OFFSHORE ENERGY CENTER HALL OF FAME
BOEM DEEPWATER GULF OF MEXICO HISTORY PROJECT

Interviewee:	Robert J. Brown
Date:	January 10, 2009
Place:	Houston, Texas
Interviewer:	Tyler Priest
Ethnographic preface:	Robert J. Brown found his first job in the petroleum industry in 1950, working as the tail chainman on a Tennessee Gas pipeline survey crew. His tenure with Tenneco took him between sites in New England and Texas, and then on to the Muskrat Pipeline in the marshes of Louisiana. By 1969, Brown left to serve as chief engineer for the Collins Construction Company, and in that position he took on work as far afield as Venezuela and the Persian Gulf. Brown earned a master's degree in civil engineering at Stanford University in 1962, and seven years later he and two partners formed R.J. Brown and Associates. There, Brown oversaw work on designing and fabricating lay-barges; pipeline towing operations in the North Sea and elsewhere; and innovative work in the Canadian Arctic in the mid-1970s. As of the interview date, Brown's company, a subsidiary of Technip, was named R.J. Brown Deepwater.

TP: This is an interview with Mr. Robert J. Brown for the Offshore Energy Center Hall of Fame induction. The date is January 10, 2009.

Congratulations on your induction into the Hall of Fame. You're in illustrious company.

RB: Thank you.

TP: We're here at the Westin Galleria in Houston. Let's start off with some background. Where were you born, where did you grow up, and how did you get involved in this whole business?

RB: I was born in Ashtabula, Ohio, February 17, 1928. That was a couple of years ago.

TP: So you've got a big birthday coming up.

RB: Well, I already had it last February.

TP: Oh, that's right, yes. What am I thinking? I didn't realize it was 2009 yet.

RB: I did my undergraduate at Ohio University and graduated in 1950. Then I went to work for Tennessee Gas in the survey parties. I started out at a dollar and eight cents an hour as a tail chainman in a survey party.

TP: Where was this?

RB: I started in Athens, Ohio. I got out of school there and I needed a job. Tennessee was coming through, and they wanted a tail chainman in a survey party. I put my hand up and ended up there. Actually, we worked across on the first pipeline that went from Texas to Ohio, then across New York State into New England. And then I spent a year laying out the pipelines all through New England in the survey group.

TP: Wow.

RB: Yes. The dollar-eight cents an hour was quite a lot of money back then. They were running sixty hours a week, and I got rich very quick.

TP: So what kind of work were you doing, just surveying the land ahead of the pipeline?

RB: Yes, surveying the land ahead of the pipelines. Then the actual construction in New England started the following year, 1951, '52. After that I worked in the survey party preparing as-built drawings as to where the pipelines were installed. Then they took me off part of that work and put me in site engineering for the metering stations all along the Merritt Parkway in Connecticut. I started in the south at the New York State line and went north to Springfield, Massachusetts.

At that time I was transferred to the Tennessee Gas office in Houston. I had just moved into a house trailer, I was trailer trash then for about ten years [laughter]. We moved around a lot, then moved to Houston and spent about a year and a half in the Tennessee Gas office doing drafting.

TP: Drafting for pipeline design?

RB: More for as-built pipelines. During the weekends I went out and work on the pipelines that were being laid through this area carrying hot dope for the field joints. Then I ended up in the survey group for the contractor there, and this was measuring the bins for marking the pipes so the pipes could be bent to fit in the ditch. I really had some good jobs. Just a short time after that, in 1953, I wrote

my first article for *Oil and Gas Journal*, the title of it was "How Engineers Make Pipe Fit the Ditch." I still got have copy of that.

After that I was transferred into the Gas Measurement Department of Tennessee Gas for a while, which I did not like, because I was going around to the various metering stations, checking the meters, and there would be little things like if you turned the wrong valve, and the pop-off would go off, and you'd just about wet your pants. I shouldn't say that. Then I got out of that and went back to the engineering side and back to New England for some crossings of the Hudson River.

TP: What diameter pipeline are you talking about?

RB: These were all in the range of thirty- to thirty-six-inch pipelines that were part of the extension of Tennessee Gas into New England. We were competing with Algonquin to get the pipelines up there. Then in 1956 I was transferred to Buras, Louisiana, and started working on the Muskrat Line in Buras. We had a boat that we hired for Tennessee Gas; it was called the *Blowfly*. We made the trip from Venice, which is the last jump-off at the head of the passes, and spent three years then on the Muskrat Line area laying out pipelines and doing the surveys. That was the main transmission line.

TP: Going to be a big trunk line.

RB: That was thirty-six-inch, and then we spent time—

TP: So the Muskrat Line went through the whole southern marsh area. Where did it connect to?

RB: It was heading west and then tied into some pipelines near [Port] Fourchon. I think it went over to as far as Cameron, and then it connected into some lines there that went north. But I didn't work on those; I only worked in the Mississippi Delta area.

TP: The Delta area, okay.

RB: Yes, and that was a very interesting area to work for a Yankee [laughs].

TP: Was Leander Perez still around back then?

RB: Oh yes. In fact, Leander . . . Unfortunately, I didn't have anything to do with him because we were working for Tennessee Gas, but he always gave us anything we wanted. In fact, did the name Nick Popich ever came up?

TP: No.

RB: But he was in that area.

TP: For Tennessee Gas?

RB: No, he had the boats to rent.

TP: Was that out of Venice?

