

PETROLEUM INDUSTRY ORAL HISTORY PROJECT
TRANSCRIPT

INTERVIEWEE: Gordon Jones

INTERVIEWER: Nadine Mackenzie

DATE: June 1983 - February 1984

NM: This is Nadine Mackenzie speaking. I am at the office of Dr. Gordon Jones. His office is situated at Executive Place, 727- 6th Avenue SW, Calgary. Dr. Jones, you were born in England.

GJ: Yes. In Northampton, that was in the centre of England, roughly between London and Birmingham, the centre of boot and shoe industry.

NM: Was your father already in the oil business or not at all?

GJ: No, he was in the family business, which is in boot and shoes and he managed a boot and shoe factory, which was part of a larger chain of offices and stores.

NM: Where were you educated?

GJ: I was educated first at private schools at Northampton, my home town and then I went to a boarding school, the traditional English public school, which belonged in Kent, the southeast corner of England but because of war time got evacuated twice. First, further up the coast and then later, back to within 6 miles of my hometown.

NM: And then you took your A level?

GJ: We didn't have such things as A levels then, we had a school certificate, which I took when I was 15 years old and a higher school certificate, which I took when I was 18. The A levels is a post war phenomenon. This was during war time.

NM: Did you at this time decide what would be your career?

GJ: When I was at boarding school, geography was one of my favourite subjects and I was also quite good at sciences, such as chemistry. I looked for geographically oriented careers and geography is a rather vague subject, which causes many disciplines and somehow I got directed towards geology. My geography master was a keen enthusiast who took us on many field trips in the mountains and more or less encouraged me towards geology.

NM: So which university did you go to?

GJ: I went to the University of Birmingham, which is in a mining part of Britain. In fact has a demonstration coal mine right under the university. Birmingham from a geological point of view, is very well located. It's possible to look at almost all the geological systems, that's the age groups of rocks, within a space of about 20 miles. You can get everything from pre-Cambrian, the very oldest rocks to Cretaceous and if we want the younger Tertiary rocks we can go a little further away, but it is rather unique. Most areas, particularly say here in Canada, you may have to go hundreds or maybe thousands of miles, to see represented rock formations.

NM: So the University of Birmingham was a very good place to be in?

GJ: It was good. It was industrially oriented, compared with the geology departments of, say

some of the universities like Oxford and Cambridge, which are better known but they were a little more academically oriented. So many of the people going into the oil business for instance, British Petroleum people sending people to the Middle East or Shell sending people all over the world, many of them came to Birmingham.

#042 NM: And how many years did you spend in Birmingham, because the British system is completely different from the Canadian one?

GJ: Yes. If one does well enough in one's higher school certificate, one's allowed to go directly into the 2nd year. So I had three years to complete my honours degree, instead of the 4 years, and then I stayed on for another 2 1/2 years for my PhD research. In the end I didn't finish it in my allotted time. I had about 2 more weeks to go when I had to get on a ship to South America. Because I couldn't finish it in that time, I came back from South America 4 years later and finished my PhD.

NM: What were you going to do in South America?

GJ: Actually I knew that there was a geological job with the government of Uruguay, they had traditionally had one foreign geologist on the staff for about 50 years. The last person had left them, in fact he was a Frenchman who refused to go back to France to fight during the war and the Uruguayan government, as an ally, felt that they couldn't keep him on their payroll. So they'd had a gap and were looking for someone and my parents went out to Uruguay a few years before and became aware of this and instead of my going to teach in an African university, which had been my previous plan, I ended up working in Uruguay.

NM: So you were thinking before that, to go and teach in Africa?

GJ: Well, at the time I got my Bachelor's degree, in 1948, I had thought of going to join oil companies overseas. In fact, was awarded a job with the Burma Oil Company to work in Darjeeling, India. Just before I assumed that appointment I was given a research scholarship to work on my PhD and decided to forgo going to India. So I began doing research. During that period I had thought of teaching in an African university and I had been discussing this with 3 different ones, one in Uganda, one in Kenya and one in Nigeria. It was about this period that my parents persuaded me that there was something closer to where they lived and it sounded an interesting opportunity. So I went out to Uruguay, partly on vacation, but partly with the idea that there probably was a job there.

NM: So you took the job there?

GJ: I took the job there and I stayed 7 1/2 years on that particular job. I was geological advisor to the government which for a 23 year old geologist was quite an interesting assignment.

NM: It was, because you were pretty young at the time.

GJ: Yes. I had just worked on my PhD and I hadn't previous industry experience or government experience and there I was, the only graduate geologist in the country or 72,000 square miles.

NM: Could you speak Spanish at the time?

GJ: No. I began . . . I was tired out when I got on the boat, having been working about 18 hours a day for many weeks, trying to finish my PhD thesis before I left. I thought I'd start working on Spanish immediately but I'd already got to Rio de Janeiro in Brazil before I started getting my books out. So I had about 3 or 4 days of studying Spanish, the last few days . . .

NM: And then living in the country?

GJ Yes, I picked it up. I found the frustrating thing, when I first joined this Geological Institute, which would be roughly the equivalent of the Geological Survey in this country, that all the engineers who understood some geology, many had subsidiary subjects in geology, they all wanted to practice their English. And so I was in constant battle as to whether we were to try my bad Spanish or their bad English.

#088 NM: Did you travel a lot in South America?

GJ: Yes, quite a lot. On my job, I initially mapped some of the what were called departments or departamentos, which is roughly the equivalent of our provinces. So I was doing field work in some areas. One area for instance, had not been mapped or had any work by a geologist since Charles Darwin was there in 1832, during the voyage of the Beagle. So there were wide open spaces of more or less unknown territory.

NM: So it was really pioneer's work you were doing.

GJ: Somewhat. There was a rough knowledge of the main rock types, but not of sufficiently scientific knowledge. So I did the travelling in the course of field work. I also, when I first went there, travelled to look at what we geologists call type sections. These are representative areas where rocks of a certain age have first been identified in a particular country or region. So that gave me the chance to visit some of the distant parts of the country. Later on, work also took me, for the same reason, to look at representative rocks in the neighbouring country of Brazil. I also, whenever I had a vacation would try to travel and in 1952, about 14 months after I arrived, I went to Chile through Argentina and spent quite a lot of time travelling through the central part of Chile and then down through the Chilean, Argentine lake district in the southern part of Chile. A couple of years later I did extensive travels in Paraguay, and southern Brazil and took river steamers up the Paraguay River and then travelled overland across Madagraso???, that's one of the jungle provinces and then down by river steamers, back down the Parana??? River, with very large waterfalls and the Paraguayan-Brazilian-Argentine border. I had several other trips through southern Brazil. Then in 1954, when I came back, partly to get married in the U.S. and partly to finish my PhD in England. On the way there, I went overland, across South America, from Uruguay, Argentina, Bolivia, Peru, Ecuador, then flew, stopping by Central America, to the States.

NM: Did you meet a lot of European and American geologists there?

GJ: Not too many. The British Antarctic geologists had their last port of call in Mandabedeo???, the capital of Uruguay, before they went to 2 or 3 year assignments in Antarctica. They used to drop by and I would show them around the country and give them a last sight of sunshine and civilization before they went to the Antarctic and then I'd meet them on the way back. A few of the American Antarctic people would go through on the same sort of basis. We had a few dealings with opposite members in Brazil and Argentina but not too much.

NM: Were there a lot of oil discoveries at the time?

GJ: Uruguay is a country with no known oil resources, even now. At the time I was there, they had been drilling very slowly and laboriously, with very ancient ??? drilling equipment. The sort we used to have in Alberta back in the 20's and 30's and were very, very slow. In fact, in the northern part of the country, where we had hard volcanic rocks,

interspersed with the sediments, one well took 7 years. And during this time, partly because of their own problems, they had got an American consultant company, DeGollier??? and McNaughton, who sent down an American geologist. And they had an American geophysical company that did some magnetic and gravity geophysical work. I cooperated with those people as well as adding my own input to, what would be a Crown corporation in this country. They call them autonomous entities. I worked fairly closely with that body. Subsequent to my leaving and I suppose in part coming out of some of my work, they did do some offshore exploration in the Rio de la Plato, which is a very large estuary of the so called River Plate, we called it in English.

#149 NM: What about the other South American countries?

