

PETROLEUM INDUSTRY ORAL HISTORY PROJECT
TRANSCRIPT

INTERVIEWEE: Mike Miller

INTERVIEWER: David Finch

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DF: Today is April 20 in the year 2004 and we are with Mr. Mike Miller at his offices at Safety Boss Inc. at 921 - 9th Ave. S.E. in Calgary. My name is David Finch. Start by telling us, if you would Mike, where you were born?

MM: I was born in Black Diamond as an oil field kid. We were actually living in Okotoks but Black Diamond was the only hospital in the area at that time. That was October 19th, 1944. And my father was in the oil business there at that time with the Conservation Board. My grandfather had been an investor in the industry as well so I'm third generation and now the fifth generation is working for the company.

DF: Wow. Your education?

MM: I completed Grade 12 and then I went on, largely by correspondence, and became a power engineer which is a SAIT type of certification, diploma certification. I really, with the exception of a couple of years, never employed that to its fullest extent. It really served as background knowledge to me, most of my education was on the front line. I started working for my dad originally, washing trucks and then went on to work on drilling rigs. Eventually ended up with an oil company, which at that time was, gosh that was back, Aquitaine, which of course, had several transitions in time until they eventually became Husky. And doing largely drilling and completions in those days.

DF: What were the highlights of that period?

MM: Probably the biggest highlight is I spent 9 years in Rainbow Lake, from the inception of that field to the development of that field. Of course, that was one of the kind of real milestones in the petroleum industry here. we basically went from zero to 100,000 barrels a day in something like two years.

DF: What was it like being on the ground there?

MM: I always have been a front line person. I have a pretty good mechanical understanding and I really enjoy that work, as well as just solving problems. Rainbow Lake in those days was a really remote community, in fact, for the first year we lived up there you could only fly in and drive in in the summer. A very boom town kind of atmosphere although it later on settled down into a pretty nice little town. But it was certainly remote in those days.

DF: Tell us your next progression then?

MM: Well, the next progression really. I then went to Libya with Mobil Oil and worked there for four years and that was kind of a hodge-podge of job titles and duties. Gosh, that would be, I think I was there '72 - '76. I went over there originally as a production operations instructor. And really, as a lot of overseas jobs, you end up doing whatever it takes. I ended up largely doing completions in the end there but really enjoyed it and that was my first taste of international experience in the Arab world and that has always been

a mainstay of our business here and my connection to the oil business really. I'm talking about the Arab contact and international business. So I came back from there about '76 and I had a consulting company called Quest Engineering, myself and partners. Actually, I'm skipping a part, I went to work for Ranchman's Resources, which turned out to be a conglomerate of the owners who originally discovered and developed the Rainbow Field, that being originally, the Banff Oil crew, I was part of that. In fact, that's who I went to work for, when I say Aquitaine, it was really Banff Oil to start, shortly thereafter we became Aquitaine. So I came back from here and I was operations manager for Ranchman's Resources for a couple of years and then started an engineering company and largely did Ranchman's Resources work for the next couple of years. In 1979 my father wanted to sell the company pretty desperately, in fact had had it for sale for a lot of years. I was always interested in it but he and I didn't get along very well but finally we solved the problem. In late 1979 and of course, that was immediately before the National Energy Policy and that almost broke me. You know, because 70% of the rigs the following year were unemployed, as was most of the industry. So we had a real struggle for a few years there and then basically started working, or started making contacts internationally again and that kind of bailed us out really, of a pretty desperate situation here at home. So I've run Safety Boss since that time. I was the CEO and chief executor and chairman from 1979 on. And of course, through the 80's the oil business was up and down substantially and then finally, in 1991, the Kuwait fires came along which was probably the major event in my history. You remember the sequence of events, Iraq invaded Kuwait in August and started wiring the wells with explosives by September, October. KOC contacted us at that time, we started developing the plan for the Kuwait fires project and of course, now if I recall correctly, the first week of February they set all the wells on fire and that was 732 wells ablaze.

#044 DF: KOC stands for?

MM: Kuwait Oil Company.

DF: Okay, so then you were busy, you've got all these wells on fire.

MM: It was a monumental task, it was just an incredible happening event in history really. There had never been any larger damage wrought by man in any form. Some of the figures are just astounding, there was 10 million barrels of oil put into the ocean, there was 20 million barrels of oil put on the desert floor and there was hundreds of millions of barrels of oil burned. And of course, with 732 of the largest wells in the world ablaze there had just never been anything like it before. That from the very start until the very end was just an incredible thing to be involved in, not only from the fire fighting and well control event but just to see the immensity of something like that was a phenomenal thing to see. And of course, we did exceptionally well there.

DF: Can you back up and position your company vis a vis the other companies that do this work and why you were there and called upon to have such a major role?

MM: We had pretty good connections in the Middle East, specifically with the Kuwait Oil Company at that time. In fact, we had only a year before, went over there and done a seminar on well control. The three major well control companies in the world at that time

were Boots & Coots, Red Adair and Wild Well Control. We were certainly considered junior and 4th place. Exactly why they involved us I don't know but we did have some international standing. We'd already done some big wells in Iran and offshore in the Gulf there so we were known in the Gulf and we weren't without our own credentials. Why exactly include us, I suppose it was a credential thing and I suppose as well, they wanted other than American companies to be involved. That having been said, we weren't very well received when we arrived there because it was a Houston operation, from the project manager down and they just didn't think we should be there. Of course, in the end that was a huge motivating force for our people and we did far better than anybody else did, almost 50% more wells than anybody else. It was largely that motivation of being thought of as being incapable, incompetent and junior. So that was the achievement of our company and my life really. In fact, when it was over I really wondered what I was going to do with my life because it was such a monumental loss of purpose. But that was an incredible thing to be involved in. We demonstrated that we knew as much or more than anybody else in the world well control.

#072 DF: How come you knew so much?

MM: Certainly a part of the problem, or part of our development that was different from the U.S. operators is that, first of all, we were a junior company and that meant that we were far more innovative. But probably the biggest influence on us was that we dealt with so much sour gas. The reason that that changed how we did things and as I say, the Lodgepole blowout in 1982 had a lot to do with that, as a result of the Lodgepole blowouts we then basically, gave up on the existing fire fighting equipment that we had, which is largely categorized as self-contained equipment. That means that everything that you've got is on the truck and when the truck's expended it's over. After the Lodgepole experience we went into the Smoky series of fire trucks which are capable of sustained fire fighting efforts. In fact, they can pump literally, four months at a time if need be. That meant that when we arrived at Kuwait we not only had a fully mobile fire fighting system, which of course, could move much faster than anybody else. Throughout that project we were moving from one well to another in less than an hour where the other teams were taking a full day to set up. The other big factor, and again, related to Lodgepole is that my father used explosives in his day to put out large fires and we adapted dry chemical systems to do that and that made a huge change again, in the operational speed and efficiency with which we did things. The problem being, when you put a fire out using explosives, you have to evacuate the area because of the shrapnel problems. So you shut down the whole operation which is a big operation because some of those big blowouts will have 300 people on site doing different things. When you have to shut the whole thing down and get everybody off site before you set the charge off, that's very interruptive. If the charge doesn't work you basically have lost a full day before you're ready to set another one. When we developed. . .the biggest change we made in dry chemical systems was a high volume discharge rate, we developed them to the point that they could discharge at 100 kgs. per second. And what that meant was that we could put out any fire in the world with our dry chemical systems.

DF: Okay, you said a lot in that sentence. Discharge is a pumping system?

MM: No, it's actually a dry chemical, not unlike flour.

DF: But how do you move it?

MM: It's in a pressurized container, you pressurize the container and it flows. The reason that that was developed by us in Canada is that again, with regards to H₂S, when we were dealing with H₂S wells in the past the safest way and most efficient way of working on them was to set them afire. Well, in order to set them afire you had to develop a better system of putting them out. And I'm talking about explosives wouldn't work in terms of. . .in some situations for example, we've put out a wellhead fire a dozen times in one day. Where that fits in to the working procedures is that, if you were going to take something off the wellhead or put something on the wellhead you put the fire out during that movement, which shouldn't be more than 20 minutes long and then you'd light it up right away. And that removes the H₂S hazard for you except for that short period. That's why we've had occasion to put them out and relight them up to a dozen times in one day.

DF: Putting the well out as many as a dozen times in a day.

MM: As I say, the primary difference, where I'm going with this is the primary difference when we got to Kuwait was the H₂S motivation, or H₂S experience. We simply could not put them out with explosives and work on them the same way that we had in the past. So we developed that dry chemical system and that made a huge difference when we went to Kuwait, we could put out the biggest fires with dry chemicals.

#116 DF: So the dry chemical does what?

MM: It removes the heat, it smothers the fire and it breaks up the chain reaction of heating gas combustion.

DF: Right. And so it doesn't, it's my job to ask stupid questions, so it puts out the fire but it doesn't do anything to the actual flow?

MM: No, it doesn't do anything to the flow, which is an important question because the objective in controlling a well is controlling the flow. The fire and other things are incidental to that. At the same time it makes it easier, if you can put the fire out easily you can work on them far more easily as well.

DF: How about other technology that you've employed?

MM: That and the Smokey Systems became, they were, in the Volkswagen sense, every time we built a truck we virtually made hundreds of changes on it. And they got bigger and bigger in terms of pump size and mobility. I mean, they're basically designed to go across the country at close to 100 miles an hour, 140 kilometres an hour. And they will pump indefinitely and they did, I think they pumped 300 million gallons in Kuwait without a break down.