RB: Yes, it was out of Venice. The first time I met him, it was in Buras. They gave me the address, I went up and knocked. This man walks up to the door, he's standing there in his shorts and a singlet, and I say, "I'm Bob Brown with Tennessee Gas." He said, "Bob, pleased to meet you. I've got a boat for you. If you need anybody put in jail or gotten out of jail, just come and see me." [laughter] He was, "Okay." I had a good time there; I learned to eat all kinds of really good red beans and rice.

TP: Muskrat?

RB: No muskrats. Anyway, I spent a lot of time there. If you think of the Mississippi River, the distributary starts just below Venice; you go down there, and there's the Pass á Loutre, South Pass, West Pass, Tiger Pass, and that's where Muskrat started was right there, and then it went west.

TP: What year was that?

RB: 1956, '57.

TP: Because then Shell had developed all the South Pass fields right around there.

RB: Yes, and we gathered all of those lines—

TP: Gathered all the gas from that.

RB: —into Muskrat, yes. But that was good times, especially since I didn't know what money was then.

TP: It's a whole different culture and environment coming from Ohio.

RB: Oh yes, completely different. It's a great culture down there. Good food.

TP: What were some particular challenges? I mean, this was a different kind of project than surveying and laying pipeline up in New England. We're in the swampy, boggy marsh area.

RB: Yes. Actually, the way they did things about the time I got there and in the surveying, was that on land we had a chain that's a hundred or two hundred foot long, and we survey that way. There we made a cable that acted the same way. It was a thousand foot long cable. We'd take a helicopter to stretch the chain, take one end of it and start, and just have twenty foot long two-by-twos. We'd start and we'd be up to you're armpits in the marsh. We'd stick a stake in, and then we'd stretch the chain out a thousand feet and stop there and put it in. Then we just, with our eyes, just eyeball it in a straight line. That's the way we surveyed in the marshes.

TP: So you would use the helicopter to move the chain?

RB: Oh yes. It was one of the little Bell helicopters, and we spent a lot of time in it. We did things like, we're going along, and we see a big alligator down, and we circle around and all but land on her, and she takes off. Then we capture these little alligators that were about this long, watching that the mom didn't come back, and we take them home. I had two of them. I called them Pierre and Fifi.

TP: Pet alligators?

RB: Yes, pet alligators. We put them in a little aquarium, and I got about two pounds of hamburger, kept it in the freezer, and they'd start to bark when they were hungry. You would hear these little barks, and we kept them in there for about two years, and they grew quite a bit just eating the raw hamburger that we'd cut pieces off of. Then one time I took them back to Ohio to show to people up there. And one trip, it was in the wintertime, they got the flu and died.

TP: So you got in the game of raising alligators?

RB: Yes. But that was really interesting. Then we would go out and shoot nutria at night in the bayous. You saw these two little red things coming when you're shining your light. We helped to cut back the nutria population, but not very much, because it's really being overrun now.

TP: Yes, it's almost unstoppable.

RB: Yes. The way they hid the pipelines, they would dig a flotation ditch forty foot wide, about five foot deep, and they'd dig one side of it deeper. That's where the pipeline would be laid. And then they had barges with spuds and welding stations on it, and they'd make pipe up, and they'd pull themselves ahead on the pipe. The flotation ditches would go through these big marsh areas, and when you opened up the marsh area, and then water would start flowing out of these marshes. And the lily pads would plug them up so heavy that when the boat came in, they couldn't get through, so you jumped off of the *Blowfly*—that's the boat

we had—and go out and set an anchor in it and back up, and then you'd pull the pads back.

We took turns jumping off. Now, the bow of the boat was up at about nine feet, and you jumped over, and then you landed, and it was like landing on a mattress. On my one time that I did it, I jump over, and as I'm in the air going over the bow of the boat, I looked down, and there's a nest of [water] moccasins. I landed right in the middle of them, and I sprung back up on the boat. [laughter] You wouldn't believe how physical you can become when you get into something like this.

TP: But you didn't get bit or anything.

RB: No. They were as surprised as I was; but you can tell that when they opened their mouths, you'd just see white. I spent a lot of time there.

TP: You went back. You jumped over again after that.

RB: I outranked the other guys and got them to do it. Well, everybody looked at it and we carried pistols with us to shoot snakes and stuff.

TP: So you worked on the Muskrat Line for about two or three years. Is that right?

RB: Yes.

TP: That was a major project.

RB: That was big, yes. After the Muskrat Line, they started on the line that went up across Lake Borgne north. We had a Mississippi River crossing at Happy Jack, and I was the engineer on that for Tennessee Gas. That was 1958 and '59. There's Lake Pontchartrain, and next to it to the east is Lake Borgne. We surveyed a pipeline right across Lake Bourne. I forget the name of the line, but it was a takeoff from the Muskrat Line that went by Hattiesburg, Mississippi .

That's when I got involved with a dispute with some landowners whose lands we were crossing near Hattiesburg, Mississippi. This was also a thirty-inch line. We crossed a piece of land and had to go into court. The owner of the land had a son-in-law that was a lawyer, so I had to testify where we started and where we ended. During the testimony he asked questions like, "What is the circumference of the pipeline?"

I said, "Circumference? Don't you want the diameter?"

He said, "No, I want the circumference."

I said, "The circumference is nine feet, roughly, three times pi; nine feet."

He said, "It's what?" "You mean a man can stand up in it?"

I said, "No." [laughter] But anyway, it went on, and it all ended up that when Tennessee had gone through there, they had offered something like fifteen dollars a rod, and when we got through with it, the judge cut the amount back that they awarded to five dollars a rod. If they'd have left it alone, they would have been ahead.

TP: What do you mean, fifteen dollars a rod?

RB: Fifteen dollars for length, like a foot.

TP: Oh, per length, okay.