GJ: Neighbouring countries, Argentina had fairly significant production, mainly in the Commodore River at Davia, which is fairly well south, not too far from the Falkland Islands, which we hear enough about these days. And also some over close to the Andes. Chile had a very small production in the southern part. Brazil was struggling to find some but had not been too successful. A very prominent Canadian geologist, Walter Link, ran a??? exploration program in Amazonas, for the Brazilian government and really didn't have much luck. Subsequently they've gone offshore and found more. Of course, northern South America and Venezuela is very well known for its large deposits and to a lesser extent, Columbia, Ecuador and Peru have quite a bit of production.

NM: Did you meet Dr. Ted Link in South America?

GJ: No, that's his brother that I was talking about, Walter Link. He had been Chief Geologist for Esso, which subsequently became Exxon or New Jersey Standard and he was the one that was hired by the Brazilians. Ted Link was here in Canada. I knew Ted Link a few years later and in fact, fairly close links to him and helped him out, writing some Arctic papers.

NM: Can you tell me a bit more about Walter Link?

GJ: I didn't really have dealings with him in South America. I knew he was there, he was my opposite number but on a much more lavish scale, in a much larger country and I was aware he was there, but I didn't really meet him until later on. I went with him to the ??? in the late 60's. I think the problem with people like that possibly, is that it's all new to them and they perhaps translate what they've learned in the country that they're familiar with and try to see the same things in a new country and it doesn't always work out. I think some of the programs by the foreign geologists in Brazil didn't work as well as that done by local geologists, who spent longer at it and had longer to familiarize themselves with local conditions.

NM: And you met the brother in Canada, Ted Link, did you meet him in Canada?

GJ: I met Ted Link in Canada too. He was a great friend of Dr. Sproule, who later became my boss and so he used to come in and out the office and if he was wanting some information on the Arctic for some speech or something of that sort, I was often the person who would provide him the information he needed. So I knew him fairly well, for quite a long period of years, until he died a few years ago.

NM: You had some publications in South America.

GJ: Yes. It was quite an experience for a European trained geologist to try to get something published in Uruguay. I was under contract to the Uruguayan government and mapped

this province, or Department of Caneloni??? my first year. When it got to November of the end of my first year my boss said, well, I want to get your contract renewed, it was a yearly contract and you'd better get something written so we can show something to the government to justify rehiring you. So from about mid-November til Christmas I furiously wrote a very large bulletin, 100 and something pages. And I managed to get it completed by year end but then it went to the government printing press and it took until 1956 to get it out of the printing press and this was in December 1951 that I . . .

#205 NM: It took them a long time.

GJ: And I discovered a lot of things. My Spanish improved enormously during that period. At first I had written in English and one of my colleagues had translated it to Spanish. By the time it came out of the printing press I was able to rewrite it myself in Spanish. [At times Uruguay was the world's worst???) welfare state and the . . well, for instance in government service, we changed from a 29 hour week, when I got there to a 25 hour week shortly afterwards. And in fact, nobody worked the full time except the man whose job it was to open the door and close up the end of the day. Everybody else came in about 10 minutes before their boss and the boss maybe came in 2 hours late. So instead of a 5 hour day, some people worked a 3 hour day. So the printing press was pretty slow moving in any case. But then I also found that since it served the politicians as well as the scientists, they would pull rank and if they had something they wanted printed, they'd take my stuff off the press and print political speeches.

NM: It's not surprising it took them so long.

GJ: Also they had the system whereby, if you got in the civil service, you had a job for life virtually. So everybody's ambition was to get in the civil service, then you got pension when you were about 50 years old and many of the people there were brothers-in-law and sisters-in-law and aunts and cousins and nieces of people that were previously there. So there were many, many people in all these government departments who really weren't working, including some of the people that should have been doing my printing.

NM: And after 7 1/2 years in Uruguay, you went to Argentina.

GJ: Yes. I had been 4 years in Uruguay and took leave in the U.S. and Britain and then went back. While I was away I found the economic conditions had begun to deteriorate. So after, they had paid me in the 14 months I was away and I felt some obligation to stay for some reasonable period after I came back but I decided that I should move on before conditions deteriorated too badly. The Uruguayan peso had been very good for many, many years, right through the Great Depression of the 30's. It was one of the better currencies and it was in fact called the Switzerland of South America. But I could see that with the welfare state, it had been going on so long and everybody was pensioning everybody else and the number of national holidays was increasing, there just was less and less effort, that eventually economic terms in the world sort of began to catch up with them. Particularly after the Second World War. Once Europe and North America came back to the point where they had exports, they could compete with Uruguay, which was trying to export to its neighbours, manufactured products and things like that. Suddenly the Uruguayan exports couldn't compete. The other thing they exported, perhaps 50% of their exports were in meat products and those were the world's highest per capita meat eaters that began eating up their exportable surplus. So things were going downhill, so

because I had a unique job, I was the only geologist permanently in the country and I spoke the language, I gave them 6 months notice rather than the normal month. During that period I happened to be representing the Uruguayan government as negotiator for a National Resource Inventory Program and I was dealing with the Argentine manager of the Canadian subsidiary of a British company. And during the course of conversation with this man he said that his father had died and he had all sorts of problems that caused him to have to rush back to Canada for some months, and would I be interested in taking his job as he realized that I was planning to go to the States or Canada. So after some thought I went to Argentina and took this other man's job for a period of four months before he was able to come back again.

#284 NM: You were saying that you were representing the Uruguay government at the point, and how could a British man. . .

GJ: I was a civil servant working for the Uruguayan government. The President of the Republic had signed my contract and the whole cabinet and the parliamentary gazette and so on and I was just another civil servant from their point of view. I was hired locally, after arriving on a vacation, rather than being a foreign employee.

NM: So you were never asked to take on Uruguayan nationality?

GJ: No. I did have to join the government pension scheme and I never got my money back. But no, they had this tradition of having a foreign geologist. Because there wasn't much need for geologists in the country, although they had an excellent university, it didn't have a course in geology. You could be an engineer or a chemist or a geographer or something and have subsidiary subjects in geology but you couldn't actually graduate as a geologist. So they had this tradition and I gradually sort of worked up in seniority and sort of standing and in a way, for an expert, in quotes, had quite a high standing and used to deal with Cabinet Ministers and senior assistant Ministers and this sort of thing very often. At one point I got very frustrated, as most Europeans or North Americans do, with some of the inefficiencies and one of the inefficiencies had been tremendous duplication of programs between different government departments, each of whom competed against the other. One of them was, in say, topographic mapping, where you get 4, 5, 6 departments all making topographic maps, not knowing that the other ones were doing it, or if they did know, they said well, the other people don't know what they're doing. So they each one would make their own maps with their own machines and one has a Swiss system and another one a French one, another one a British one, German one, different sorts of machines which weren't compatible. So I was wanting air photographs as a basis for my geological mapping and also the maps which are derived from air photographs. I discovered that the air photographs they had were all on different scales, some taken by the Air Force and some by the Army and some by private concern. So eventually I got sufficiently fed up that I'd gotten hold of the various senior civil servants and politicians and said, let's do a national program of air photography of the whole country. And that gradually blossomed into a National Resource Inventory Program, in which we were not only to take the air photographs on a common scale, but also to make the maps derived from them and then do an inventory of soils and forestry and use them for civil engineering purposes, like road location and also for my geological mining needs. And so I sort of unwittingly started a fairly major national program and it was very interesting

because I had to sort of bang the heads together of these Army generals and Air Force commanders, together with regular civil servants and persuade them all to cooperate when they weren't in the habit of cooperating.

End of the tape.

Tape 1 Side 2

NM: When you left Uruguay to go to Argentina, what was the political situation in Uruguay?

GJ: Well, as I said earlier the economy was deteriorating so new pressures were coming Uruguay had been an almost caricature democracy, one of the most democratic countries in the world since the beginning of the century. In the previous century they had more or less 75 years of civil war from the time of independence. Finally a man got in control who said enough is enough, who said no more civil wars, no more power given to one person's hands, and they tried to reduce the power of the Presidency and set up a 9 man council. The first effort at that, in the early 1900's, didn't fully work. So when I arrived in the end of 1950 we still had a President but with very little power, lots of checks and balances through portions of legislature and shortly after I got there, they abolished the Presidency and set up more the Swiss style of a 9 man council, with 6 from the leading party and 3 from the main opposition party. A variant of that was that within the majority party you had lots of splinter groups and within the minority party there were a lot of splinter groups. When you voted, in fact, you could vote for your splinter group. If your favourite group didn't win then the vote slipped across to the next favourite one. Very complicated voting system, it was a sort of ultra democracy. They actually paid the parties \$4 dole, per vote they got, which was a lot of money available for propaganda and publications, broadcasts and so on. Parties would guess what income they were going to get from the votes they got and sometimes if they were wrong they were badly in debt because they would spend the money before they received it. But they would print slogans, like white lines we use for traffic on the street, they would print all up and down the streets, they would have loud speakers in aircraft, they would fly over at you shouting at you, they drop leaflet bombs and spent a tremendous lot of money, so it really was a democracy carried to extremes really.