DF: So how come, I mean, why can they do that?

MM: Just the continual change and upgrading. I think that we've always had a pursuit of the best technology and we've always been a front line company, far more so than certainly, our Canadian competitors, in that we really have all of our systems work at the front line, that's where our focus has been. It's not standby fire protection, it's what do you need to put out the fires. That's the same as all of our systems, I mean, there's just nobody else

that has the track record that we do in actual fire fighting, in actual well control, in dealing with actual H2S situations. Where most safety companies would have a tough time gathering a handful of people that have had any actual H2S experience, we have on some jobs, put 2,000 man hours in a toxic environment. So we're world leaders in all three of those areas really.

DF: On these Smokey trucks, can you explain more about them?

MM: Well, the original concept was to have a large pump truck as opposed to the self-contained system. I think the first ones that came out were around 640 gallons per minute, the latest ones are almost 4,000 gallons a minute now. So there's been a huge. . . what that pump rate means is that you can move fires around, you can work closer to them. And again, with regards to the Kuwait operation, we also developed systems where, if you can set up on a fire in an hour, it's just not that short set-up time that you've saved. More than anything is you haven't fatigued your personnel, they haven't been 8 hours under a blazing fire setting up the thing so everything goes faster when you can shorten that front end operation.

DF: So talk about a typical blowout then, you've got the fire out, what's your next step, how do you compare with the competitors with what you do next? I'll ask one more question, obviously everybody who does what you do has basically access to the same technology.

MM: I wouldn't argue that.

#154 DF: Okay, so what. . .

MM: Well, the biggest difference is experience, and that's what really came to be an important factor in Kuwait, is that I was among the people that really didn't think it would take 3-5 years to bring those wells under control, as opposed in the end, it was less than 8 months, or it was 8 months really. But the biggest difference of all was just the experience of the crews. We had 25 year old guys that did more firefighting in 3 months than I did in the previous 20 years. It was just every day working on the biggest fires in the world. There's a lot of other things that need to be said about that, is that we did develop a training system that was very effective in terms of. . . there wasn't enough firefighters in the world so you had to develop a system where you'd get somebody with as closely related experience as you could and move them right in, eventually, in a short period of time, right to the front line.

DF: How did you do that?

MM: We have a few things I think, that are unique about it, and probably fairly motivational in terms of how you build a team. The first thing that made a big difference with us is that my own personal value is that I don't tolerate any form of discrimination in any manner. Where that played an important role in Kuwait is that more than 3/4 of the people that we supervised were, what in those days or probably still is called TCN's. What TCN means is Third Country Nationals. So in Kuwait that meant Filipinos, Pakistanis, Afghanis, Indians, Egyptians, those comprised over 3/4 of our staff.

DF: How come?

MM: That's just the way of business over there. I mean, we basically were the supervisors and the TCN's did all of the really hard work. The only thing that we really did hands on was

at the wellhead.

DF: How did that compare with the American companies?

MM: They were all fairly racist in their attitudes towards the people, they didn't like the TCN's and the TCN's didn't like them. But more importantly what happened is that through, we had a meeting every Thursday night and the purpose of that meeting was solely to continually develop the system. Out of that, first of all, in those meetings everybody came, including all of our TCN's and everybody was basically given the right and encouraged to put their 2 cents in and let's hear what you've got to say. And a lot of problems got solved in those meetings. Out of those meetings we basically went from our early days of taking 8 hours to set up on a fire, within a month we had that down to 1 hour. And that, as I say, just had all kinds of other impacts, not just the immediacy of saving 7 hours. It was a matter, by the time you move onto a fire you're getting the fire out within the first couple of hours from your arrival, which means you haven't had a crew of 50 people working under intense heat all day long. And again, remembering that through the midsummer months there we were seeing 50 and 55 degree heat every day by noon. So that made a big difference but this whole thing of a quality status, we had TCN's, that came forward with ideas that really changed things, how we did things. In one incidence in fact, that bronze out there in the lobby is a picture that appeared in Life. We were cutting wellhead studs off with a hacksaw, which was just a terrible job to do. We were covered in oil, most of which was literally gluing our eyes shut after you get coated with it and you're trying to saw a stud right at the roaring wellhead in the mouth of the dragon. And you can't see and you're kind of halfway through the bolt and then it jumps up and turns around and you can't find where your cut was again so you just start over, to say nothing of the fact that the studs are exceptionally hard. They're what's called a B-7 hardness. It was really a tortuous job. We later on, we had an Afghan hoe-operator that decided he could get the tooth of the bucket in behind the top of the stud and just curl the bucket and snap those studs off. Well, I mean, that job of sawing off 12 of those studs took us 3 days and here a guy in 20 minutes came forward with an idea that worked. It had some drawbacks but. . .

#212 DF: Such as?

MM: It would shoot the stud back at the hoe-operator with a bullet velocity right. So we had to build a protection shield in front of him to do it. But like I say, he would snap the stud off and he could snap 12 of them off in an hour. That having been said, we did have better equipment than actually hacksawing bolts off but at that stage of the operation it hadn't arrived yet and it was all we could do. But that was just an example of those people feeling part of the team and coming forward with being listened to and being respected and developing ideas. And they did come forward with a lot of other ideas, not in a sense of whole new procedure but just in terms of making a contribution of how you did things or something's doesn't look right, we can't go ahead that way and having that whole team environment where people were able to come forward with that. All of the TCN's really liked working for us and of course, one of the reasons was, there was fundamental respect for them all the time.

DF: How did you find them?

MM: They were supplied to us by Bechtel and Santa Fe Drilling. And of course, they also started dropping out of other teams and coming over to us and wanting to work for us. And then there was just an enthusiasm among them to keep the wheels turning and to run a high quality show and they really enjoyed being a part of that. Actually there's a picture, that's a part of them there but there's a picture of the whole crew and I'm sure it was an event in their life, like it was in all of ours. But from that, just that respect of all people, there's some great ideas. Not only that, I mean, our accomplishment in Kuwait, more than anything else was that teamwork effort. When we hired people in Kuwait they were basically told before they were hired, look, this is the Stanley Cup and we put you on the ice, if you don't contribute you'll be sent home. And that largely was true, although we actually sent very few people home. But there was just no tolerance for other agendas and there was no back-biting or concern about, somebody got a promotion and I didn't. All of that stuff was set aside really, because of the bigger picture. We knew it was the pollution event of the world for sure, we knew that the wealth of Kuwait was burning up and we also knew it was our time on the stage. And it was a matter of perform or make yourself look stupid. And they did, and all of our team did that. As I moved away from Kuwait I began to realize that the personal experience of working with men in those circumstances was exceptional. Simply because, in a sense, not only of our accomplishment, the lack of problems, in terms of political infighting, in terms of people being concerned about biases to them, I mean there was just continual examples of people working above and beyond. You know, at one stage of the project when we had moved up to north Kuwait, and we were concerned in the north Kuwait area, about sabotage of our equipment because we were close to the Iraqi border. The other teams were getting pretty upset, by this time it was becoming common knowledge that we were widening the gap and moving ahead. So there was always a concern about sabotage because largely we left our equipment in the desert. At any rate, I went up there ahead of the team, we'd start at 4:00 in the morning, I'd usually head out at 2:00 in the morning to kind of go out and check sights as to where there was supposed to be a tank there and it was supposed to be full of water, has that been done and where can the teams move to next. And that was kind of my job in terms of pre-planning everything and being sure that the plan would unfold properly. At any rate, I was up in north Kuwait, about 2:00, 2:30 in the morning and as I approached this lease where our equipment was on I could see a portable light in the area of the fire truck and I was quite concerned as to whether it was sabotage and what the hell was on. As I got closer I could see that someone was under the fire truck, which was again, disconcerting. But when I got there it turned out to be one of our pump operators who had worked the full day before, which was usually not less than 12 and often 16-18 hours. The packing on the pump was leaking to the point that we couldn't operate it the next morning and I finally recognized that it was our truck and it must be one of our people and got him out from under the truck and said, gee Dirk, what are you doing here. Well, he said, the pump wouldn't be serviceable the next morning and it was just an entirely spontaneous effort. There was no one sent him there. And that was carried throughout the crew, people

just did more. When it came time to change crews, one crew to another you just didn't have to be concerned that the outgoing crew hadn't done the very best they could in terms of tool inventory, in terms of getting wellhead ready for the next crew. Everybody really did contribute 110% every day all day and that was the phenomenal experience of Kuwait was that personal, being involved in a team like that.

#293 DF: How many teams did you have?

MM: We had three teams in the end. That as a rule meant that, per team, we supplied 7 of our people. There was lots of people that did other things, there was welding supervisors, paramedics, but we would have 7 of our employees out there and they would supervise a crew of about 50 people. So that would include crane operators, cat operators, water truck haulers, and then back at the yard we had inventory people, supply chain people, welders and welder ???, these are largely again, very few of our people supervising and TCN's doing the work.

DF: So you're fabricating as you're going along, you're inventing things to . . .?

MM: Yes, that was the other thing about Kuwait. For example, on the wellhead shacks, we call them monitor shacks, where the water cannon sits in them, we had built 27 different prototypes before we were satisfied with the one we got. But the one that we finally developed out of that process was real key in the one hour set-up. It was designed so that no people had to go with it, the cat could pick it up by itself, go out and plunk three of them down in 5 minutes and then just hook them up and we're in business.

DF: You know your business way better, so you've got three of these shacks and what do they do?