RB: Yes, fifteen dollars per length.

TP: So you made out in that case.

RB: Oh yes, Tennessee made out big time. But there was some funny stuff on that.

TP: Yes, wow. Can you describe a little about the evolution of pipeline technology as you were working in the marine area and probably inching out into deeper waters in some of the technical challenges that you faced?

RB: In the marshes you always keep your lines straight, and then you lay it off a barge. You don't bend it or anything like that. On land you have to make bends in the line, and the way they would bend it, they have what's called a bending shoe, and they grab the pipe and start to bend it until it wrinkles. It is called wrinkle bending, and when a wrinkle starts, you stop. Bend it a little further, wrinkle, bend it some more until you get the angle that you want. This is something you never do now.

TP: So on land it's much more difficult, because you have to go through property owners and you have to make bends around features and things.

RB: That's right. We used the wrinkle bending on land. There are other ways of handling it, so that part is gone.

TP: But offshore, as you get into deeper water, you have the problems of bending as you lay it, right?

RB: Well, you use the flexibility of it, and you stay in the elastic range. Now, if you bend it, you're going plastic. So in the elastic range, that's all you do offshore is you stay elastic.

TP: And you develop stingers to sort of help keep it in that range, right?

RB: Yes, exactly.

TP: It says here you also worked in Venezuela and the Persian Gulf. Is that right?

RB: Yes.

TP: After the Muskrat Line?

RB: After the Muskrat Line, I went to work for Collins Construction Company.

TP: So you left Tenneco then.

RB: Yes, I left Tenneco in 1958 or 1959, after nine years. Then I was Collins' chief engineer for about four years, and then I worked in Venezuela in a number of different places. We specialized in pulling pipelines. In other words, if you had a ditch, you lay the pipeline in, and you have a barge, and you pull the pipeline with the barge and add more pipe to it.

TP: The other way you were pushing it through, right?

RB: Yes.

TP: Was it all push on the Muskrat Line?

RB: Well, it was off a barge where they move the barge out from underneath it into the marsh, and offshore is like that too. You move the barge out from underneath it, and you always stay elastic in the overbend and in the segment. You can't go plastic. If you go plastic you can end up with problems.

TP: So you went to work for Collins Construction.

RB: Yes. That was for about five years, and then we lost on the job in the Persian Gulf. In fact, I went out on that job to do some design work. The Persian Gulf has an island south of Teheran that's called Kharg Island. There is a little adjoining island next to it that was called Khark. It is about four thousand feet long, and we made up pipe on that and then pulled it over to Genoa on the coast of Iran. That was a nineteen-mile pull. In fact, that was the record we set at that time.

TP: What diameter pipeline was that? It wasn't a forty-eight-incher, was it?

RB: No, it was a twenty-eight- or thirty-inch. It was one of those pipelines with concrete that we placed on the island. There was a ninety-year-old lady living in the island. She lived in a little thatch hut, she had a goat. I don't know how she survived, because the island was all sand. I don't know how she did it; she was the only thing on the island. Anyway, we pulled nineteen miles to the coast of Iran, which was at Genoa, and that was near the end of my work with Collins.

Then I stopped working and then went to Stanford University for a Master's in Civil Engineering Construction. I had my head on backwards until that time, and I went to Stanford and I got it headed in the right direction. From then on it was kind of straight up.

TP: But your practical experience, no doubt, served you well.

RB: Oh yes. What was interesting is that the course I went through, I thought it would be easy. There were about thirty of us in the class. There was a group from the military; about four people from the army, four from the air force, and four from the navy. The rest were undergraduate students. I had to join the army class to study with them, and after that I did really well. The professor used to say to his students, "How much does a board foot of wood weigh?" Then they would scratched their head, and he'd say, "I'll bet you Brown can tell you." And he'd ask me, "How much does it weigh?"

I'd say, "Well, it floats, so it has to weigh a little bit less than sixty pounds a cubic foot. You divide that by twelve, so it weighs about six pounds a foot."

He says, "See? You guys got to get some practical experience." And they shouldn't have let me in, because my grades were not that good, but it's only because I had the experience that they let me in.

TP: Why did you decide to go back for a Master's in Civil Engineering?

RB: I love engineering, and I knew that could make a big difference if I'd get on the construction side. It made a hell of a difference.

TP: So what did you do after you came out with your Master's?

RB: This was right at the time of the Cuban Missile Crisis in 1962. Then I went to work in Hawaii for a construction company building a pineapple processing factory in the area of Dariango, in southern Philippines. I designed the complete pineapple processing plant; spend only about a year and a half on that.

TP: Wow.

RB: Yes. The plant had a whole bunch of pipelines. It had some harbor structures, and I worked on all of those. The hilarious thing on that is this was for Dole Corporation, and when they grew their pineapples, they were supposed to be about this big, and they had what's called Ginaca machines. These would fit in the Ginaca machine, they'd slice them, core them, doing them all. And the land was so fertile there, they had pineapples that big.

TP: About twice the size.

RB: Twice the size. [laughs] So they really had a hell of a time getting their machines converted.

TP: That's an interesting interlude for someone in the oil and gas construction business.

RB: Yes. Then I left Hawaii and went to work for Bechtel. I had a number of the people that I'd worked for at Collins who were working with Bechtel. I spent about a year in their offices in San Francisco, and then they made me the chief pipeline engineer in The Hague. I spent three years there.

TP: So you worked in the North Sea?

RB: Yes, started in the North Sea. They got a little upset with me because the work in the North Sea was slowing down a little bit, so I was reaching around into Canada and getting work there from The Hague, and then into Australia. They said, "You have to stay in the North Sea." But there was very little work at that time; that's when we quit and started our own company, R. J. Brown and Associates.