NM: And you felt it was going to get worse.

GJ: Yes, well, the point was it was getting less efficient. It got to the point where people in their late 40's were leaving on pensions, full salary and the beaches of Mandabedeo, it's the capital city but it also has about 10 large beaches, they'd be packed every day and many of those people were business people, they should have been sitting in their offices. Sidewalk cafes were packed, people would just skip out of their office for a coffee break, and disappear to the beach for a couple of hours and this sort of thing was going on on a national scale. In the past, because of the sheep and the cows and they could grow and it was a good climate they didn't really have to do much work to have an exportable surplus. But somehow or other this was vanishing. So then you began getting the restlessness of the trade unions, there was communist influence, the Russian Embassy in Mandabedeo was the biggest in South America. It had over 200 people and considering there was virtually no trade between Russia and Uruguay, it was pretty obviously not

there for normal reasons. Because it was a democracy and the neighbouring countries were mainly dictatorships, they used Uruguay as a sort of spring board to the neighbouring countries. So there was a lot of agitation in the dock workers and certain other unions and eventually we began getting strikes which were quite crippling. Just the lack of production, the competition with more efficient nations, things began deteriorating. Whereas previously it was a middle class country, with everybody more or less prosperous, no real poverty stricken people, it had a national health scheme for 50 years and they'd had a free education right through university for 100 years, no about 80 years, since the 1870's. They had many advanced things but suddenly the fact that nobody was really working hard enough caught up with them. So then you could see things were going to get worse. Shortly after I left the peso dropped. When I had arrived in 1950, it was about a peso and 86 cents to the dollar. By the time I decided to leave it was about 8 pesos to the dollar, by the time my six month notice was up, it was about 10 to the dollar. About 6 months later, it was about 200 to the dollar. So it really deteriorated, so I got out just in time. With that deterioration then the strikes and unrest became more and then a guerilla group called the Tupamaros??? developed. This all happened after I left but I had many friends there who had contacts with them. And then the Army which had been an absolutely insignificant thing finally got fed up with having the guerillas and so on, so this democracy suddenly became a dictatorship when the Army stepped in and put down the guerillas and it's gradually coming back to being a democracy now, but it's taken 30 years and conditions have deteriorated from being the most advanced country in South America, it's now one of the sort of middling ones. Still a highly educated population.

#068 NM: So you left Uruguay and went to Argentina.

GJ: Yes, that was in June 1958, after 7 1/2 years altogether. I went over to Argentina until October 1958. My wife was already committed to go back and see her family in the States so I went over there as a bachelor. I didn't bring her down before that particular job finished because the man who I replaced was able to come back to Argentina. By that time the Canadian company who's Argentine office I was looking after had decided they liked me so they said would I come to Canada, specifically to their Toronto head office and then I would be sent back as manager in another South American country. When I arrived in Toronto, having driven from my in-laws home in New Jersey, with a station wagon full of furniture and I expected to get a house in Toronto, they said, well, things had changed a little bit and they decided I better go out to their Calgary office to get familiar with the Canadian oil industry before I went back to South America. There were various delays in South America due to revolutions and things of that sort and driving out from Toronto to Calgary. . .

NM: So you didn't stay in Toronto, you did not work in Toronto?

GJ: I was there for 6 weeks in Toronto and I specifically studied air photographs of Bolivia and interpreted those for the oil companies and in fact, there were some discoveries on those structures we identified at that time. But it was just a fill-in job really, waiting for a new South American assignment and so January '59, after a short period in Toronto, I drove out to Calgary and while I was coming out here the Castro revolution took place and one of the jobs I was potentially to take in South America, was in Cuba. So that one fell through. Another one had been Venezuela and there they didn't have a national

revolution but they had a revolution in one of the regions, which affected another job that I might have potentially been looking at. Each were multi-million dollar, natural resource inventories. Then the third possible job was in Chile. In that case there was no revolution but the Chilean government got the idea the United Nations might pay for the job if they hung on a little. In fact there was four years of negotiation and eventually the United Nations did run it, but by that time I had decided I couldn't wait, marking time and I had got involved in the Canadian Arctic.

#102 NM: Had you heard of Calgary before you came here?

GJ: Yes. In 1931-1932, when I was 4 and 5 years old, my grandmother came to Canada and the States to visit three of her sons that were there and she travelled right across Canada and spent some months in Calgary, I believe it was in the summer of 1932 and she sent me letters and picture postcards from Banff and things like this. So I was well aware of it and I was an avid stamp collector so I am keen on geography, so I did know where it was and roughly what it was like at that time. And then I don't think I heard much more about it until 1958, when I was travelling through Columbia on my way to come permanently to North America or as it turned out permanently to North America. I happened to be a sort of red carpet guest of the airline, through a chain of circumstances and they had offered to show me around the sights in Bogota, the capital of Columbia. We were going to a large waterfall and a cathedral and a salt mine, at various points. While I was arranging the car, two girls were having some problems getting transportation and I said, well if they cared to join me on my trip they could and it turned out these two girls were from Calgary. One of them worked for the Canadian Pacific Railway. I don't remember their names, I've never met them since I got here, but they were very pleasant people and we chatted about Calgary and so I at least was updated and I knew roughly how big a city it was, I think it had 160,000 people then.

NM: So what did you do in Calgary when you arrived?

GJ: Well, I arrived with a few jobs related to South America that I still had to write up, but mainly I was here as a guest in the office of a local consultant company and just to take advantage of familiarizing myself with the Canadian oil industry before I went back to South America. And it so happened in the first 2 or 3 days I was here that some entrepreneurs approached the Canadian federal government and wanted to take permits in the Arctic Islands for exploration of oil and gas. The government was not prepared, they had no regulations, they hadn't even thought anyone was interested in the area. So there was some publicity in the daily oil bulletin and other places, that the government would have to look into the matter. So immediately several oil companies started taking interest. So the manager of this local consulting company said, well, you're used to mapping large areas and maybe you could look into this new area, find out what's known about the geology and so on, really very little was known. There had been work done in the 1800's by, mainly British expeditions that were looking for the Northwest Passage and most of them had had a doctor on board and he was usually a scientist in the old style that took a great interest in other sciences and probably collected a few rocks and fossils and then somebody back in Britain had written up a bit about the geology based on what he found. Then there's been a little more done by a Scandinavian geologist at the turn of the century. Then the government of Canada had sent out a few preliminary geological

expeditions during the early 50's. So there was a few publications to look at. And then the other thing that happened was after the Second World War, the Canadian government had started doing air photography of the entire area. So we in the oil industry could get air photographs and we could begin interpreting the air photographs from a geological standpoint. And as I'd had some background with that sort of thing, I got involved in that. So first with that hunting company that I'd been working with in Argentina and Toronto, I first started doing some work in the Arctic Island with them and then later on I consulted on my own and eventually I ended up joining Sproule Associates, who were probably the principal Arctic explorer at that time.

NM: This is the end of the first interview with Dr. Gordon Jones.

Tape 2 Side 1

GJ: . . . geologists and a number of junior geologists and supporters. Later on, I gradually worked my way into become the head of those fields, geological parties up in the Arctic, among other things.

NM: Were you staying in the Arctic at the time or were living in Calgary and travelling to the Arctic?

GJ: At the time I was hired, I was here in Calgary consulting on my own and working with a Saskatchewan consultant to some extent. Soon after I joined Sproule we'd just got together further supplies for the second party, myself and several others went up at the same time on a charter aircraft, at that time there were no commercial aircraft flying into that area.

NM: Did you stay a long time in the Arctic at once?

GJ: So that summer I spent 3 months. That was about our normal for the next 6 years or so. Basically geologists have to work in the snow free season. In theory there might be as much as 3 months snow free, in practice we usually found that we were groping around in the snow for our first 2 or 3 weeks and again, our last 2 or 3 weeks and trying to get the maximum field season possible. Other people like geophysicists, they prefer to work in the winter, when everything is frozen and hard and aircraft conditions are sometimes better than they are in summer. And drillers tend to, well, they sometimes work year round but they prefer the winter too, because the ground is solid and a good foundation for their rigs.

NM: How was Cam Sproule, what type of a person was he?