MM: They're going to put water on the fire. The water on the fire is going to cool it so we can work on it and in some wells you could put them out with water, some of the real high oil with less gas you can put them out with water. So that's the role that they're going to play. And that was part of that whole set-up is, not only did we . . . I should give you the contrast to it, is that for example, when we did blowouts in Iran, or did a blowout in Iran, we would develop a special tool to do a specific job. It was probably not only going to be a one-off but it was probably the only time you were going to use a tool like that. So you designed it, built it and used it, and it maybe didn't work very well or it didn't do exactly things the way you wanted it to but it did the job to get you through and you moved on to later things in the project. Well, in Kuwait it was the only time, with hundreds of well to go where you'd take that tool back and say, you know, it didn't come off the wellhead right or it's not sitting right on there or we could align it up better, things like that and you would spend the time and the effort to do it, to get it right. And that's why, as I say, we went on to finally 26 prototypes. That having been said, each crew would have four monitor shacks. So we would have twelve in service but 26 prototypes.

#339 DF: So correct me if I'm wrong here but it seems like, in the course of the normal year you would have a certain number of wells but here in Kuwait you had hundreds. And so your learning curve was very quick, you had opportunity to turn around and apply that and see if it worked and then you were . . .?

MM: And continued development.

DF: Continuous development, so you had dozens of years compressed into a few days.

MM: Absolutely, decades compressed into one.

DF: Amazing.

MM: And just that thing of, you're done one, you move across the road and do the next one.

And so it was worth our time. The other thing that was very effective for us in Kuwait is that we were stinging wells. What stinging wells means is that you actually drive a pointed hollow tube into the wellhead and then you pump a kill fluid down the well to kill it. That has been done in the past but the way it was done is they put it on the back of an athey wagon. An athey wagon is a long tractor vehicle but the main problem with an athey wagon is they are very inarticulate and by that I mean to say, for example. . .

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Tape 1 Side 2

MM: Well, they're very clumsy and the problem with an athey wagon is, is for example, if you move the back of the cat, where the athey wagon is pinned on, a few inches, the boom moves a few feet. And when you're trying to drive a stinger into a wellhead where the opening may only be 2", obviously that's not an easy chore. In fact, it's sometimes simply impossible. What we did was mount our stinger on the end of a 90 ton crane. That made a huge difference because we've got very fine articulation and full 6 way movement, all dimensions. That meant we could be far more accurate in stinging and more than that, we didn't have to set up an athey wagon to do it. We could literally drive the crane onto the well site and stab it into the wellhead within minutes of our arrival there with a great deal of accuracy. We were far more effective than any other team in doing that because of our set-up, primarily because of the crane.

DF: But what are your control devices? You still have to be some distance away from it, even with the crane.

MM: Yes, you do. You've got all of that, that crane had something like a 60-90 foot boom, which, in the configuration that we used it we couldn't go longer than that. But again, the crane could just make fine movements any way you want, up and down, sideways and you don't have to, you're not repositioning the whole machine. Your machine is sitting there and the boom is moving like this. With an athey wagon you have to move the whole machine you see.

DF: Yes, and the wheels and everything. But your operator is still how far away from that wellhead?

MM: Oh, he's, in most cases, about 60' away from the wellhead so he's in close. You have to protect those guys, so the first thing you do. . . the relative steps, and they're not all the same. . . I mean, first of all, one of the things about Kuwait that did make it go fairly fast is the damage was all similar. There was no burnt down rigs on top of the hole for example, which is very time consuming before you actually get to the wellhead. The damage was all similar but relatively, the way it would go in Kuwait is that the first thing you had to do on arrival of a location, I mean assuming everything is there, the water is

there and you're ready to go from that aspect. So you set up the fire fighting system to protect people and machinery at the wellhead, then you complete the landscaping so that when you put the well out the fluids are not going to run back under your equipment. All of this has to be done with the wind at your back right, you can't fight a wellhead fire from downwind. In fact, if the wind changes on it you've got to get out of there and call off the game. At any rate the first thing that you do is get the landscaping right so that when it comes time to put the well out the fluids are going to run to where you want them to run, primarily, away from you. The next step in the more conventional type of operations would be to put the fire out, then remove the damaged wellhead. And then killing the well would take a variety of forms, either we were putting what was called a kill spool on, which was basically a valve on top that we could pump into. Or we also would stamp packers into the wellhead and get them to seal in the bore so that we could complete the kill operation. But what's important about stinging a well is you can move onto a well, stab into the wellhead and kill it right there. What you have to realize about those things is the high danger and high risk to people is removing that damaged wellhead. That's the only complex operation in the whole thing. Putting the fire out, killing the well is all fairly quick and fairly easy and fairly straight forward stuff. But because the wellheads were so badly damaged, they were fractured, sometimes in hundreds of pieces, you know cracked badly and you had no idea what the integrity was of them, if you could drive in and sting the well you'd sting the well and roll straight into a kill procedure. So that meant you didn't have to fuck with the wellhead till it was dead. So the well's dead now, then just whack it off, get a valve on top and it's over. So in a lot of stinging operations they would be one day operations. You'd get on there stinging. In fact, some of the stinging operations were one hour operations, move on there, sting the well, kill it, weld a valve on top and away you go to the next one. And we were the only ones that could do with. . . primarily because the articulation of our crane as opposed to an atthey wagon. The other thing that became a fairly sophisticated science, again, developed by us, is something that's been around for years and it's commonly known as trash plugging. In the old days, and this goes back 50 years really, if people had for example, a cracked wellhead valve, often what they'd do is pump debris into that wellhead to try and seal that crack. That debris would take the form of the wildest things you could imagine, from golf balls to oats to rope was common, gloves were common.

#048 DF: Anything available.

MM: Yes, anything available that you thought would jam in that hole. What was instrumental, what was important about our stinging operations, trash plugging we developed to a very high science. Where it fit into the thing is, you could jam your stinger in the hole but if you couldn't seal it into the wellhead or the wellhead was leaking you couldn't, whatever you pumped was just going to go out the side. So when we started trash plugging what we would do is pump polypropylene rope in there and we finally settled on that because of the exceptional high tensile strength that it had for the size that it was. So what we would do is pump a slug of, and we'd often do this in several stages with bigger and bigger rope. And by rope, the rope would be about 3 or 4 feet long and it would have knots tied in it.

Some would have a single strand, some would have 3 or 4 strands. The idea usually was, and again it went to what you saw at the wellhead in terms of how big you thought the cracks were. So you'd usually pump, a usual operation would be to pump a slug of fairly big trash and by that I mean to say, you know, 3 or 4 strands which would be over thumb size with knots in it. Now that would go into the cracks and seal the cracks off and then it would come up around the outside of the stinger and actually seal the stinger in the wellhead itself. Okay, now you've got the wellhead sealed off and now you've got the stinger sealed in the well bore, now when you pump, the fluid is going to go down the hole. So the trash plugging was really instrumental in making our stinging system work because all of those wellheads were fractured badly.

DF: How far down?

MM: Not very far down. In most cases right at the surface. With one exception the wellhead was within 2 or 3 feet of surface. We had one exception where we had a hole at 75' and we literally had to dig down to the hole.

DF: Really. Okay, so you've got the stinger in, you've plugged it somehow. . .

MM: Yes, you seal it in the well bore, you seal the wellhead with the trash.

DF: Okay, so this is a mechanical, you've jammed the stinger down into the well and you're holding it in there under pressure?

MM: Yes. If you'll accept this as the damaged wellhead right. So it now has a flange here, has another flange here, the well bore is here, the casing is here and somewhere through here you have tubing. And this is a badly fractured wellhead and you've got an opening up here. And the opening of course, that was the other thing about our stinger system is the opening may take any form. The usual way that they'd caused the damage in these wellheads is they packed explosive on either side from 5-20 lb. on each side, plastique explosives. When they blew it, as a rule it was a crushing force from two sides, sometimes more circumferal but as a rule, it was a two sided crushing force. So what you would usually end up is tubing that had, either an elliptical form like that or sometimes, a butterfly type of form like that. This being the major impact area of the explosives. Well, what we would do is on our stinging system, days in advance we'd go to these wellheads and measure these out and then we'd go back to the machine shop and have one built to fit. We had a lot of what we called the duck-billed stingers, for obvious reasons, that would fit in there so then the stinger would go in like this right. It's driven in place and then you'd pump the trash in to seal it into the well bore that way.

DF: Are these wedge shaped stingers.

MM: Yes. All types of shapes, there was the butterflies, there was the duck-bills which were that kind of shape.

DF: But they are tapered so that you can get them in, as you push them in they. . .?

MM: Yes. I mean, if you have a fairly round hole the stinger is just going to be. . . well, it won't be that kind of taper, it will be more like this kind of taper, right.

#089 DF: And what's going down the middle of the stinger?

MM: Well, the stinger itself is like this. (Drawing) Now the stinger on the bottom has this v-shaped cone in the bottom so what happens, now this is all mounted on a crane right, so

the crane sits like this and it's on a swivel point on the crane. So what we would do is drive up to the wellhead, drive it into the wellhead which is here and this valve is open, that valve's closed. So once you've got it driven into the wellhead you have this kind of situation, the flow is coming now out of the top, directed away from the crane. Now what happens is you close this valve and that was the other thing about the crane is we were able to exert far more down force to hold it in the hole than they could with an atthey wagon. So now what we would do is now pump our trash in and it comes down, this is our kill line, this goes to our pump trucks and everything else. So now we're pumping knots of rope in there at a very slow rate because we want it to come up and around and go out into these fractures holes in the thing. So we pump at a very slow rate, you'll actually see the trash hit, you'll see it seal basically. You'll hear it fizz, then it hits and then you know whether you've got a seal or not or whether you've got to pump some more or whatever. So it's now sealing the cracks in the wellhead and it also seals this space that I was talking about here around the stinger in the well bore. As soon as you've got that done then you just keep pumping. You pick up your rate and now you're pumping heavier fluid and it's going right to the bottom of the hole.