TP: R. J. Brown.

RB: That was in 1969. People at Bechtel were unhappy about that, but we said, "Jeez, we're getting all these projects elsewhere, and then you guys want to do them in San Francisco. We want to do our own jobs."

TP: So you took some other engineers who were with you from Collins and Bechtel and formed R. J. Brown and Associates?

RB: Yes. Two guys, actually. I had a secretary and a guy who used to be with Collins. One was my partner, George Hinkle. I'll need to send you some articles that we've written on that.

TP: So it was R. J. Brown's Pipeline Construction Installation Company?

RB: No, it was Marine Pipeline.

TP: Marine Pipeline exclusively?

RB: Yes. Engineering, and then we do the construction supervision. We actually started by doing work for a Dutch dredger company who wanted to build lay barges and this type of thing. One of the first jobs that they wanted to do was building a lay barge for the Russians.

TP: What was the Dutch company?

RB: IHC Holland. In Dutch it's Ee-Hah-Seh. So we made a trip to Moscow, this was 1971. The Russians had said that they would like them to bring slides on how they designed pipelines, so I had a whole bunch of slides showing how to design, how to survey, and how to design pipelines. I didn't realize who the man was that asked us. He was the Minister of Gas; his name was Ruchev [phonetic]. Well, the Minister of Gas to me meant nothing.

Anyway, we went to Moscow; I had four Dutchmen with me, and he had about sixteen engineers with him. The translator was a beautiful Russian girl. I mean, whoo, she was a real looker. Anyway, she did a very good job with translating, because they'd ask questions, and I'd answer in English, and she'd translate into Russian. After about three hours of this, she started stuttering in both English and Russian, but, I mean, it was extremely interesting. I had all these slides, we got through with it all, and I thought, Boy, this went real well! My Dutch IHC people were very happy with the way things were going.

He was the Minister of Gas; his name was Ruchev. We got right down to the very end, and he said, "This is all very interesting, but we can also do this ourselves!"

I thought, "Well, shit." I had my briefcase open, and I slammed it shut. I said, "Great. Do it."

He said, "But wait. It will take us twenty years. [laughs] Go away, design a pipeline barge, and bring it back. But when you come back, bring slides of the lay barges that are working. Do you have those?"

I said, "I've got all kinds of slides. We'll bring those back."

Anyway, we went back six months later, and Ruchev and these other engineers were there, and we went all through that, and I thought, "Boy, this one worked out good." At the end he said—and apparently, he did this with everybody, and everybody kind of—

TP: Just intelligence gathering.

RB: No. Nobody really didn't want to talk to him, because he was God over there. I didn't realize it, or I wouldn't have talked to God like I did. [laughs] But we got all through with it, and he said, "This is interesting, but the cost is way too much."

I said, "If you buy this in the States, you're going to pay a lot more for it."

He says, "You're in Vietnam," to me like that. [laughs]

I said, "You're in Czechoslovakia."

He said, "You're in Vietnam."

I said, "You're in Prague". And apparently he took a liking to me, because nobody had ever talked to him that way before. But I still didn't know who he was.

So we came back and designed it, and then he came to Holland. I had a very good-looking secretary, and I had a very good-looking Dutch girlfriend at that time, who was her mother. I mean beauties. [laughs] So we were talking about the project, and Ruchev had two sub-ministers and two guards with him. We were in our office in Schiedam, right near Rotterdam. My secretary's name was Henrietta, she spoke German. He spoke German along with Russian. —The girls are going to like this— In my office I had a statue of Greek wrestlers with no clothes on. The one Greek is holding the other one and he's about to drop him, and the one that is about to be dropped, he has reached around and he's taken hold of—

TP: I've seen this.

RB: —of some important parts. Ruchev said, "You're going to have a problem if you drop me." We were with Ruchev in my partner's office. He really got a little stiff and he went into my office. Then Henrietta went in and explained that, "You're going to have a problem if you drop me."

He started roaring in laughter, so the rest of us then got out and went around into my office. I was the last one to come through, and as I came through, Ruchev was holding the statue, and he said, "Brown, *nyet*. You'll never get me that way." [laughs] But I really liked the old guy.

TP: Did anything productive come out of it?

RB: Oh yes. We got the lay barge. Brown & Root was trying to get it, too, and I beat them to it. But then it was a tricky one, because—

TP: So you're building a lay barge for the Soviet government.

RB: Yes.

TP: Where were they going to use it?

RB: In the Caspian. Now, the interesting part about that is that the Caspian is landlocked, and the distance from the Volga River to Leningrad is as far as New York from Los Angeles, downhill to the Caspian, which is a hundred-fifty feet below sea level. So it had to go through locks, because the barge has to be a certain width, and if they can't make it that width, then we had to cut the lay barge in half so they could take it down the Volga River for thirty-six hundred miles to get it into the Caspian.

TP: You're kidding. You cut it in half?

RB: Just slice it longitudinally, cut it in half.

TP: And then reassembled it when it got —

RB: And then reassemble it when they get down there. That's how that barge got in there. It was built in Holland.

TP: Is this the *Suleyman Vezirov*?

RB: Yes, that's the *Suleyman Vezirov*. But then we built a tank in Holland in the The Hague, and we brought their people over, and in the tank we had a lay barge with all the controls so to teach them how to move it.

TP: So they did it. You just designed it, but they are the ones who actually took it through the locks.