GJ: Cam Sproule was a very dynamic individual. I suppose most of us that worked with him had a sort of love-hate relationship. He was always driving, he was a man of vision. Those of us who had to work closely with him sometimes were sort of pulling his coattails, trying to get him to drive in a different direction because we didn't always see eye to eye on some of the things he wanted to do.

NM: Could he accept other people's opinions?

GJ: To some extent. He had been a geologist with government as a young man and then had been, for many years, with Imperial Oil, first working in western Canada and also working out of the Toronto office for a time. Had been to South America with subsidiaries, in Peru particularly and when Imperial Oil, after Leduc, needed money to

exploit their discovery in western Canada, they sold their international subsidiary to their parent company. So Cam Sproule was to be moved from the Toronto head office of their international subsidiary to Florida and he was a pretty dedicated Canadian and very keen on the north country and this sort of thing and he didn't want to go to Florida. So he set up his own consulting firm and I think he showed his dynamism in those first few years because from about 1951, when he founded the firm, through to say the 1960, he built it up into the biggest petroleum engineering and geological consulting firm in Canada and established quite a reputation, gathered some pretty dedicated and capable people around him. I think he was not a good businessman, he was more of a visionary and an ideas man. Many of us had to try to make his promises come true. He would tell clients what he could do and he perhaps sometimes undercharged for our services and we were always scrambling to make deadlines which were perhaps not realistic ones. And in many ways as a business, we got on better when he was on holiday or sick or something like that. There were many of our clients who really believed in Cam Sproule. They thought his ideas were excellent and they trusted him implicitly, whereas other ones were quite wary of him and much preferred to work with the rest of his colleagues, who perhaps were a little more scientific and steady and a little less mercurial. But like many dynamic people, he had I suppose, faults. But if you always look at all the problems you see there are so many of them that maybe you don't start aiming at a particular objective. With Cam Sproule he didn't see the problems, he just charge ahead and got on with the job, and somehow between us, we made it come true.

#053 NM: Did you get on well with him?

GJ: Oh, yes, personally I suppose I got on better than most, although I was one of the people that argued with him a lot. Quite a number of people preferred not to. So we had our differences of opinion on geological matters and things like this sometimes, but I think there was always mutual respect and basically I got on pretty well. I always found I had access to him at any time, from virtually the first time I joined the company to the time I left it, and I could always walk into his office and we could have a chat and that was a very easy relationship in that respect. Or he would drop by my office frequently and chat about things. In many ways I had a great liking for him but he was. . .

NM: So you were great friends and ???

GJ: There was a lot of wear and tear though, partly because his idea about deadlines and things was sometimes unreasonable, so we were almost invariably scrambling to get something finished, working very long hours. Sometimes we would have a top priority with strict instructions not to do anything else. Within 10 minutes of him telling us that, there would be about 3 more new things that would be more urgent still. So we were always trying to accommodate these rather erratic desires and yet run a business and keep our clients happy and that was a little complicated sometimes.

NM: Can you tell me a bit more about your work in the Arctic?

GJ: Right. Well, as I think I explained earlier I arrived in Calgary right at the beginning of the Arctic Islands interest by the petroleum industry so it was a completely virgin area from the point of view of industrial oriented geologists. Previously there had been a little work done by government geologists, from an academic point of view and they laid the groundwork for ??? geology, enough to get us interested but not enough detail for the

industry to use as a basis of its work. So we had a great advantage in the Arctic Islands because of the fact there is no vegetation or very, very modest amounts. There's small amounts of flowers which are there for a few weeks in early summer and the tallest trees are about 4" tall, which is the catkins and the willows. We in fact, used to land on top of the forest in our planes. So that gives an advantage to the geologist in that a tremendous lot can be seen from the air photographs. Prior to my joining Sproule he had had consultants in the field of photo geology, that's the interpretation of air photographs from a geological standpoint and they had prepared rough maps as a basis for the field geologists to continue work. One of my reasons for joining Sproule was to set up a photo-geological department, so we did that ourselves in house, rather than having to rely on outsiders. As there was an urgent need for me to be in the field when I first joined them, I in fact, started doing further photo-geological interpretation while I was up in the Arctic. Whenever the weather was bad we would spend our time working, interpreting the air photographs and when it was good we would be out doing field work.

#093 NM: Who was taking the photos?

GJ: The photographs were taken principally by the Canadian Air Force, although some were done by two major air photographic companies on contract to the Air Force. One of them was part of the hunting group that I had previously been with and the other one was Spartan Air Surveys. These two companies between them, probably did about 90% of the work. Prior to that, just during the war and just after the war, the U.S. Air Force had taken some reconnaissance style photographs because there was concern that the Germans might try to infiltrate from Iceland and then into Greenland and then into the Canadian Arctic. So there was this preliminary work done. They took what were called trimetrican??? photographs. This was a strip of vertical photographs and then inclined photographs off in either direction, so you could cover a wide swath of country with just a limited number of flights. Whereas the later Air force photographs and the ones contracted by the Air Force, were all vertical one, so you get continuous coverage and you can readily make maps from them. When we first started systematic work in 1959 and 1960, we were still having to use some of these trimetrican photographs. A lot of them are very beautiful for illustrating geology but they're very hard for systematic mapping. So we used both sorts and there were still gaps in the photography and we anxiously waited until I think 1962 when the final air photographs were taken. Prior to that some of the government topographic maps had many, many mistakes or distortions. Some islands were completely misshapen in the photographs, based on information from the last century, during the Franklin search and other earlier times. A few small islands weren't even known to exist until the air photographs were taken. In fact, several of them didn't have names. In some cases, if you put two government maps together, the islands wouldn't properly join. For instance, on the 80th parallel, on Mian??? Island, when you tried to join them, the islands hardly touched, the north part and the south half of the island.

NM: There was something wrong there.

GJ: Yes, there was a major problem. The basic triangulation stations used by the topographic survey hadn't been put in place and the lack of air photographs. There's a whole lot of things hadn't been done. So we were really up there in the beginning of the modern stage

of exploration, as exposed to the old last century stage when people would go up there for 3 years and get frozen in on their vessels and so on. We were in the dawn of the aircraft age and the dawn of the age of air photography and these sort of modern devices. On our field work, once we were in the Arctic was based on the fact that we had these fairly quick and simplistic interpretations of the air photographs, but at least we had a basic knowledge of the geology. So we knew roughly which formations were likely to be up there and what major geological structures were there. So a lot of our field work was a checking out of what we had interpreted on the air photographs. And I suppose this was one reason why I sort of became the head of the field group, because as I headed the photo interpretation group, the two things went so closely together that it was easier to run it when you had a full knowledge of what you expected to find beforehand. We organized ourselves mainly in groups of perhaps 6-8 geologists, usually in pairs, a senior geologist with an assistant. So we would have 3-4 pairs that would go out to do field mapping and they would be supported commonly by, after the first year or two, by helicopter and by fixed wing aircraft. The fixed wing would be something like a Beaver, which could take a couple of men and their supplies and leave them on an island to work for a week or ten days. Or it could, in several trips, could move the base camp and it could bring in fuel. The helicopter would be used also, to place out two men camps or the Chief Geologist could use it as a reconnaissance vehicle. In 1960 and to some extent in '61, we had less helicopters and we had to rely more on very small single engined aircraft, such as the Piper Cub. This could just carry a pilot and one passenger with his toothbrush and a sleeping bag.

#157 NM: And nothing else?

GJ: Not much food. One problem was, in trying to work in pairs, sometimes you'd get one geologist landed and then before the second plane could get in, fog would come or freezing rain or something and you've got a man stranded without adequate supplies. So those were good reconnaissance vehicles and the government geologists used them more but for us in the industry who had to do more detailed systematic work and carry more heavy samples, they weren't too satisfactory, so we rapidly settled down to using a helicopter as a basic tool and then something like a Beaver as a support plane. Later on we, I suppose, began to take more account of safety, having had a lot of nasty episodes and began. .

NM: Were there a lot of accidents?

GJ: Surprisingly few. The thing we . . all our fixed wing aircraft we were using, large balloon tires. These are tires and wheels much bigger than for a plane of that size. For instance we used a DC-3, which was one of those fairly major transport planes of the World War II period. We'd take wheels from that size aircraft and put them on a very small aircraft and they'd be only inflated to very low pressure, so we could land on rocks and ??? and hopefully you could land intact. We knocked off a lot of tail wheels, which were always very vulnerable and we flipped a few aircraft onto their backs and bent fellows and. . The geologists and pilot would often argue about how big the rocks were and we'd circle round and round and then you'd pick what you thought looked the best spot and sometimes a pile of rocks would appear in the middle of the runway and you'd try to grind to a standstill before you hit it.