DF: You're pumping what?

MM: Heavy mud.

DF: Okay, and how far are you pumping it?

MM: In most cases 3,000 metres kind of thing. It ranged from, all the stuff over there was in feet but it would range from 5,000' to 15,000'.

DF: So you're filling the bore?

MM: Well, now you move straight on to a kill operation. You fill all of the tubulars with heavy mud and the well's dead. At the same time you have to recognize those big wells over there turn over fast. In other words they come alive very quickly. If you kill a well out in east central Alberta it will stay dead for days. Over there they might stay dead 4 hours, 6 hours, kind of thing.

DF: And then what do you do?

MM: Then they start to flow again. What's happening is the mud's being displaced by the oil and gas, just a natural gravity situation.

DF: Okay. But that gives you time to rework the surface?

MM: Yes. So by that time, in that short hours, we've cut everything off now and we'll either end up with round pipe or we'll weld a flange on here. And then it's just a matter of getting a valve on the top, shutting it off, it's over, you know, move on. So we were exceptionally. . . I mean, we stung far more wells than anything else and probably 40-45% of the wells we did were stinging. But what's important about the whole thing is you don't have the risk to personnel. Because the biggest risk of all, as I say, was getting that damaged equipment off. A) it could fly apart while you were working on it and B) what frequently happened is we would have what we call relights. And a relight is simply that, is the fire re-ignites. And the danger with the re-ignition is that you've had a much larger fuel build up than you've had previously. Basically when a well's on fire it's consuming everything as it comes out. If you shut it off for any length of time you have a huge build up of fuel and the problem is then, you've got people at the wellhead now up there ready

to start with the killing operation or removal of the wellhead system. And if you get a relight they're going to be fully engulfed in flames. And that was another thing that was different about us is we wore more or less, standard fireman's gear. But the real difference that made to us is that people could exist in flames for up to 30 seconds. They could be fully engulfed. The first thing that we did before stinging or any of this operation, the first thing you do is get your water monitors out there. And the purpose of the water monitors, they are going to protect those guys on front line. If they're engulfed in flames and it happened on several occasions, if they can get water to them right away you'll save their life, if you don't you'll lose them.

#137 DF: How fast could you get that water?

MM: Within 5 seconds at the most. Because when anybody's in the hole, as we call it, in other words down in the position like this, there is someone on a water monitor and the water monitor's going. So if it lights up he's going to go straight onto them. And we did have a situation where we had a relight with the guy and in fact, it was the only incident that we had in Kuwait and it was legitimately called a lost time accident but the reality of it was, and then I'll go through what happened is, is that we had a relight. Again he was fully engulfed in flames and unfortunately his feet were stuck in the mud. So he kind of backed up, you know, pulled one leg out of the boots and then he fell backwards because he couldn't move his feet and he was fully engulfed at this time. But when I talk about his protection system, so he's got a balaclava with only an eye hole and then he's got fireproof coveralls on and over top of that he's got fireman's gear. For explanation point it's not much different than what you see a city fireman. But the point being is he's fully protected and the only concern, not the only concern by far but the primary concern is protecting his breathing system. That's where, if he breathes in fire he's dead. And that's where the 5 second, 20 second comes in, is you've got to get him and you've got to get water on him during that period. That having been said, he's got a full helmet, he's got a full winter liner only it's fireproof, he's got not only the balaclava but he has a substantial face piece in front of him and then he has a face shield that comes down in front of him. So he is well protected but that having been said, you've got to get the water to him or he won't survive. What happened with this guy is he fell backwards and was kind of stuck there until somebody could get down to him . . .

DF: But you had the water on him, he could still breathe?

MM: We had the water on him, yes, so he was saved. And we had 29 incidents of re-ignitions, relights and all of them had people in them and all of them made it through.

DF: What were the extent of his injuries?

MM: Oh, I'm sorry. To go on with that, it turned out, in fact it was a dreadful night, one of the more dreadful nights of my life actually, because the first report I got was that Dwight had suffered third degree burns over 80% of his body and they were transporting him out. KOC supplied a Medivac team, primarily David, because there was no medical facilities there. And that was really a big part of the story. He wasn't seriously burned but there was nowhere to treat him. Basically they got a jet in there from Switzerland, loaded him up and flew him straight to Calgary. But by the time he got to Calgary he went to

emergency room and they kind of greased him up and that was it, he was never admitted and it was never serious. It was like a bad sunburn across the main part of his trunk and he went back to work 2 weeks later. So it was an LTA, a lost time accident, but in fact, it wasn't nearly what it. . . you know, had treatment been available he would have been back to work the same day.

#176 DF: So it wasn't third degree burns?

MM: No, it wasn't anything like what they told us, which was obviously pretty disappointing. Because you know, part of the thing about Kuwait is that I did think that there was a real possibility of losing people in Kuwait, losing our own personnel. For a lot of reasons, it wasn't just the well control operation which is dangerous enough on its own but it was all the armaments. I mean you have to remember the place had been . . .

DF: Mined.

MM: Mined everywhere. Not just mined but all the arms were there, mines were there, unexploded ordnance everywhere, carpet bombs everywhere. And what was, I guess, particularly concerning to us about that is that's just not what we know. We don't know a cluster bomb from a grenade, though we soon bloody learned. That reminds me, Laurie's got a poster from Kuwait. And we did have to drive through mine fields, kind of things. Although I shouldn't say that, mine fields. Mine fields are not what I envisioned them to be, mine fields are clearly demarcated. There's a certain number of strands of wire on the front side of a mine field as opposed to the back side of a mine field. The idea of a mine field as I learned, is not to surprise people, it's to keep people out of areas and to funnel them into other areas. So you want them to be easily recognizable. The greater danger to us in Kuwait was unexploded carpet bombs, because if you remember they had 8 months of bombing the shit out of them. And of course, a lot of that stuff didn't detonate, for a variety of reasons. Sometimes you'd find a canister where none of them had detonated for who knows, altimeters didn't work or whatever the detonation thing was. But the other thing was is they often fell into soft sand and didn't have the compression force. So they were all over the desert. We did have a pickup got the front end blown off but the guy was okay, couldn't hear for a couple of days but other than that he was okay. But as I say, to some degree that was more of a concern because it wasn't what we knew. And bear in mind that the bombs were dropped and then the oil came later so they were all covered in oil. And there was huge lakes of oil in Kuwait. There was hundreds of square miles of oil lakes and there was thousands of square miles of desert covered in oil. It was just a phenomenal thing to see. That's the thing, when you look at any of the pictures of Kuwait is you're getting that very small scope on what was immense. But when you see 20-30 fires out there, there was hundreds behind that. It was just an incredible thing to see and the immensity of it. I recall one time we were on one side of Kuwait and one side of the Burgan field which is one of the biggest oil fields in the world, we were working on one side of the oil field and we wanted to get set up on the other side in case we had a wind shift we could go and work on that other side. Myself and my buddy decided we'd cut across the field.

#216 DF: How common were wind shifts?

MM: They were regular. Basically the wind shifted between 10 and 11 in the morning and it was basically an atavatic/catavatic effect. It would offshore through the night and then about 11 in the morning. So what was key to us was getting the fires out before the wind shift came. That had to fit into your game plan, for obvious reasons. We did, in the early days, and this again led to the development of our system, so that we could set it up in an hour, we were out in the south Burgan and we had set up on a fire and it was a big fire and we were setting up 5 monitors and we were just finally getting to the point that we were ready to go to work and the wind shifted again and brought the fire down on top of us. We literally had to cut the fire hoses and get whatever we could out of there. We lost a bunch of equipment, fortunately not really. . . I mean, replaceable kind of stuff. But that was really, in essence, what the real motivation was that, hey, we've got to do something different. We spent 8 grinding hours getting the system in place, the guys were fatigued and now all of a sudden the wind was down right on top of us, burning our equipment up, burning the guys up and we had to salvage it and literally, cut and run. That was probably, we went back into our development meetings at that time and said, hey, we've got to change it, how can we set up this faster. And through that process we did develop a system where we could set it up in an hour. As I say, the whole thing is, it's not the 7 hours you save, it's the exposure of the men to that extreme heat, it's just simply being able to plan things better. You're not now fucking around for 8 hours. Because the problem is, you can't do this at night so you've got to start at daylight, whenever that is, and if you aren't at a certain time by mid-afternoon you can't go further. Because you can't continue an operation into dark. So being able to set up in an hour just had all kinds of benefits to us.

DF: So I interrupted you, asking about the wind, you said you and somebody else were going somewhere.