RB: Oh yes, but we train them to use it. Have you ever seen the tank we had down in the basement there at our office? So we designed the tank and we brought them over and trained them how to operate the barge. During one of these trips Ruchev came over. I had this good-looking secretary and my wife-to-be, and I had a Mustang, and so I get Ruchev in the backseat of the car, and I'm taking him down through the red light district in The Hague, and he's going, "*Mein Gott, mein Gott, mein Gott*," as we were going through. But he was such a nice old guy. I mean, tough as hell, but he was good.

Then we built the barge and trained the people to do it. It takes a long time to get down the Volga to Baku, which is where we ended up, and they lost half the barge. You'd think it that would be hard to do, but for some reason it stayed lost for about a year. When they finally got the barge parts down there and assembled it, then they lost the people that we trained. [laughs]

TP: So did they ever get it working?

RB: Oh yes. Yes, they got it. It's been working since 1975.

TP: Still in operation.

RB: I think so. They may have renamed it. In fact, the Caspian is the about the size of England, and it's like having two five thousand-foot bathtubs hooked together with a line across the middle that this barge was designed for, to bring the gas across the Caspian in a shallow part which was only a thousand foot deep.

TP: The big ridge in the middle, is that right?

RB: Yes, there's a big ridge in the middle.

TP: Wow. Were you the one that conceived of the two-part design?

RB: Well, yes, we had no choice.

TP: It was just a matter of necessity.

RB: Yes, you just had to do it.

TP: No one had ever done that before, right?

RB: No.

TP: Wow.

RB: No, but it was interesting. Actually, this was my idea for the *Viking* lay barge. It was a semi-submersible, and it had a stern ramp on the back; that's to get the pipe to bend but stay elastic in its bends. That's a ramp that you can retract. In other words, a big storm is coming. You lower the pipe down and leave the pipe on the bottom, and then you retract your ramp and ride out these big waves. But that's never been done.

TP: Was that designed for the North Sea?

RB: Yes. It was designed to lay across the Norwegian Trench in the North Sea.

TP: What is a stern ramp?

RB: A stern ramp is a stinger, but it's retractable. It's never been done to that length or curvature again since then.

TP: I imagine you were doing other projects at the same time you were working in Russia.

RB: Oh yes.

TP: Tell me about some of the other interesting jobs you were on.

RB: We were doing one crossing the Straits of Magellan at the south end of South America. That was really a toughie, because that's where bad storms run almost all the time, and it's not that far from Antarctica. Storms that are generated in Antarctica have a wave that travels north and, in fact, hits the coast of Africa. We designed it and it was installed by ETPM, a French contractor. That's as far south as we got.

TP: It sounds like you started specializing in extreme engineering problems.

RB: Oh yes. You wouldn't believe what we've gotten into. We're not there yet, but we're getting there. [laughs]

TP: Let's talk about this anecdote when you were working on the Statfjord-B pipeline in the ROV, the two-person submarine.

RB: Yes.

TP: Do you want to talk about that?

RB: Yes. You girls are going to have to put your fingers in your ears sometime along this. I was doing a lot of towing of pipelines since my time with Collins Construction Company. In fact, almost all the long pipelines that have been towed are with either Bechtel or R. J. Brown and Associates, and we've been the ones on the leading edge of this work. We were doing a lot of work in the North Sea.

TP: Towing as opposed to laying them by the stinger, is that right?

RB: Yes. Most of our work has been designing pipelines that are installed by lay barges, but there are a lot of cases where towing is more effective, where you make your pipeline up onshore, you pull a section, and weld another section on.

TP: Near a shore type of project.

RB: Yes. And you keep going. The longest we did was in the Persian Gulf off the island of Khark.

TP: That was the one you told me about earlier.

RB: Yes. That was about nineteen miles or thirty-two kilometers long. But for Mobil Norway's Statfjord-A, they wanted to install a pipeline that was only six thousand foot long and thirty-six inch. That was to hook up to a loading tower from one of their big concrete structures so they could process the oil, take it out to the pipeline structure, and offload it. The guy's name was Wes Abel.

TP: Wes Abraham?

RB: Wes Abel, of Mobil. He said, "How do we know that the concrete won't fall off the pipe?"

I said, "Well, this concrete is very tough. It won't fall off."

He said, "Can we make a test?"

I said, "Sure. Have you got any pipe?"

He said, "Yeah, we've got two thousand feet of pipe."

I said, "Well, we'd be glad to tow it and do a test." So we made it up in the Tananger Harbor; that's right near Stavanger. It was six thousand foot long. So we put instruments on it, and then we bring it back so we can measure the amount of abrasion, and we get loads. We gained a lot of technology off of it. Vickers at that time had submersibles. We used the *Pisces-3*. It's a six-foot diameter, a little bit larger than this, two people can lay down this way, and they put you in the water. Anyway, what we did is we made the pipe up, and then we started towing it out of the Tananger Harbor. We had done a survey, and we found that we couldn't go straight off, because it was too steep, so we'd have to go along the coast and wind our way down and then go across the trench.

So we made a couple of stops and dives just to see how it was handling and to check any damage to the pipe. It takes a crew of twelve to run this. It takes ten guys or eleven guys to stuff that one guy in the submarine—no, that's just a joke—to make it work. [laughter] But no, you'd get in, and we're laying down.

TP: It's two people, right?

RB: Yes, side by side, six-foot sphere. And you have a porthole you're going to look out. You can only look down. So if you want to kind of look up, you have to lay down and get your eyes down so you can see what's—

TP: I would have terrible claustrophobia in something like that.