NM: It sounds very dangerous.

GJ: So we had a lot of episodes but after that one fatality, right at the beginning, due to white out, which is like, well, when a whiteout happens, just the change in temperature can change the reasonable visibility into something like the inside of a milk bottle in a matter of seconds. If you just happen to hit the slight change in temperature which will make it almost impossible to know even if you're flying upside down or right side up. It's just a very dangerous condition. Once we had become aware of the dangers of it, of course, we tried to avoid those conditions as much as possible. On the whole we got on without too many bad accidents. We damaged a lot of aircraft and not too many people. Got a lot of scares and I guess my ??? the flying has been not too good after so many episodes but there are many times when you'd get above the clouds and we were flying aircraft with visual flight rules, which means in theory you should never be above the clouds. But sometimes the clouds would form below you while you were up in the air and then you would have to find a way down and hope there was a gap in the clouds somewhere and sometimes we'd fly over a camp that we knew to be there and the people would talk us down by radio and at least they could tell us there was a gap under the clouds and they weren't sitting right on top of the hills.

NM: It must have been pretty scary?

GJ: Yes, at times. We had our share of scares. Partly because of the problems of flying, where possible we put our 2 man parties in a place where they could say, walk out from their camp. They might be on a separate smaller island or on a peninsula and we'd try to put them in a place where they could walk in all directions and maybe work for a week or 10 days by themselves. Usually they began either running out of food or getting too many rock samples, a combination of both of them. Because the problem was too, that we could say we will come and see you a week next Tuesday but when a week next Tuesday came, it was a blizzard or the aircraft had an accident somewhere else or there was some reason we couldn't go there. So we always had to take enough emergency supplies that they could exist, maybe not live comfortable, but they could somehow survive for another week or so, after we had promised to pick them up.

#218 NM: What were these emergency plans?

GJ: Well, this man Allen Riis???, the fellow that was killed, had previously worked with a British-Swedish-Norwegian expedition in Antarctica and I believe he'd also been on Greenland and there he had learned to use a lot of dehydrated foods, which the typical North American geologist didn't take very kindly to. In 1940 when they got the supplies ready for a fairly sizeable expedition, in 1960, they took very large quantities of dehydrated foods, very little fresh food. We did take many, many crates of eggs. Up in the old DC-6 that I went up, we had no seats in that DC-6, the crew had seats but the passengers had to sit on top of the cargo nets, no seat belts, it was strictly illegal. And unfortunately we took up a President, a very rambunctious ebullient sort of man in his 60's, the President of a small speculative oil company and he scrambled around on top of our eggs for the whole trip north. By the time we got there, there weren't many eggs that survived. So we had to concentrate on dehydrated food. The ground beef was one of our staples and it sort of tasted something like sawdust if you can picture that. It really was very hard to make it palatable.

NM: Where did you get the aircraft from?

GJ: This was one of our problems as a consultant company. Typically in the oil business it's very hard to get and it was hard to get our clients to make up their minds as to whether they wanted a field party. Sometimes they were waiting for new government regulations or they were waiting for the results of our phot-geological interpretation or some other reason, before they decide whether they wanted us to provide a field party. So consultants always promise that you can do something and at the last minute we had to make it happen. So we would normally go to companies to charter our aircraft, but at short notice it was sometimes impossible to get them and so we sometimes had to buy the aircraft. We bought Beavers and we bought . . .

NM: ???

GJ: Sometimes they came directly from, say the Bell helicopters came directly from the factory in Texas and we flew them up to Yellowknife and then put them on board a bigger aircraft and they were taken to the north. The fixed wing aircraft would fly directly up there. Some of the aircraft we bought second hand, from various bush operators. But where possible we chartered them, but this wasn't always possible. In fact, in Sproule Associates, this was one of our problems, we, by about 1964 or 5, we owned about 6 aircraft. Some years we had as many as 17 aircraft operating in the islands and the trouble then with owning the aircraft was that we geologists who wanted them for 3 months a year, during the Arctic field season, didn't need them for the other 9 months. So I found myself, as head of the field geological department and my colleague, the Vice-President of the company, between the two of us we found ourselves operating an aircraft company, trying to get charters for our aircraft and looking after pilots and mechanics and various people for the other 9 months or the year. And this was quite a chore.

#277 NM: Where were the pilots trained?

GJ: One sometimes wonders if some of them were trained. Some of them were Canadian bush pilots with many years experience, real pioneers of the north. I had one Beaver pilot who actually owned his own Beaver and he'd flown 5 or 6 thousand hours in that particular Beaver and we always felt rather safe with him, despite the fact that he had bottle bottom glasses and looked as if he couldn't see, and the windshield was always so covered in mud that you had to look out sideways to see where you were going. But other ones were quite young pilots, just very recently trained and really with very few hours experience behind them. Some of them became very good pilots and they're still active and a few of them got out of flying altogether, fortunately for their passengers. We had a few ex-Air Force pilots, who frankly, I didn't like. In the Air Force I guess there's a tendency to take risks with government property and maybe take a rather light hearted view and then you sort of bail out and survive somehow, but we were doing this as a business not as a lark and we preferred the pilots who took a systematic view of the way they went about their business. One thing I should mention is, in the Arctic we're flying over water in the summer season, we've either got ice with lots of holes in it as it's beginning to melt or we're dealing with water with cubes of ice floating around in it.

End of the tape.

Tape 2 Side 2

#027 GJ: So because of the dangers of flying over this very cold water where, at best, one could survive about 90 seconds, even under summer temperatures because the water is say, 29 degrees Fahrenheit or say -1 or -2 Celsius, one has to be pretty careful about flying over open water in single engine aircraft. The pilots I appreciated were those who would island hop, taking the shortest routes across the water and would get up to maximum heights that conditions allowed and theoretically keep us in gliding distance of land at any time. Now we always had some pilots who were just delighted to fly at 20 or 30 feet above the water where you had absolutely no earthly hope of surviving if the engine started coughing. We did have a lot of problems with engines that would cough and sputter and sometimes fail because there was often moisture in the fuel. In fact, in the early years we used quite a lot of fuel that had been left in storage on the islands for a number of years. And as the oil drums sort of breathes with a certain amount of air and water going in and out the bung hole, for a number of years, you gradually get more and more water. You also get a sort of dirty sludge accumulates at the bottom, if it's a leaded fuel and that sludge doesn't do the engine much good. So we had a few episodes in those early years and really because of the dangers it was good to have pilots who really took a healthy view of safety. There are some really fine pilots but quite a share of poor ones and one problem was, in trying to get the pilots was that we were often having tried to get them at the last minute to man aircraft that we just bought. I remember one year we brought a pilot over from Ireland at the very last minute, and he turned out to be, well, he had no idea how to navigate in the Arctic. To navigate in the Arctic is tricky because we were very close to the magnetic pole. I mean, in fact some of our base camps were pretty well at the magnetic pole. And the magnetic compass is virtually useless. I have a funny incident with Dr. Sproule, when he first came up the Arctic Islands, I was there at Resolute to greet him, having come in to fetch some supplies and we both got fogged in together and during the period we were there we were chatting and I mentioned that we couldn't use our magnetic compasses, which a geologist normally uses all the time as does the pilot. He just didn't sort of think that was reasonable that we couldn't use such important tools, so he decided to do some experiments in his bedroom, with his compass and he showed me that it always pointed north and it was therefore quite reliable. And I assured him that it wasn't so, it was pointing north because it was parallel with the plumbing in the building. But you had to have a real sense of navigation and those of us that were good at air photo interpretation and the geologists were often better at the navigation than the pilots, who perhaps were more used to relying on instruments. Some pilots were very good, others were poor and would continually be getting lost and having to sit down on some island and try to figure out where they were. Now, you had asked me earlier about getting our aircraft and we did get to the point where running 6 aircraft was a real nuisance to those of us who wanted to do geology and engineering. By the I suppose it was about 1966, roughly about that period, we made an agreement with Pacific Western Airlines, who had been told to get rid of their bush aircraft division, if they wanted to stay in the big aircraft business. This was an edict from the governmental aeronautic authorities, and we joined with. . they had 6 bush planes and we had 6 bush planes and there was another small company called Northwood that had 3, and we put the

15 planes together in a group called Northwood Aviation, which operated for the next 10 years or so. And we still had a financial stake in the combined company but we had less to do with the day to day operations and were able to have more professional staff. Although even that had its problems.

#079 NM: Who were your clients?