MM: Oh, I'm sorry, we were going across the field and again, we had throughout, this was not long into the project, maybe thirty days into the project, something like that and we decided to cut across the field and the field at that point was about 45 miles wide. We really didn't comprehend how serious it was going to be once we got into the interior. We got into the interior of that smoke probably about 5 miles out and we thought, Jesus, we've made a serious mistake here. We were completely surrounded by blazing wells, no sun at all. You know, at times the headlights would hardly penetrate the smoke, I mean you could kind of see the road down there beside you. But more than that, there were obstacles everywhere. There were oil lakes everywhere and there were pipelines on surface across the oil lake. And of course, what that meant is, you're trying to cross a lake and you run up to a pipeline, it's too slippery, the truck can't get up and over it so then you've got to turn around and go back out and find another direction. We got into this doom and gloom scenario and it was like, holy shit, I don't know how we're going to get out of here. We had radio contact with one of our other crew members which was a notable conversation because we had gone down there and said, you've got to take the road to whatever it was in the south field and you'll get to the 3 dead camels, then you turn left and you cross a pipeline and go through a burning battery and we're in there somewhere.

So we were talking to them, trying to figure out where we were and how we were going to get out of there. But in the meantime we spent 3 or 4 hours in there, pretty desperate hours because it was becoming obvious to us, by this time we'd gone down rows, they'd ended in oil lakes and we'd tried to cross lakes and run into pipelines. It was getting to the point, we were kind of safe where we were at but at the same time, what were we going to do there, we couldn't stay in the middle, we had to get out. And of course, the wind was swirling and it was just. . . it's so incredible to be in the centre of a volcano like that. So unreal, without any sky to it and just of course, intense heat everywhere, everything covered in oil. You're talking about an area the size of Calgary, way more than Calgary covered in oil, in oil lakes and blazing wells by the hundreds. But at any rate we finally did figure it out, kept poking away at it until we got back out on the side we came in. But when we got out it was like, fuck, we can't go across that field again, that's death, man.

#285 DF: How did you figure your way out?

MM: We geographically had a pretty good feel for where things should be and we finally stumbled across a satellite system that we knew was connected to a GC, it was close to where we went in and that kind of sorting out. But again, it was one of those things, well, try this. There's not much for roads over there, particularly out in the field so you kind of head off in this direction thinking you're going to follow a pipeline or follow a power line and pretty soon you're in an oil lake and then you can't drive over a pipeline so you've got to come out to make sense of where you're at.

DF: What's a GC?

MM: Oh, Gallery Centre.

DF: Why were you doing more wells than your competition?

MM: First of all we were just simply better at it, primarily we worked harder too.

DF: Were you faster than them?

MM: Yes, absolutely.

DF: So when you got one done you could. . . ?

MM: Faster, more motivated. Probably more than anything more motivated.

DF: How come? I can't imagine they wouldn't be motivated.

MM: You've got to kind of understand the characters involved. Basically the three principals being Boots and Coots and Red Adair and then a couple of the other leaders of those companies, had had it their way for decades. Basically there was just no motivation for them to do something better. Surprisingly, even when we developed systems or methods that were better than theirs they wouldn't change. You know, up in north Kuwait, we had a particular problem in north Kuwait because by the time we got to north Kuwait those wells had been burning for so long they were completely enshrouded in bitumen tarlike substance that was commonly known as coke over there. It was like asphaltine is very close to what it was like. What happens is that when you have a . . . this is best demonstrated on a horizontally flowing stream, is that when that stream flows horizontally, if you look at the fire itself you'll see bright orange parts of the fire but on the edge of the fire you'll see rolling black smoke. What's happening is those constituents come out. The lighter stuff burns first, so you're talking about gasoline and up burns

quickly and that's the bright orange part of the flame. But the stuff kind of gasoline and down, so you're moving down into diesel fuel and heavier and heavier components, it's not burning well. What happens on a horizontal flow is that at the end of that horizontal flow you'll get a build-up of this bitumen like stuff. It'll eventually, in time, and given the last wells were burning almost 8 months, in a vertical flow it will virtually form a volcano that would be 30-35' high, involving virtually thousands of tons of debris. And the wellhead's down inside this thing. In north Kuwait what happened. . . I should go through the normal process, before you put the well out is you've got to dig all this stuff out to get to the wellhead. And that's a very intensive and time consuming operation, again, the other teams are largely doing it with at they wagons, get in there with the rake on the end and grab what you can and rake it out. That could take literally weeks. When we got to north Kuwait we had developed a system where what we would do is dyke up the wellhead with sand and build up a 4 sided dyke all around the wellhead. Then we would fill the dyke up with water and then that would bring the fire up to the surface of the water, we could knock it out like that. That would quench the well because part of the thing about these coke mountains is that inside this coke mountain you have several feet in depth of charcoal like material, glowing red hot which of course is a re-ignition source and you can't put the fire out until you've dealt with that. So what we would do it build this dyke around it, flood it, that would quench the coke pile, put the fire up to the top of the water which makes it real easy to put out, sweep the fire out, break the dyke open, let the water and debris run away and then get in there with backhoes and again, in a matter of 6-8 hours you've got the wellhead dug out.

DF: And you've got it cooled off and . . .

MM: Yes, and ready to go. And what was interesting is I recall working with . . . Boots and Coots was working in the same area like that and they saw us do that and somebody made a comment about that, sure looks cool, but they never did it. They went on raking the coke out. And in some instances we were literally working circles around them. We'd move into an area side by side and we'd do our well and every well around them and move on while they did one.

DF: Was there no economic motivation for them to work faster?

MM: No, there wasn't, we were all paid by the day basically. KOC bought our equipment before it left and we were paid by the day.

End of tape.

Tape 2 Side 1

DF: Anything more you want to say about Kuwait? Let me take you back, early on you said that your experience with sour gas here in Canada prepared you for work there. Just give me the background on your . . .

MM: Primarily because we had to deal with fire more effectively and it went to this issue of leaving H₂S while it was burning. That meant that we really needed a system far better than dynamite to blow them out. We had to be able to put them out quickly, light them up again, which is the key to H₂S wells, is you have to keep them burning as long as

possible. We look at H₂S as a complicating factor of 10. By that I mean to say, to get one man hour of work done at the wellhead under normal conditions, it takes you 10 hours to do it under H₂S conditions. H₂S is by far the most hazardous thing that we work with and to give you some feeling for the categorization of things, the easiest ones by far are the ones that are burning and dry gas is the easiest among those. Next in line is dry gas with liquids and of course, liquids unlit is higher on the scale of hazard because of the immense potential fire you could have. But H₂S is by far the most complicating thing, it requires a much larger crew. When you deal with a situation like Lodgepoles, we were at Lodgepole from start to finish, as a junior company, we weren't in charge of it but we did all of the wellhead work there. But at one time we had more than almost 1,000 air packs in circulation. The reason being is, that every time you take your air pack off, because it's raining condensate that condensate gets into the interior of the air pack and it's got to go back and be completely stripped down and cleaned. As well as that, when you've got a crew up on the front, at the wellhead for example, you have to have at least one rescuer for everybody up there. For obvious reasons, you have to be able to carry out a rescue in the last minute. And just the complexity of working in air, because you have a situation again, like Lodgepole or any H₂S blowout is that you have to always go back to a safe breathing area and then proceed from there. So you're going back to that clear area, you're proceeding usually, in somewhere in the neighbourhood of 100 metres, from here to there, to do your work. Your time is limited by your air pack and then as you get into your reserve part of the air pack you have to leave that area and get back out to the fresh air environment. So it's just that continual in and out process, where your time is really being consumed.

DF: What's the time on an air pack?

MM: The new ones that we use is 1 hour. But in those days, in the Lodgepole days, that was. . . it's actually 30 minutes but there's further limitations on them. You always have to maintain enough reserve in your air pack to carry out a rescue in the last working minute. So that means for a 30 minute pack you can never drive it below 10 minutes because in that last minute you may be faced with a. . . you have to have a reserve to carry out that rescue. So that means you've got a 30 minute pack on, 20 minutes of which is useable. Now you have to walk 100 metres there and back in 20 minutes and then what's left is what you do at the wellhead.

DF: So you brought that experience from Canada because sour gas is more common in Canada than anywhere?

MM: Yes, by far, I mean, we are the technological leaders in dealing with sour gas, certainly in the upstream area. Simply because we've had it, 30-35% of our wells are sour. And that goes back 60-80 years. We've been in that business in a far greater quantity than anybody else and a far. . .

#037 DF: Can you go back and tell us that story of how your company got started?

MM: It was started by 5 people in 1956. My father was one of 5 partners. They originally, the way our company started is that it was associated with hydraulic fracturing. Hydraulic fracturing was first developed in the early 50's under licence or patent by Amoco. What

hydraulic fracturing is all about is literally, create enough hydraulic force to create cracks in the reservoir rock. While that crack is open you stuff it full of sand so it can't collapse again. That's the essence of hydraulic fracturing. But in those really early days, in fact it was so crude that they would literally dump oil into a barrel that had hand propelled paddles on it, dump oil in one side and dump sand in the other and then pump it away. Now the problem that created, because of the openness of it, is they had fires in the early days and it burned down all the equipment. So then they needed fire protection and that first fire truck of ours was primarily for fire protection during fracturing. That was really the start. Now that having been said, Pembina would not have been developed had hydraulic fracturing not come along. The reservoir really wasn't producible to any extent in its original state, it was really hydraulic fracturing was the key to developing that field. And along with hydraulic fracturing was the need for fire protection. Well, at any rate, he was one of five founders of that company and was not involved. But by the first year the company was failing badly. He, as one of the owners, took it over with an agreement to buy out the other partners. Shortly after he did that he went to a blowout for Imperial Oil in Redwater and spent almost 2 months there, which basically, kind of got the company on its feet and away it went from there. Then we continued to be. . . we basically were the people that developed, not only fire protection to its given state in the industry, but also the H2S business in total. We were the first people that packaged the H2S equipment into a trailer and said, this is what is the standard and that standard continues to this day. In terms of how many air packs are in it, how much air reserve is in the bottles, the accessory equipment, like stretchers, first aid kits, that was all my father's concept really. As was oilfield firefighting.