RB: Yes, and especially after what happened. Anyway, we did a couple of dives, and then we turned off and went across the Norwegian Trench. We left shore at about nine o'clock in the morning. We started off the Norwegian Trench, and by the time we're at the point where we're starting down the hill, it was three a.m. I couldn't sleep, so I'm up. I'm watching the sounding gear, and you see this bottom, and you see _____ [unclear] did this and back down. And I said, "Holy smokes. We're going to run over something." [laughs]

The skipper said, "Do you want to stop?"

I said, "No, this is a test. We'll see what happens. But now that pipe has five thousand feet of cable on it. We're forty-five seconds ahead of it, and I'll just start a countdown." So I'm counting down, and I said, "Five, four, three, two, one. See-." That's all I got out, and the noise woke up southern Norway. We ran over something that pulled the cable off of the drum against the brake, and it made a terrible noise. I mean, there's dirty laundry and everything. I mean, it's horrible.

And the skipper said, "Do you want to stop?"

I said, "No. If we've opened up the pipe, I don't want it to sink here. Keep going." So we kept going. Got up on the plateau on the other side of the trench, and then we stopped. Then I made a dive on it there and checked it. One thing that occurred to me is, I'm not sure what we ran over. I didn't know if it was a Russian submarine or something else. Then I really started to get concerned.

TP: You didn't even know what it was.

RB: I didn't know what it was, but we just kept going because I didn't want to leave that piece of pipe in the trench. Anyway, we got on the other side, and I made a dive in the submarine. I got back in the sub again and went down. This is why I call this episode—

TP: You went out of the submarine for—

RB: Oh, no, we stayed in the sub. They put you in on the surface, and then they let you free-fall, and he starts up a little music. It's really impressive. You see all the stuff in the water going by, and as you get deeper, it gets darker. So anyway, on the plateau, then we made some speed runs, and then did some testing.

So then we were coming back to go back across the Norwegian Trench, and we got right in the middle of the trench, the deepest part, which is eleven hundred foot, and on that one, they have an A-frame on the back of the vessel. They take you off the vessel and hold you and then put you in the water, and then a guy comes out and cuts you loose, and then you free-fall. And in the free-fall, we

landed right on the edge of the ditch. We landed, and you look down, here's the ditch of the pipe, but it had already gone by. Anyway, the skipper said, "What do you want to do?"

I said, "Well, let's follow the trench; I want to see what condition the pipe is in." So we started following it, and then the ditch disappeared, because the pipe was actually going up a little hill. That's really a pockmark; it's a hole in the bottom of the sea, and it comes from either gas seeps or from gouges from icebergs; you don't know which. Anyway, the pipe was spinning, so we're coming up to it, and we don't see the pipe anymore. So we get up here and look over, and there's this big hole.

The skipper says, "What is this?"

I said, "This has got to be a pockmark."

He says, "What's that?"

I told him, "A hole in the bottom of the sea."

And he said, "What do you want to do?"

I said, "I'd like to see the pipe." So we got the pipe like this, and we go over it, and we turned just a little bit and went under the pipe.

TP: In the pockmark.

RB: In the pockmark. We went under the pipe, and behind the sub we've got a rope that comes up to a buoy on the surface. So we're going along under power, and the submarine stops. The propeller's running. He throttles back and backs up, because we were pulling—we're doing this with it.

TP: The rope got tied on the pipe itself?

RB: Well, it was under the pipe. We're on one side of the pipe, and the—

TP: And the rope's on the other.

RB: And the buoy and the rope's on the other side. Anyway, I'm going to do the whole thing, so you girls are just going to have to—

Unidentified Female: You just go for it.

RB: —just bear with us. [laughs] So anyway, I wasn't too nervous then. Then he'd throttle up again, and we'd move ahead. He'd throttle back, and we'd move

backwards. Then in these little submersibles you have CO_2 scrubbers that takes the CO_2 out of the air and cleans it up so you can breathe it. What they don't have is H_2S scrubbers. Anyway, the skipper, he was kind of a fat Englishman. Not many Englishmen are fat, but he was; a beer drinker. Anyway, he started to release the H_2S into the air. It's called a fart. And when he did that, then I thought, "Oh my god, we've got a problem." [laughs]

TP: You were stuck in there.

RB: We're stuck. We're here, and we can't go anywhere, and the water is thirty-four degrees, and it's cold. And then the inside of the sphere starts to sweat, and it smells bad inside there. We were stuck there for eight hours, and so finally he called the surface. He said, "Brown wants to come up."

I said, "Yeah, Brown sure as hell does, because Brown is having problems, and he's getting religion." We had to shear the rope that we're tied to, and then we came up. The surface said, "We have to move out of the way, and so you don't come up under us."

TP: How did you shear the rope?

RB: There's a shear bar inside that you could cut your rope in case you get in a position like this. So we started up, and as we started up, we saw rope, and it went right by the pipe. It was just about getting dark, and when we got on the surface, they said, "There's a Russian trawler that has joined us."

And I thought, "Holy shoot, we did run over a Russian submarine. We may have started World War III." So then I was really—I mean, you talk about—I was really nervous after that. I could hardly stand up when they hooked onto us. It was starting to get rough, and you stay there a little bit and you'd get sick. They finally got us up on the deck, and I got out. I could hardly walk. I mean, I was cold, scared to death, nervous, and looking—thank you, Lord, for getting me out of this.

Then we had to go from that spot about five hours to get back to the place where we ran over something. This is the part that isn't in here, but this story isn't over yet. So we went for five hours, and I lay down, and I thought, "Well, I can't go to sleep in all that spoom in my eyes. I want to dive again, but I want a skinny skipper. I don't want the same skipper on this one." So we go for the five hours, and then I got up. I put more clothes on that time to be a little bit warmer, and we went down.