GJ: Well, when we first went up, actually Sproule tried to put out field parties in 1959, shortly after the first people had approached the government about getting permits in the islands. For one reason or another, mainly to do with the government regulations not having been issued, his potential clients in 1959 decided not to go ahead with a field party and they just authorized a photo geological interpretation. By the time we went into the field in 1960 we knew the government regulations were coming out imminently. In fact they came out in June of 1960 and our first field party went up in May. Among our clients we had rank speculators who were interested in getting in on the ground floor in a completely new area of Canada where they had good reason to think the geology was good and maybe the government was going to be helpful towards Canadian entrepreneurs. But we also had some of the major oil companies, the large multi-nationals and we had medium sized ones, we really had a big range of clients. There were a few oil companies over the first 5 years or so that put their own field parties up there but almost all chose to use consultants and we ended up with 80 or 90% of the consultant work. So we essentially ended up working up for most of the industry. This had a benefit to them that we could work over the whole area, right from Ellesmere Island to Banks Island, which is 1,200 miles and from the Arctic Ocean right down to Baffin Island. Whereas an individual company could perhaps only afford to put field parties in localized areas. That was one of the things we soon learned was that it was ridiculous for us to work in the Arctic, in the wide open spaces, in the same way that we would work on the plains here in Alberta and Saskatchewan and northeast B.C. Here the oil companies have small permits of 160 acres or that sort of order and magnitude, whereas we were looking at thousands of square miles. But even that large basin was broken up into government permits of relatively small sizes. I mean, they were big by prairie standards but they were still small in terms of Arctic operational convenience.

NM: At the time, was the government [giving easily these permits??]?

GJ: Depends what you call easily. Political critics would say they gave them easily because they didn't demand a lot of money up front in the way that we have in more southerly areas. What the government demanded was that you spent 5 cents an acre on your holdings in the first 3 years. That doesn't sound much but if you have several million acres, it soon mounted up. And particularly as many of the companies that went up at the beginning were these small Canadian companies, it was to them a lot of money. Now the government said okay, you put that money up, you either put a promissary note or a deposit of bonds or some other manner, and then as you spend it on acceptable geology or geophysics or drilling, then they would refund it back to you. So most of our clients were people that wanted to spend their 5 cents an acre. In fact probably 70-80% of all the land in the Arctic Islands was land that we had recommended to our clients. They had field on it with the government and probably, in return their agreement with us as a consultant was that we would spend that 5 cents an acre in an intelligent fashion, evaluating the

geology sufficiently that they knew whether they wanted to continue into the next 3 year period. At that time the next 3 year period was 15 cents an acre, so it was three times as much. And then after that, there was a 2 year period which was 20 cents an acre.

#133 NM: Did they have to wait for a long time before getting the permit?

GJ: No. They had to meet certain government conditions, when the regulations came out there was some mention of Canadian content, not so much at the exploratory stage but they knew when they went to the development stage and wanted to produce, that they would have to be listed on the Canadian stock exchange or they'd have to have a majority of Canadian control. There were certain stipulations. As a result some of the foreign companies dropped out immediately they saw the new regulations. They originally had put their name on the sort of waiting list of companies wanting permits. And then when they saw that there were going to be some problems for them, some of them dropped out, whereas other foreign companies stayed in. So we in our early days of mapping up there, found it just really wasn't practical to work for company A and then work for neighbour company B and C and D and so on, without sharing the knowledge that was found on the lands of each one of them. So what we did very early was to negotiate with our clients to agree that, yes they could have some private information on their own land but that there was certain information of regional value about the different strata, rup??? types, the fossils and the major structures. All this information of regional interest to their neighbours could be shared. And it was really through an evolution of this process that we eventually led to Pan Arctic. In most of the virgin areas of the world, from the point of view of a petroleum geologist, say in the Middle East, a concession from a foreign government to, say, British or American or Dutch oil company, might have been half a country or even a whole country, very large area, here in the Arctic we were still down to relatively small permits. The typical Arctic permit's about 9 miles by 11 miles. It's very big in terms of what we'd had on the prairies but it's very tiny compared with what you had in many overseas countries. So over the first 4 or 5 years of working for clients in the Arctic, we found this frustration of always persuading people to share information and try to get all our clients to have similar ideas so we could work systematically on an island.

#167 NM: Because that must have taken a lot of time.

GJ: It was very time consuming, because we in fact, and when we came back in September and I went for many years without holidays because the minute we arrived back we had to write reports and then we were writing reports right through till we were ready to go into the field the following summer. We had so many clients with very similar reports but each one different and they were rather massive geological reports. Many, many photographs and extensive maps and diagrams and so on. So after we had been doing this for a few years and also partly because some of the Canadian companies when they came up to their 3 year renewal and suddenly had to commit three times as much money, a lot of them were beginning to find they were short of cash and then they were expecting a more expensive renewal later on. And they began getting worried as to whether they had the money. So they began looking for other companies to put in money into their programs. So this gradually led us to further cooperation between oil companies. In 1962,

after we'd been up there a couple of field seasons and were into our third one, we found some oil sands on Melville Island, in an area which is now called the Sproule Peninsula. And there, after finding that we grouped together all the companies in that general area, into an agreement which would pool the land and that particular thing didn't really go ahead very far because at that time oil sands weren't really needed in the Arctic Islands, we had enough of them in Alberta without really having to go as far north. But it did get the idea of the land pooling, you know, got into the minds of the industry at large and we ourselves learned some of the techniques of how to do it. So by 1964 the germ of Pan Arctic was developed and pan Arctic eventually took over the lions share of the lands up in the Arctic Islands.

#196 NM: Who had the idea of forming Pan Arctic?

GJ: I think I have to just back track a little bit, rather than just giving the straight answer. We were working on this idea of pooling lands as I'd already mentioned. We had many, many clients who were coming to us and saying, we're having a real problem in finding the money to keep on exploring, if you hear of somebody that's got some money that would spend on our lands, we'd be very interested. We ourselves were suffering as consultants because we depend on our clients. We had put a great deal of money, not only our clients money but we put our own money. At least it was a great deal for a relatively small consultant company, assuming that we would get the benefits of that investment later on as this area developed. And we were beginning to find that instead of developing as fast as we originally anticipated, there was other things happening in the world which maybe were competing with the Arctic Islands. From 1964 onwards the North Sea began to be developed and of course, that was so much nearer markets than the Arctic Islands that there was great urgency to develop there and money began to be funnelled off to that area. Some of the U.S. offshore areas, off California and some of the Gulf Coast ones were also siphoning off quite a bit of money. And then from January 1965 onwards, the Alberta scene improved somewhat, having been in a bit of a state of depression, not having found any new sizable oil fields for several years, in January 1965 the Rainbow oil field was found and gave a new lease on life. So again, there was competition for money that might otherwise have gone to the Arctic. All these forces were at work and in December 1964 Cam Sproule happened to be talking to one of his clients, Eric Connolly, who was then President of Pembina pipelines and Pembina was a company that we'd worked for in Alberta for many years, but we had also introduced them to the Arctic Islands and they'd taken out permits in 1962 and we had explored their permits. So we had a very close relationship with them. Just in casual conversation, Cam Sproule was perhaps a little frustrated that he wasn't getting the financing and the backing to do the things he had the vision of doing. And he made some sort of general statement to Eric Connolly along the line that if he had \$30 million he could more or less take control of all the Arctic Islands and explore it in a systematic fashion, say the way that British Petroleum did in Iran, where it had the whole country to look at, instead of a lot of isolated permits. And it was just sort of rather casual conversation, it was the sort of theme that he'd been thinking about but he hadn't a particular scheme in mind and that conversation happened and nothing more was thought about it on Sproule's part in particular. So about a couple of weeks later, Eric Connolly came back and said, did you