DF: What were the early ways of putting out wells?

MM: The early ways of putting out wells, first of all, dynamite has been around from the early days, going back to Myron McKinley, but again, there's just a lot of drawbacks in using explosives to put out oilwells. Our first trucks were self-contained systems that, they were all nitrogen propelled, in other words, you pressured the system up with nitrogen and that gave it, energized it. There were two sphere trucks and that first truck is in the OTS Museum in Edmonton actually, out by Devon. At any rate, the one sphere had 1,500 lb. of dry chemical. In those days dry chemical wasn't much different than baking soda, in fact, it was sodium bicarbonate. There were just things added into it to make it flow more easily but certainly the major constituent of it was sodium bicarbonate. The other sphere had basically water in it. And then we had the ability to mix foam with it and the foams in those early days were a licorice solution.

#076 DF: A what?

MM: They were made from licorice root, the same thing you eat.

DF: How come?

MM: I don't know, I mean, that was just, I guess it was a surfactant type of thing, in other words a soapy type of thing and that's what we used. I mean, there was a lot of problems, it was very corrosive, it plugged off systems and it separated water from the licorice kind of things. And on we went, into the smoky??? series, 20 years later.

DF: Anything else to talk about the evolution of the technology in the early days?

MM: I guess probably one of the things that was instrumental in our history and it had a lot to say about the state of the industry, there was a time, especially during those early Pembina days, you know, I'm now about 14,15,16 years old. When Pembina, as most fields are developed in their early stages, every well had a little battery on it. That meant in the Pembina field there was hundreds of these small batteries out there. When an electrical storm would come through it would set, sometimes we'd have 20 fires in a night. And my brother and I would have to go out and put them out, go from one to the other and put them out. You know, there's far less of those, I mean, technology is ahead first of all, well, the whole status of the industry in terms of the environment and the regulation, you just couldn't do those kind of things now. But in those days, I recall in some electrical storms, as I say, my brother and I would take the fire truck out and. . .well, we had two by that time and we would go out and try to do as many fires using as less product as possible, so we could continue going on to the next ones. In the meantime, then he would leave, take the empty truck back and my dad would be coming out with the next one you know. And it was intense firefighting in a sense. Later on I kind of discovered, nobody was doing nearly the amount of firefighting that we were doing. You know, we talked to a big firefighting company in Texas and in that year we had done 36 fires and/or well control events and they hadn't done that in the previous decade. We were just doing more actual front line stuff than anybody else.

DF: So what would ignite at a battery and how . . .

MM: Lightning would ignite it and it was usually gas fumes off a storage tank was the most common thing. The other common thing was static ignition from trucks loading or unloading, which causes a differential in the electrical potential.

DF: Yes. So you just knock down the flames and go on to the next one?

MM: As a rule. Most of those, it really depended on how long they were burning and the reason that played an important role is that, we were so limited in our water ability and the dry chemical would knock those fires out but it won't stop them from relighting. So it really depended on us hopefully, getting water from somewhere to take the heat out of it as soon as we put it out so it wouldn't reignite.

#107 DF: But you weren't doing anything beyond that, you were just getting the fire out?
And the company had to deal with whatever the leaks were and so on?

MM: Yes. These were not wellhead fires. We did do wellhead fires and there were so few of those events but largely they were just storage or facility fires. The big difference with them is, they will burn out and there's not an ongoing fuel supply to be dealt with as there is in well control events. Obviously, in that business, we naturally got right into well control because we simply had a fire truck . . .

DF: You were there, yes.

MM: . . . which was a key component, into well control. And we just got more and more advanced about it. That having been said, my father really didn't have a background in well behaviour if you will. He was in the supply business before that, whereas by the time I took over Safety Boss I had a long suit in drilling and completions of the internal

workings of a well. So really, at that stage we moved far more into full blown well control on a world wide scale. I mean, I took over in '79 and we went to the Persian Gulf for the first time in 1982, 1983.

DF: You said there were differences between you and your father, you want to talk about those?

MM: Well, we just didn't get along very well. He was I guess, and I'm not so sure, it's just my view, but a fairly pessimistic kind of guy and I was the young smart know-it-all or teenager for that matter, and there was just that general collision of values. I was a hell raiser and looking for more money and more fun and everything else and of course, he was running a business. I mean, that having been said, we. . . I have to think it over in terms of framing it correctly but we had a thing going where he just kind of thought I was a fuck-up you know. I was always doing something wrong and always getting into trouble and there was that general underpinning to our relationship. So consequently, although I worked for him all of, you know, from really, 14 on and probably pretty close to 18, 19 years old before I finally went out and got a job on the rig and didn't have much to do with. . . Well, I shouldn't say that, I didn't have much to do with the ongoing business on a day to day basis but he frequently called me back to do well control. First of all, I was liking it more and more and I was becoming more and more familiar with how it was done. And that kind of became a standard practice. And there was some incentive for oil companies that I was working for, for me to know about those kind of things so they usually supported those kind of absences and that kind of thing.

#140 DF: So a big part of it was just the father-son thing too?

MM: Yes, it was. I guess to some degree. . . I mean, I certainly had a vision that was far different of his as to where this company could go. By the time I took it over I'd worked internationally, I believe that the company could compete internationally. I was also, had by this time, a lot of experience in dealing with very big wells, just in terms of drilling and completing and the general day to day operation of. He didn't have any of that background. So I was anxious to go international and do big blowouts and he had absolutely no desire. He basically, in his kind of retirement years, made a trip around the world that he despised in a sense. Where I was just the opposite, I really got along well with people and loved being out there.

DF: How did the NEP affect your company?

MM: The NEP nearly broke us. I took over the company from. . . up to that point I'd been pretty successful in my own ventures, both private and in my career with other oil companies. By that time I was actually owning wells and drilling my own wells and things like that and that was fairly successful. I guess part of what I'm saying is I really thought I was a genius rolling into the safety business to take it over and of course, the NEP just washed away, there was just not much hope of surviving. As I say, 80% of the rig force was laid off. And the business just simply wasn't there, it didn't matter how smart you were, it wasn't going to change. And it nearly broke me, for sure. I spent, it was really 3 or 4 years of desperate times. We were just, fucking, every month was a struggle to meet the payroll. And I spent, I recall those days pretty well because you

basically spent all morning chasing people who owned you money and all afternoon sucking up to people you owed money to. And that was the way I spent my days all through it all. That having been said, I mean, it was, I never considered the possibility of bankruptcy, even though I was told I should throw in the towel. You know, but it's not redeemable and it's only getting worse. Because I guess, I was fairly proactive in dealing with people, particularly that I owed money to, the essence of all those relationships, if you'll talk to them they'll live with you. If you'll phone them up and say, I owe you 20,000 but I can give you 5,000 or 500, everybody in fact, did go along with me in those days. But communication was key to it all. I mean, basically, and it's not much different now, if somebody owes us money and we're not hearing from him we know it's a problem and we know we've got to do something about it. And that, as I say, was a long and fairly bitter struggle and really, interspersed in there were blowouts overseas that made all the difference in the world. We simply wouldn't have survived without them. And we were unique in that position, our competitors didn't have that ability. We've always focussed on areas where Canadians are more welcome than Americans. From the simple standpoint is, the worldwide industry, although it's changing fairly rapidly now, but the worldwide industry has, by and large, been an American industry. And Americans hire Americans, that's fundamental. It doesn't matter how good you are or what you've got, the good old boy from Texas who's now working in Saudi is most preferentially going to hire a company from Houston if he has a lot to say about it. We see a huge shift in that in recent years, even more so in the last year because of the Iraq situation.

#188 DF: Caused by?

MM: They're just becoming a very unfavoured nation. Very recent events, I do want to spend more time on what I said earlier but, our most recent tour, I was just over there, got back at the end of the month and there's a clear intention to stay away from American personnel. For a lot of reasons, primarily because they're targets. That means you've got to protect them. Second of all, or third of all, they're probably more expensive than anybody else. So that having been said, from the outset we marketed in areas where Americans were less welcome, if not, not welcome at all. Libya and Iran were two successful targets of ours, we did very well there. And we did very well there because we supplied, basically, identical technology without the political baggage. And that's the situation now, is that I mean, in spite of our stand in Iraq which is a long argument either way, it's really important that the Canadians and us get out there now and take advantage of our political situation. As you probably know we were shut out of Iraq because of Haliburton. And then, we were really not able to get in there and won't be able to get in there, I don't believe, until Iraq gets in charge of its own industry. Then I think we'll be favoured. In fact, there's a blowout going on there now that we've traded correspondence with them. We'd like to go and we will go but we sure need to know a whole lot more about who's paying us and where we're going. We know it's in the Kirkuk area and that's about all we know and we don't have any confidence we're talking to the right people either.

DF: So American foreign policy is big on your radar isn't it?

