what the hell happened? With the company car, he went across one of the freeways and hit somebody head-on, killed them. I think he was caught at a motel, drunk, and he was terminated, of course. But that was, whew! That was terrible. I mean, it is bad when somebody gets killed. He knew a lot of the Shell data. We had to keep that away from the land guys because, you know, they would be trying to get a particular lease and they would play all sorts of tricks. They would bid on a tract that was no good. And people, because they thought Shell was bidding on it, they would bid it up and things like that.

TP: A wild story. All right, why do not I shut the tape off? Thank you for your time.

THE END