mean what you said about getting \$30 million and you could get control of the Arctic Islands exploration play. And so I think Cam Sproule was maybe taken by surprise because he hadn't really had a specific plan in mind. But he immediately said, oh yes, he did mean it. But he had to ask Eric Connolly what he had in mind and what Eric Connolly had in mind was, he was a great friend of Dean Nesbitt, the very venerable and well known Canadian financier, who was the head of the Nesbitt, Thompson financial house. Had been involved in things like the development of the Trans Canada Pipeline and various other large financing groups, and Eric thought that it was worthwhile talking to Dean Nesbitt, to see if there was some way in which they could finance exploration, provided we could give them a guarantee that we could get the lands under control. Immediately following that conversation Cam Sproule rushed into my office and said look, if we had \$30 million, what would we do and we immediately got together on some maps and started looking at potential well sites where we had mapped structures and we had been recommending our clients to drill them and the geophysical work that we thought needed doing and what further geology needed doing to fill in the gaps. So rather quickly we fleshed up a program. I always had a personal problem in that Cam was a real enthusiast and then he was promising wells left, right and centre and I was always worried whether we had enough dollars. \$30 million back in 1965 sounded like a lot of money but in terms of Arctic wells, it wasn't that much. So what we began doing then was to take letters, where we took a letter from a client, for instance Great Plains was one of the companies with a lot of acreage and we had a letter from them which we'd had for the last year or so, saying that their lands were available provided we could find someone who would drill wells on certain blocks of land. We had other people we had talked about this, we maybe didn't have a letter but we knew that if we could find somebody to drill on a particular structure, maybe one of the ones we had discovered, that they would be prepared to give up 50% of their land or 80% or some other figure. So rather quickly several things happened, one is that Eric Connolly went and talked to Nesbitt and Nesbitt showed some interest. It took him by surprise but he was interested enough, he came out to Calgary and we spent quite a bit of time with him, explaining about the geological prospects and the fact that you had a sedimentary base and that was in many ways, more promising than the western sedimentary basin here in Alberta and yet it was completely untouched really. It just had some preliminary geological work and no drilling, practically no geophysics and that it was theoretically available on relatively cheap commitment terms. So he got quite interested. At the same time we ourselves began fleshing out the potential program and began talking to our clients and trying to firm up these various potential promises of having their land available.

#332 NM: But where was the money coming from, this \$30 million?

GJ: Okay, well, because it went through various vicissitudes, I think initially Eric Connolly thought that maybe Nesbitt, Thompson would have a public offering if we pooled the lands and you'd set up an oil company based on the money the public put in and you'd use that. When Nesbitt talked to his colleagues I think they were a bit horrified that their very conservative and venerable founder was suggesting what they thought was a rather wild scheme and they were a little more conservative and gradually the scheme developed that if we could raise half the money from acknowledged oil companies, then they would

look at raising the other half from the public or the public offering. But there was a catch. They said they could only afford to raise it from the public if they got a tax concession from the government. So that Canadian tax payers, outside the oil business could invest in Canadian oil exploration on a somewhat similar basis to the way the Americans did it, investing in oil exploration, which gave them a write off against their other revenue. In Canada we weren't allowed to do that. So at that time we collectively, Connolly, Nesbitt, and Sproule and so on, approached the Revenue Department to see if this was feasible. Although there was a lot of sympathy, it looked just too complicated to change the tax laws and all the rest of it. We had a lot of sympathy from the Minister of Indian and Northern Affairs, Arthur Lang, and John Macdonald, his Deputy Minister and other senior officials. They felt that they couldn't do much necessarily, to influence the tax department but they were anxious to help us and over the next year or so new legislation was developed called the Northern Mineral Assistance Regulations, whereby if money could be raised for exploration north of 60 and this didn't have to be petroleum and natural gas, it could be mining too, if money could be raised from non-normal industry sources, people that weren't normally eligible for a tax write-off, then the government would match 60% of the private money with 40% of government money. And this law went through Parliament and in fact, was never used by Pan Arctic. By the time we finally got Pan Arctic we had no time to go through this relatively slow mechanism, we had to find another mechanism. But it has been subsequently used by various other mineral enterprises. This would enable Canadians, say people had made money in brewing or in some totally different industry, could put money into exploration and put it in on a basis that was attractive for them to do so. Whereas that was one of our problems, why we had so much foreign ownership in Canada was that it was easier for the American tax payer, just an individual or a company in some other business to put money into Canada and get the rebates than it was for a Canadian citizen.

End of tape.

Tape 3 Side 1

GJ: While this preliminary look at financing and the problems it entailed and tax regimes and so on was going on, we were getting further into our negotiations with the many, many clients and other land holders in the area. Now, as we said we did have a few initial letters and then we had these verbal promises so Dr. Sproule rushed up a bunch of 2 page letters to people saying we'll do this \$30 million of exploration in the vicinity and you'll get the benefits of all this and it'll upgrade you land. In some cases he hoped to earn a percentage of their land just on the basis that we'd do all this activity and also we would keep their lands in good standing with the government, we would pay their 15 cents an acre or whatever it happened to be as part of our program. But in many cases, particularly where the oil company felt that their geology was good, either we or they had identified a structure which needed drilling, in many cases they said, well you've got to drill 1 or 2 or sometimes 4 or 5 wells as part of your commitment to us. So in some cases Dr. Sproule had already informally committed to drill wells and part of my job really, was to go over these various promises made, on a rather casual basis and try to top them up and see if we

were going to have the money and how we would do it. One problem I had right from the beginning was it looked as if we might have already committed our full \$30 million, if not more, before we even had it. And so that was of some concern to me. Then the other thing we had to do was to evaluate all the people's lands and decide which was the best. And if we thought the land was very high quality, then we probably said that in return for spending this \$30 million in the general area, plus some drilling on their land, we would earn 50% of their land and they would retain the other 50%. If we didn't think the land was so good, then we'd probably say we wanted to earn 80% or in some cases even 90%, and they would just retain 20% or 10%, some lesser percentage. And so we had to pretty much evaluate the value of the geology and then we had to negotiate with the company to get them to agree with our evaluation that their land maybe wasn't as good as that of their neighbour, therefore we should do less work or we should earn a higher percentage. That was quite tricky. Fortunately because we did know more about the geology than anybody else in the industry at the time, we were able to persuade virtually all of our clients that in fact we did have a good basis for judgement and they trusted us that we were treating everybody fairly on an equal sort of basis. This is a rather unique condition because normally oil companies are very jealous of their privileges and believe that they know more about their own geology than anybody else and this was rather unusual that they trusted a consultant so much.

#039 NM: Did you have to go in person to do all the negotiations?

GJ: A great deal of it. Initially we rounded out our set of brief letters just outlining the bare bones terms and Dr. Sproule himself sent off most of these. And then I was the one that really took it over from there, together with our legal counsel. I was very fortunate that I had a man called Fred Phillips, from a firm called Allan, Mackimmie at that time and then later became Mackimmie, Matthews, who was very versatile. Most lawyers tend to go by precedent and if there's no precedent they sometimes have some problems. In this case we had a very versatile man who was prepared to work with me, a fairly young geologist who wasn't really versed in the legalities of oil and gas agreements and to develop new ones to cover what was a very different sort of project from anything that had hitherto been undertaken in the industry. So we had then to translate these two page brief letters which really had very little legal validity but did constitute, well, they were fairly firm promises as to what we would do. We had to translate those into meaningful legal documents. This is where I had problems with Cam Sproule just because of his different personality. He frankly wanted to get on the job, he wanted to get field parties into the Arctic and he wanted to start getting geophysics and drilling and things. And he assumed that we could go from this two page letter into full legal agreement and get the thing financed and off the ground very fast. And it was soon very apparent that we were going to end up with very complex legal documents which were going to take a long time to negotiate. And at the same time it was clear that the financing was going to take time. Although everybody in government and many of the people in the financial community seemed pretty sympathetic and there was general agreement on the sort of thing we were trying to achieve, when you got down to detail, there was a tremendous lot of detail that needed handling. So I almost, because of Dr. Sproule's personality being a somewhat impatient man who wanted to get moving, I inherited the negotiating because it needed a

lot of patience.

NM: Diplomacy too.

GJ: Quite a bit of diplomacy and that was ne thing Sproule wasn't strong on. He could be quite charming but he could get quite annoyed with his clients if they didn't agree with him sometimes. So we had to have these long, complex negotiations, land men, lawyers. .

#070 NM: So you took over ???

GJ: Essentially I took over that work. It was partly, my role was increased rather rapidly because Dr. Sproule had a fairly significant illness and was away for quite extensive periods, some months and really, by the time he was able to get back to work, he'd lost touch with the complex negotiations and never really got back into that side of it. He continued to take a great interest in it and he continued on some aspects of the financing and some of the governmental relations and various other things but he really never got back into the land negotiations.

NM: Was he bitter about it?