- MM: Oh it is, yes. Or Canadian foreign policy, the more palatable Canadian foreign policy is what we think we have to sell.
- DF: No, but I mean, it's there and it has to be part of the world that you see.
- MM: Yes. For the first time ever, on this tour, we were in meetings with big companies that had no Americans on their staff. I've never seen that. Certainly, when you're talking about a company like Aramco, the primary upstream company of the Saudi industry, at one time it was like an American oil company. Most of the staff would have been Americans and now, they're completely absent from the scene. So the flags are up. And as I say, they're fairly obvious. Aramco is not going to make a public declaration that we're not hiring Americans but you can see it everywhere you look, for obvious reasons. That having been said, there's a huge shift that I think amounts to far more than anybody realizes of Arab patriotism away from the U.S. When I say that, that means they're not banking there, that amounts to trillions of dollars, because of the difficulty of coming and going, the potential unpleasantness of coming and going, being an Arab. And the other side of money being seized or being suspect. So people, Arabs there now who are maybe two generations educated in the U.S., are now, when I made that tour, want to know where their kids can go to school in Canada. Well, it's a whole shift much larger than what you're seeing. First of all, if someone comes over here and gets an education he probably spends 6-8 years here doing it. They don't care about the fees, whatever they are they'll pay them. But more importantly, you've got a guy for life, he feels comfortable coming and going to Canada, he speaks the language, he knows the system, he probably knows people in the business who are going to continue and it goes on for millions of dollars. It's their favourite supplier. And as I say, this shift, I recall, during the Kuwait project we were living there, my wife was living in Bermuda. On one of my leaves there, there was. . .and Bermuda always has the struggle between a Conservative government and a Labour government. Well, during the pre-election process it appeared that Labour may get in and they had a shift of billions of dollars in the two week period, it was like, hey, we're not going to be there if they don't think there's going to be favourable foreign company treatment here. So you can imagine, if it's that small in Bermuda, what the effect is in the U.S., it's huge. And it's huge in a long term effect.
- #253 DF: It boggles the mind what that long term effect could be.
- MM: Oh yes, absolutely. I mean, when you know of the wealth in those countries and you know that a lot of it is not going to go or be connected to the U.S. anymore. The Americans are shooting themselves in the foot big time over this thing.
- DF: Well, this is huge because I mean, they rely so much on the whole Middle East for their oil and I mean, it's not just the fact that they got work out it, it's that that's their source of oil.
- MM: Yes. It's not only their source of oil, that whole industry is basically an American industry. That means, every goddamn pressure vessel and truck and everything over there is, or was, American at one time. It's billions of dollars, hundreds of billions of dollars.
- DF: You can't begin to imagine what this is going to mean for the next few years.
- MM: No, I don't. That having been said, that was clearly where we were going, even from the

early 80's on. Because of this clear prejudice against us, being a Canadian company, we had to go to countries where there was a favouritism or bias towards us. And that's common sense, but at the same time, that's what Canadian I think, have to do anyway. We are much more. . .we're kind of the good guys of the world, we really are. We don't get out and stomp on anybody's regime and we don't. . .we're basically peacekeepers or whatever.

DF: So during the booms things are good, but during the busts, how did you keep the company going, diversification into overseas is one?

MM: That was kind of the saving grace for us in those early struggles. The industry finally did come back, although as you know it's been up and down with oil prices, which, unfortunately isn't much of a barometer anymore. We've actually had our, shall we say, financial health seriously threatened on two occasions, by that I mean to say, I basically had to borrow money from friends and neighbours and family to keep it alive and to meet the next payroll and keep going.

DF: What caused those?

MM: It was largely recessions in the oil business, it was all recessions in the oil business. That having been said, it wasn't the recessions alone. One of the problems that we always had is, we were doing well but we weren't being paid. I guess part of that is, if we were being paid for the work that we did everything would be cool. But you take those big disasters like Dome or Turbo, well, we were caught in the middle of it all. Fortunately we were. . . you know, you learn a few pretty hard lessons, hey, you've got to get in there and whine if you want to be paid. And so we became very good at that, but at the same time, it's bitter stuff, it really is.

#296 DF: How much have you not been paid for over the years, what percentage of your work?

MM: It wouldn't be real high David. In fact, I will tell you about a few exceptions but really, on a percentage wise, it would be very low but the pretty soon reality is, is that a) watch who you're working for and b) be goddamn sure you make it clear that you want to be paid and you're going to be there. Because during those days, during the NEP and the other recessions, it amazed me when I found out that people went out there and did \$2 or \$3 million work for a company, they weren't paid and they never did anything about it. Some of them even went right on into bankruptcy and never made a phone call, where's my cheque, you know, which amazed me that people could be so disconnected, in a sense. Because it was always my view is that, hey, you took the work, you took the benefit, you owe us. Not when you get around to it and not when you get your next payment or whatever. And as I say, that was a bitter part of the business. That having been said, we've actually done four blowouts that we have not been paid in whole or in part for. Of course, part of the problem for us is that there is an illusion, and I've made a few enemies out in the industry because I'm very insistent about I've got to be paid. And not when the insurance company settles and not when this is solved or that's solved. There's an illusion, particularly among, big companies know better but small companies think that I'm going to go out and do a \$2 million blowout for them and I'll carry that

until they sort it out. Well, it ain't going to happen. Nor is it my position to do it. There's far other people who have a priority, the government for one thing is the most obvious one. I shouldn't have to fund and finance blowouts. We're just not going to do it. As I say, we have, on four different occasions, done blowouts for people where we have had significant problems being paid. In some it's been years before we've got some semblance of payments, but really, in all of them, we didn't collect 100%.

#334 DF: Anything else you want to say about the Safety Boss Company? Where do you see it going in the future?

MM: We certainly see a large movement to international markets, we just feel that. . .and it was kind of re-enlightening for us to go back and make a tour there. We are in a sense, in typical Canadian fashion, better known overseas than we are in Canada. There's more respect for our name and people know of our accomplishments far more than Canadians do in a sense. That having been said, I think that we have really set the gold standard in Canada by a large margin. People, collectively, in all the other companies out there, no one's had the achievements or awards or recognition for success that we have had. I think that comes from a continued pursuit of excellence that has always been a big part of who we are and what we are. We have always had and I would love to hear anybody that would argue, we've always had the best equipment and we've always done the biggest jobs and we've always, as I said, received all kinds of recognition for that. But that, in terms of the future, we're always looking at new specialty services, in terms of how you could do a job better. We're presently looking at diamond rope cutting. If you know, they cut big blocks of cement with diamond rope and all they do is run it around a continuous system and move it through. For example, if you want a window put in your basement it's probably going to be a diamond rope company that does that. We think there's some application in that in terms of cutting off a wellhead. You have a wellhead on fire and burning rig collapse. If you could get underneath, cut the wellhead off, then you can move everything off without having to deal with the attachment. That's where it would fit in and that's kind of one of the key points with a drilling rig collapse is how do you get unbolted or unconnected from the wellhead to get the rig away. That's only one example and we're not very far along in that. We've always kind of watched laser development in terms of someone developing a laser system that could cut a wellhead off from a distance away, that could be a big thing. We have introduced almost every system and procedure that's involved in well control in Canada, has been through out introduction. That would include things like magnesium rods that are 10' long, where you can do the kind of cutting from a distance away.

End of tape.

Tape 2 Side 2

MM: We also introduced ultra-high pressure waterjet cutting. Water jet cutting is where you can cut a wellhead off using ultra-high pressure water. That was the most significant technical advancement that came out of Kuwait. That meant that you can cut a wellhead

off with five strings of pipe in it in about 3½ hours. That's a huge leap in technologies before that and we've got those machines here, we brought them back from Kuwait. That's certainly a new technology. And really, to some extent, where I see our company going in fact, in a confidential manner, what we're going to do is get out of the standard safety business. We're going to become much more specialized and much more focussed in specialty services. In the next month we expect to sell most of our routine safety assets.

DF: This water for cutting, what technology made that possible?

MM: The technology, it's really a re-application of technology because water-jet cutting, first of all, what it's all about is that water is pumped at a pressure, anywhere from 35,000 lb. up. So that's a whole new system when you get into that, that's considered ultra-high pressures. It can go up to 65,000 lb. Then you introduce garnet into the stream, right at the tip and the garnet is actually the abrasive that does the cut. The water is the propellant. First of all, it's explosion proof so you can do it when there's oil and gas flowing, or for example, on a plant that's onstream. The other thing about it, you can do it very precisely. You can dress a cut so that it's like a finish machine cut. They actually cut bullet proof cloth with ultra-high pressure water. They'll stack them up this deep and then they'll. . . it's an automated machine. And that's the thing, it was there but it was adapted to well technology. And it's a huge thing for us, as I say, the problem that you've got with most wellheads is that you've got to get that old wellhead off. If it's not on fire how are you going to do that. So that's among the technologies. Magnesium lance systems is another technology that we introduced. They're 10' long and they have a tip temperature of about 4,000 degrees. What's unique about them is they'll cut through almost anything. That would include a metre of concrete for example. That means you can cut a drilling table, which is this much steel in half, or cut a slot into it or something like this, if you want to get the rig out from around it so you can work on a wellhead. That's not real new now, that's probably 10 years, 15 years old but it's a system that we introduced here. Counter-balanced snubbing systems is a method of taking something off the wellhead or putting something on the wellhead under real extreme control of the system. What happened at Lodgepole is, as they moved the stack over the hole it caused wide-spread horizontal flow and that's when the guys died in that situation. With our counter-balanced snubbing system you can control within a few pounds what the thrust forces are on the stack when it goes across the flow. That means that it's under very precise control. Because what's important about those stacks is, in the bottom of the stack there's the metal ring gasket in there and that's been welded in place and if that comes out or if you bash it out of place with it, it's ruined and the stack has to come off and that rig has to be replaced. So the very tight control over that means that you . . . because one of the problems is, as you move a stack into those high pressure flows you have serious hydraulic forces acting on it. For example, the one that we did up in Kalua, when we moved the stack in the hole we saw a pick-up effect, as we call it, which is basically, the thrust induced from the well of 20,000 lb. on that stack. Well, that's sure as shit when your stack only weighs 10,000, in terms of bobbling it around and making it bounce up and down and that kind of thing.