We didn't find the track right off, so we had to circle around. Finally we found the track; it was inshore of the track, so we went offshore further and then kept

going and went by the spot where we ran over that object. I thought, "Oh my god, it was a submarine, and he's gone. I hope we didn't hurt him."

So we went further on, and then I started to find pieces of concrete, and then I found the bollard of a ship and that part where the rope goes through right next to the bollard. So we found that, and I said, "Well, it has to be some sunken ship that nobody knew about."

TP: Really.

RB: Yes. And I told the skipper, "Let's go back and take a look at that." And as we turned around, we went by the ship. It was like this.

We got to that spot, and then we started coming back, and as we approached. Now, the skipper is an Englishman. He said, "It looks like a block of flats ahead of us."

And I said, "What the hell is that?" And as we came up, we got right underneath the ship, right up to the keel, and as we're approaching it, it was an orange color, and it looked like it just came out of the factory. I said, "That's got to be a keel," with a couple of other expletives in there.

He says, "It is."

I said, "We really shouldn't be here."

He said, "No, we should not."

I said, "Can you back out?"

He said, "Yes."

I said, "Please." [laughs] So we backed out a ways, got clear of it, and then got approval from the surface to drop our ballast, and as we rose—I have some TV of it, but you can't see it too well. I could paint a picture of the porthole when we went by, of the decking and of the railings and the superstructure. I could paint a picture of it now.

TP: What kind of ship was it?

RB: A World War I freighter—

TP: Really.

RB: —that the Germans had sunk.

TP: Wow.

RB: Yes.

TP: Incredible.

RB: I don't know if you got a copy. We continued then back, and as we pulled the pipe up onshore, I stood on the pipe and we took a picture of it. I gave them that file.

TP: They have it. I don't have it with me right now.

RB: It's a shame, because that's when you're a Y and D, and I'm standing on the pipe when we got back.

TP: Y and D, huh?

RB: Yes, and this was the funny story that I was going to have it told today at this thing, and I said, "But we've got to leave out some of the words like fart." Then this morning I called Bob Scott, and I said, "Also leave out the H_2S."

TP: So you have a slide show on this.

RB: Oh, I've got a slide show on there.

TP: That would be great.

RB: Yes, I've shown this to about five hundred BP engineers in Chicago, and it brought the place down. But I used the full bit.

TP: That is great. So you still ended up doing the pipe for Mobil; this was just the test.

RB: Oh yes. This was just the test.

TP: Wow. So you were able to avoid the ship. Did you report it?

RB: Oh yes.

TP: Did they recover the ship or leave it where it was?

RB: No, no, they just left it where it was. It's a monument down there now. We don't want to go that route anymore. [laughs]

TP: You were telling me before we sat down about your work in the Arctic.

RB: I'm going to give you a movie on that. We made a twenty-eight-minute movie that showed that. That was one of our big technological jumps.

TP: What year are we talking?

RB: This was 1976. Just about the same time as this was happening, we pulled a pipeline from an island four thousand feet offshore, and we had to go through thick ice. It's so far north that it's landfast most of the time.

TP: Who was this for?

RB: This was for Panarctic; it shows in the movie. I'll give you a copy. We had six things that had never been done before. In fact, it was there that we developed the first of the models, because we couldn't get up there, and everything had to be airlifted in. It went up to Rae Point and then it was airlifted by Hercules aircraft another two hundred miles north. And it was from there then that we had to get this pipeline out to a well offshore for the Drake Field. There's a big gas field there.

[Recorder turned off.]

TP: So you were talking about the Drake Field, Panarctic.

RB: For Panarctic, yes, in the Arctic Islands.

TP: Arctic Islands above Canada or—

RB: Yes, it's northern Canada. It's as far from south Alaska to north. You go that much further north, and then you go to the east, and that's where it's at, so it's really up there. It's where you have landfast ice most of the year, so you actually have to work on the ice. We had to build a model to simulate the entire construction. How are you going to make it up? How are you going to launch it and tow it? How are you going to make the connections? And there were actually six new things that had never been done before that we had to engineer to make this work.

TP: Can you list those for us?

RB: Yes, in fact, it shows also in the movie. Yes, it shows up, and it just runs through them. One was it's the first time we had made a diverless tie-in, where we had pulled the pipe and deployed chains. The pipe floated off the bottom, and we deflected it and plugged it in just like you plug in a socket in the wall. That had

never been done before. You'll see deflect-to-connect in the industry. That's where we coined the name.

TP: Deflect and connect?

RB: Deflect and connect. It was all diverless.

TP: Wow. And they do that in deep water now?

RB: They should be, but they're not. They're putting in jumpers, so they've got other leak paths. We have, on the jobs that we've engineered, where you get on the model and you determine where you park so you can float her off the bottom and bring it around and plug it in, so you only have one connection. You don't have jumper connections, and they should be. A lot of people now are starting to think more about this, to limit the number of leak paths that you could have for pipelines.

TP: So you did this the first time on the Drake Field.

RB: Yes, and it cuts the cost down tremendously, because you don't need to have a vessel up there. You have to work right off the ice. It minimizes the vessels where we do this offshore, and the amount of money. It eliminates the bringing in of a very large vessel, which probably costs six to eight hundred thousand a day. You eliminate that by just doing it where we're towing pipelines out, and we park it in the correct spot. And the towing line is about a hundred, hundred and fifty thousand a day, and then you deflect it and plug it in, all with the little vessel. This is where the economics come into play.

TP: So you tow out and deflect instead of getting a big giant lay barge.