#043 DF: Okay. I'm going to ask some sort of, more broad questions now. What have you

done in your career that you think is the most, there might be several but most important contribution to your part of the oil patch?

MM: I think myself, and the company, Canadianized blowout control. There was a perception for years, a lot of years that Americans were the only ones capable of doing that. I guess part of the unfortunate problem that changed that is that we really had to establish our credentials overseas. You know, doing big wells in Iran. . .

DF: Yes, but isn't that the Canadian story?

MM: It is the Canadian story. It's a sad story but it is that, that's fundamental to what happened to us, is that we weren't accepted as being capable here until we did big wells overseas.

DF: Yes, because a lot of the early Turner Valley drillers that were Canadians had to go elsewhere to get their experience, and then come here.

MM: Oh yes. And for years, really, right up until 1982, anytime there was a major blowout in Canada they got the guys from Texas. What was particularly disappointing though, about that, is there was often an illusion, if you call Red Adair you get Red Adair. Well, that's not the case, nor is it the case when you call Boots and Coots. So what I'm saying is, is there would often be people showing up here with far less credentials than what we had, yet there was this perception from the big company, they knew all about it. And certainly I guess a part of it was, is after I worked with a few of those, especially the less experienced ones you say, hey, I can do this, he's not a genius about this, I know as much about it as he does. But it is a sad state of affairs that Canadians have to go through that kind of stuff, that Canadians aren't recognized till they're credentialed overseas. The continued commitment to the development of excellence and new products is probably the biggest contribution that I've made to our company and to our industry. And of course, the Kuwait fires is without a doubt our. . . it's the only time they had a world cup in firefighting and we won it and we won it hands down. In fact, there's a funny story that would be interesting is, when we first got to Kuwait, as I say, there was a lot of animosity about us being there, particularly by the big egos. In fact the first meeting we went to it was like, I don't know how come they've got those fucking Canadians here when they can't supply us with equipment here. And this is while we're sitting in a group discussing what we're going to do tomorrow and this is the statement made by one of the big Red Adair big shots. But there was just a tremendous amount of animosity, they wouldn't talk to us. We're eating lunch in the same hall, they wouldn't respond to good morning, kind of stuff. And every meeting, we had a meeting every night and this was amongst all the blowout companies and the management companies and they would sit down. . . Now part of the story was, is that we got there about six weeks later than everybody else, because they had seized funds in the U.S. that they had available to them, okay. The Kuwaiti government funds were seized in the U.S., so that was available to the American

#077 companies, it wasn't available to us and we simply couldn't start on that project without having some money in advance because there was money far beyond our capabilities involved. So we were late getting there while this situation was sorted out. Then when we got there, and again, with regards to the whole organization, including the management

company was a Houston company and they weren't thrilled that we were there and they weren't the least bit concerned about how well we did. They were just something that basically, they had to deal with us but they weren't the least bit happy with it, I'm talking about the management company. At these meetings every night it would start out by the well count, you know, Boots and Coots have got 8 and Red Adair has got 9 and Safety Boss has got 1 and Wild Well Control has got 7, that kind of thing went on every night for the first couple of months. Then they started bets downtown at the big hotels of who would do the most wells. Then they decided that wasn't appropriate, they weren't going to announce the numbers anymore. Well, surprisingly that worked in our favour because what they didn't realize is that, although it was by this time evident, we were creeping up on them, once the numbers were no longer counted they had no idea that we'd not only crept up, we'd gone far past them. And by the end of the project, when numbers started to appear again, they were like, holy shit, these guys are way ahead of us. Because in the end we did 50% more than the next closest company. Interestingly enough because we were just back in Kuwait on this thing is that, we did 180 wells in total. Of the Kuwait stories, we actually did 178 in Kuwait and then we went across the border and did 2 in Iraq in an adjacent field that had been blown up. So the official count from KOC when they published a memo when the last fire was put out was 178 for us. The next closest company, if I recall, was Boots and Coots, about 123. Interesting enough, since that's happened, we were over there and there's a monument to the firefighters over there, of which we are on the top. But the Kuwait team, which as I recall in this memo was down 17, 18 wells in total, and when we went to see this monument ours had gone down to almost 20 down, a fair number, we were around 163, and the Kuwait guys now did 41 right. So there was kind of a political reshuffling of the numbers after it was all over. But whatever.

DF: Yes. Any regrets?

MM: None of significance. There's always things that I might have done different in the past, I mean, just the whole learning curve of getting into the service business was pretty severe but no, not at all, nothing serious.

DF: What are you up to these days outside the office, are you doing some interesting things?

MM: Oh yes, I am, I'm always a pretty active guy. We just got back from diving in the Baja and that was a nice adventure. I tend to spend a lot more time in the Arab world because I'm very close to those people and that culture and I really enjoy it. As I say, I'm really moving, with regards to the confidentiality of it, we really want to . . .

#114 DF: Okay, we have to get you to sign off on this at the end of the interview so if you want to tell me something really confidential maybe you want to say that off tape. But tell me about your family and your children and that. . .

MM: Well, I've got three older daughters, which are the centre picture there, they're kind of all grown up and gone away now. One of them is still in Calgary, one is with the NFB, the other one lives in Dubai and is married to an Arab over there. In fact, this is his boat here, he's an offshore racer. All of them are multi-lingual, but then we adopted these kids. They're now 8 and 12, from Guatemala.

DF: And what's the story behind that?

MM: Well, basically adopted them, really, Guatemala was just at the time that we were ready to adopt children. . . First of all, we hadn't realized, and this was actually part and parcel of the Kuwait project, we hadn't realized that you can't adopt Canadian kids when you're not a resident in Canada. So that kind of led us to look other places. In that search we came across an adoption agency in Montreal whose specialty was children in Guatemala. Of course, Guatemala at that time was still in their war and kids were. . . I don't know whether, did you go there at all?

DF: No.

MM: Well, there was thousands of kids on the street everywhere, there was just no place to go. So it was fairly easy to adopt in Guatemala, that kind of led into far other things, you know, through that group we basically got involved in building schools down there, originally with a missionary group, and then when we weren't Christian enough we formed our own group and went on. We've accomplished a lot of things there, first of all we've built 12 rural schools to date, usually in places where nobody else would go. And then. . .

#133 DF: Why?

MM: Why would they not go? Most of all because they were so remote. The NGO's tend to hang close to the bigger centres and we were prepared to look at schools further out. In fact, that really was our mandate. This at that time, was basically just a private group of people. At that time our group was called School Friends. We later on, about 3 or 4 years ago, got attached to a group called NPH, all this is on our website if you want to check it out. NPH is . . .shit, what does it stand for now, our brothers and sisters or something like that, I forget now, I'm sure you would know. At any rate, they were originally started I think, in the 50's, 60's, by a priest in Mexico who started developing orphanages that were different in some ways. One of which, they don't adopt out, basically children come into their care and they stay there, that's their home for their life. With the exception of maybe going back to families or things like that. And they're largely self-sufficient, they grow their own vegetables, in fact, in the old days they made their own clothes and their own shoes. That's no longer become practical. At any rate, they moved to Guatemala because there was a tremendous need in Guatemala, there was orphans everywhere you went. I think, if I recall, 100,000 kids were orphaned over that long war. We started building schools there but because we didn't have anybody in the country we continually had this problem of going out and trying to find that project. Because obviously if you're going to build a school you want some confidence that they're going to carry it on, that they've got a school board, that the land is owned appropriately and things like that. That was a continuing struggle, not having anybody on the ground there so we, through our continual search for projects, we did run across NPH in Guatemala, they were just establishing an orphanage then. I think in less than a year they had 300 kids in their care, that's now I think, over 700, and we built them a very large complex. It involves. . .well, it's a residential complex and a school for 600 kids. So the classrooms alone are, 1, 2, 3, 4, 5 big two floor buildings, six classrooms per floor. And residence and gardens and the

whole schmo. And we actually now have become the NPH. . .or, Friends of the Orphans, Canada is who we are now. And we do that, both my wife and I do that. She just got back from there, had a great time. She's coming along with Spanish speaking. We just did a job in Cuba actually, for the Spanish company Repsol, we'll be going back soon.

#170 DF: And that's a . . . ?

MM: Spanish government company.

DF: What do they do?

MM: They're a worldwide company and they're drilling offshore in deep water in Cuba. Have you been back there?

DF: No. There's a question as to whether or not I owe military service.

MM: Oh.

DF: So did you do a blowout for them?

MM: No, no, this was just an emergency response planning was a big part of it, to go down. They had an emergency response plan, we basically adapted it to the site specific situation. We'll continue to go down there to look at the rig and decide on its suitability and that kind of stuff. The guys really liked it. I haven't been there myself.

DF: Anything else you want to tell us?

MM: Not really. I think we've kind of covered it all.

DF: Well, on behalf of the Petroleum Industry Oral History Project and particularly myself, I'd like to thank you for the opportunity to meet with you today and to hear your story, or part of it and we'll follow it up with some of these other things you've mentioned like your website but thank you so much Mike, it's been a real pleasure.

MM: You're welcome David, pleased to talk to you.