RB: Yes, or a derrick barge. Are you here this evening?

TP: No, I will not be here.

RB: You won't be here.

TP: But we can arrange time.

RB: Because I need to give you some other articles I've written on the subject.

TP: I'll come out and visit you in your office.

RB: Oh, great, yes.

TP: So what else did you invent on this project?

RB: There was a bundling of pipelines, where we had two six-inch; we had a two-and-a-half-inch annulus access; we had four hydraulic control lines; instrumentation line, all in a single bundle. This hasn't been done before. This was all inside an eighteen-inch casing; we put this all in a twenty-four-inch line. Then outside of that we had a three-inch glycol circulation line where we could take glycol minus ten Celsius down that, and bring it up the inside to grow a permafrost bulb around the pipe for protection.

TP: Wow.

RB: There's the connection itself, the deflect-to-connect, that part, and there are two others.

TP: Well, I'll see it in the movie.

RB: Yes, it's all in the movie.

TP: Wow. I didn't realize that there were fields developed so far north.

RB: Oh yes. There's something like thirty trillion standard cubic feet of gas in the north that can be tapped into, but you have to have your oil price up. Now the oil price is high enough that we can start tapping into it.

TP: Were you limited in times during the year in which you could work? I mean, you had to only go up there in the summer?

RB: You have to design it for both cases. If you want to do it in the summertime, or in the wintertime, you can design for that. Still, the best way in the Arctic is work on the ice.

TP: When it's colder.

RB: Yes. Take advantage of the ice because that's your platform, that way you don't have to take up a barge of any kind. Work where it's landfast ice; work with Mother Nature every time she can help you with something. Well, when you put your pipe in the water, you get the weight of the pipe just right, and you can move that around wherever you want it. It's unbelievable. In fact, when you come to our place, I'm going to take you downstairs, and I'll show you these models, because we're still using the one that we developed before the Arctic, and that was 1976.

TP: Really.

RB: Yes.

TP: So you have little scale models down in your basement?

RB: Yes. There are tables that would be from here to the wall over almost to the end. You'll see that. That's the one that was designed in 1976. The modeling was the first case we ever did where we'll design an entire pipeline and establish how you handle it underneath or where you can get it to floating.

TP: And people are starting to think about using this for deep water pipeline tie-ins?

RB: We already have.

TP: Really?

RB: Yes. In the Gulf Coast now we've towed fourteen lines, and you'll see the cross-sections of the bundles.

TP: To what depths?

RB: To depths of three thousand, three hundred feet. There's a whole bunch more that would be very appropriate to do.

TP: What projects? What pipelines?

RB: BP Thunder Horse. This is the one that we've spent the most time on and where we've done more advances in our modeling technology than anything else. I'll give you a whole bunch of things on this.

TP: How big is the firm now?

RB: Well, in the '80s we sold R. J. Brown and Associates to Basics Corporation in New York. I don't think that's in here. Anyway, they went broke, so we got the company back. That was 1980. Then about '83, we sold it a Norwegian company called Kvaerner and it became Kvaerner R. J. Brown. And then we had our major offices were in Australia. We had offices in Perth, Brisbane, Sydney, and Melbourne. Then Kvaerner decided they didn't like this kind of business, so they took the name away, and when they took the name away, all the pipeline people left, and we got it back again. [laughs]

TP: Now, did you stay with them?

RB: Oh yes. I stayed with them.

TP: You moved every time you sold off the company; you sold yourself as well. I mean, you didn't sell yourself, but your expertise.

RB: This is what they kind of accuse me of doing. You don't have to record this, but they say Brown is like a prostitute. He has it, he sells it, and he's still got it. He sells it again, and he's still got it. [laughs] I'm sorry about that. You can leave that part out. I've got a whole bunch of other stories.

TP: But now it's called R. J. Brown Deepwater—

RB: R. J. Brown Deepwater: A Technip Company. Now I've been bought body and soul, but I have to stay as the director, which is great, because I don't have the problems with hiring people, laying people off, and handling people. If it wasn't for people, this is a wonderful job. [laughs] When people get involved, that's when you have more problems. I'm out of that now, so I'm having more damn fun. In fact, the project I'm on now is one of the sweetheart projects. It's almost as good as the Panarctic. Panarctic was first. This one is, right now, second.

TP: Which one is it?

RB: It's the LNG submarine pipeline for Hess Corporation. It's in Weaver's Cove.

TP: Weaver's Cove is where?

RB: It's in southern Massachusetts on the Taunton River. What we're working on it; I think we're on the edge of having it by June of this year. It's a permit from FERC—that's F-E-R-C—

TP: Federal Energy Regulatory Commission, yes.

RB: That's it, yes. This will be the first-ever permit issued by them for a LNG pipeline in the States, which this is a big deal. I mean, this is just like the Panarctic one.

TP: Really.

RB: Yes, and in fact, I'll show you how we're deflecting to make the tie-in for this project on the big model. And the only way you can engineer it is to have it modeled, so you'll like this.

TP: Wow. So you're still going strong.

RB: I'm having more damn fun.

TP: You're not going to retire.

RB: Man, if I retire, in six months they'd put me in a box and nail the lid on it and put me in the ground. I don't want to go there. [laughs]

TP: Well, that's great. We should probably wrap it up. We've got some other folks coming in. But I'll follow up with you.

RB: Yes, and you need to come by. You've got my address.

TP: Yes.

RB: You know, as you're going out I-10 and you get to Beltway 8, on the right-hand side you'll see the big Technip office. That's where I'm at.

TP: Okay. Congratulations again on your induction into the Hall of Fame.

[End of interview]