GJ: I don't think, I think he was glad he was being carried on. I think there was a few times when he thought I was giving away more than was necessary. Unless one's in the heat and details of the negotiation it's difficult to know what concessions are necessary. I think there were times when he thought I was over generous and of course, the clients thought I was the other way around so I was sometime between the devil and the deep blue sea. But it's difficult to tell. I don't think Dr. Sproule ever appreciated the difficulties and the complexities of the negotiations, he certainly could never understand why they took so long. But we ended up with, after 3 years or 2 3/4 years, we ended up with 23 major agreements, with about 75 oil companies. Most of these documents ran to 100 pages or more and they ranged from major companies like British Petroleum or Chevron or as it was then called, California Standard, by large multi-national companies who had concerns about things like U.S. anti-trust and all sorts of complexities, nothing directly to do with the Arctic, down to simple speculators who had a few permits and were hoping to make a profit on them. And we had to try to make agreements which would match all these different sort of corporate entities. At the same time would be things that Pan Arctic, once it was formed, could live with for the next 20 or 30 years, including the production stage, when millions of dollars would have been at stake. So what you had written in the agreements was going to be very important to the success of the company. I suppose I and my colleagues, you could say, fools rush in where angels fear to tread and in many ways, if we had realized the complexity before we started, we probably wouldn't have started. That certainly I think applied to Dr. Sproule because I'm sure in the rather simplistic beginning, there was no feeling for the very complicated end results that developed.

NM: How many acres of land was the project covering?

GJ: When we finally got Pan Arctic off the ground we had put in about 40 million acres, which was the biggest farm out, certainly in Canadian history and probably the biggest in world history, in terms of land involved and number of companies. And at that time, the dollars involved were pretty high, by present standards they may be, with our cheapened dollars, maybe some of the newer agreements run into higher figures. We could have had

more land in, but basically we tried to get all the onshore Arctic Islands land, which we thought was worthy of putting into the package. So we were offered some land which we just didn't think was worth putting in from our geological standpoint. We accepted some because we had to. If a company had a block of land and some of it was good and some of it was bad, we sometimes had to take the bad in order to get the good. Perhaps I'll lead now, into the next phase beyond Pan Arctic, perhaps it's a bit premature but may as well mention it at this point. At the time we were just getting Pan Arctic off the ground or getting well advanced in the negotiations, in late 1966, had some discussions with a leading offshore drilling company. One of the pioneers, not just in the drilling but in all the engineering and environmental problems that went with offshore drilling and this company, Global Marine, had drilled the first offshore wells in Canada, two wells on the Grand Banks, under very difficult environmental conditions, in a year when the hurricanes came in close to the Canadian coast, so it was much worse than it normally is. And this company was looking around the world for places that it, as a drilling contractor could get into the oil business as a land holder, rather than just a contractor. But it wanted to do so in a place where it wouldn't upset it's normal clients, such as Esso and Shell and the other worldwide companies. Through a series of circumstances, working with two of my colleagues, I got in touch with Global Marine and they showed great interest in getting into the offshore of the Arctic Islands. Previously we had had some conversations with Dr. Sproule suggesting that we should not only include the onshore in Pan Arctic but that we should include the offshore. Surprisingly, considering he was such a visionary man and had been a real pioneer in the Mackenzie Valley and then later in the Arctic Islands, and had many sort of perhaps, wild concepts, he nevertheless didn't have any belief that the ice infested offshore would ever be exploited. In fact he said, no one would ever drill there in his lifetime or in my lifetime. Well, as it happened he did die rather prematurely and before the first offshore drilling was done, but only just a short time before and I'm fortunately still alive. So that in fact, we have found ways and means to drill in the ice infested offshore. But because of that he decided he didn't want them in Pan Arctic. He just felt that he had enough problems and the offshore was a complication which he really couldn't see an answer to. So it wasn't put in and it was really sort of very reluctantly that he gave me permission to deal with Global Marine, which in fact is what started the offshore ice infested water exploration in Canada, except for a few areas, such as the Mackenzie Delta, where Esso had gone out into very shallow water, 5 and 10 feet deep. But nobody previously had consciously gone into water of several hundred feet deep and purposely filed on permits. So that was, while we were setting up Pan Arctic, a very large land based thing. .

#160 NM: You were the first Corporate Secretary for Pan Arctic?

GJ: Yes. That was one of the titles I had. I suppose my main role was as chief negotiator but in fact, when we had to set up a company, there was a handful of us involved. Essentially Sproule who was sort of the leader in terms of the money that had been put in and I of course, worked for Sproule and then Connolly had been involved in the idea and had continued to cooperate in some of the discussion on financing and some of the governmental discussions and then our legal advisors. Really it was just a handful of us that were involved. Some of our other geologists and engineers would from time to time

be called upon for some help but it was really just a small group. And after some discussion it was decided the Eric Connolly should be President and Sproule should be Executive Vice-President and I was made Corporate Secretary, we were the three officers. Sproule I think, he really was the leading light there in terms of the ideas and the money put in, but I think the financial community were a little scared of this wild geologist and so Eric Connolly seemed to be a more solid sort of businessman, financial man, so that's why he became President rather than Sproule. I was Corporate Secretary but my real function really, was many other things. There really wasn't much work for a Corporate Secretary to do at that time.

NM: How did finally Pan Arctic get off the ground?

GJ: Well, it was fairly complex. We had a lot of pressures on us. Quite early on in the negotiations we had been promising all our clients that once we formed this new company that it would take over all their expensive exploration work, therefore these companies didn't wish to put up any more money, knowing that somebody else was going to spend the money for them in the future. Yet several of them were coming up against their renewal dates on their permits with the government. There had been many people who went into the Arctic in 1962 at a time when a well had been proposed on Ellesmere Island, so a lot of new acreage had been taken out. All this acreage was now getting to its third year and had to be renewed during 1965, which was in the first few months of the negotiation of Pan Arctic. So we went to the federal government who had been quite sympathetic towards the idea of Pan Arctic and realized that it would enable people to keep on exploring in federal lands in the frontier instead of putting their money into some foreign country. So they were quite willing to help and we asked them if they would put a moratorium on the spending commitments of the companies that wished to join Pan Arctic, to give us time to complete the negotiations. In fact, over the next 2 1/2 years, they gave us several moratoriums, we had to keep asking for extensions because the negotiations were much more complex and took much longer than we initially realized would be necessary and the government were fairly long suffering in it. On the other hand it was to their benefit really, that we should successfully complete this negotiation. So we were under this pressure of time in the negotiations. At the same time we were trying to raise money and we would get commitments of money from various oil companies. Some of them were people that themselves had some permits in the Islands and others were companies like mining companies, International Nickle, Noranda, Cominco, a Norwegian shipping company and various people that really hadn't previously had much to do with the Arctic. But these companies couldn't afford to leave money sitting around for a couple of years without being used and without knowing for sure whether this was really going to happen. So in some cases, as we tried to collect the money and collect the commitments, we'd get some new money from one source and lost it from an old source as they lost patience with our long negotiation. The game plan had been to get \$15 million from industry sources, which would then convince the financial community that this was serious and that it was a worthwhile endeavour, in which case then, Nesbitt Thompson would have raised \$9 million from the public, which could be from people right outside the oil industry, who just wanted to put money into exploratory investment. And then the other \$6 million would have come from a matching grant from the Northern Mineral Assistant regulations. This game plan sort of looked as if it was feasible but we

got up to \$13.5 million in money committed and we just somehow could not get that \$15 million target reached. When we got to \$13.5 million one of the companies dropped out and we were back down to about \$10 million and then \$9 million and then back up to 11 million and then up to 12. It seemed to go on like this for a long period, we just couldn't keep everybody at once. Sproule used to say it was like trying to pick up a bunch of snakes. You picked up a couple of them, while you were leaning down to pick them up the other two slipped out. It was a very frustrating experience. So eventually by the time we got to the July 1st weekend in 1967, we had had so many extensions of time from the government and people had extended the time they were making the lands available to the package and the amount of money they were committing and we realized that something had to be done very quickly or the whole lot would collapse. In fact, many people were predicting that I would collapse. So we did get the key players from within the founding group, Sproule, Connolly, myself and our lawyers together with some of our key Canadian financial interest, in particular John Taylor of Pan Canadian, Bob Armstrong, President of Cominco and Jack Gallagher the President of Dome. So we spent the whole long weekend, I think 3 or 4 days together, trying to work out some solution. Just prior to that we'd also persuaded Sproule very reluctantly to back down from his target of \$30 million, to what we thought was a more attainable target of \$20 million. The problem was he had told so many people in government and outside that \$30 million was the minimum necessary to accomplish his task and he didn't like to sort of lose face by backing down from that but we said, well there's nothing really magic, let's get the thing going and if we're successful during the first \$20 million phase, surely we would get money later on. So we changed our financial target and we were prepared to look at other ways of financing. It became apparent that to go through the Northern Mineral Assistance regulations and also to go through a public offering of money through Nesbitt, Thompson it was going to take another three months or more and we'd just began to realize that we hadn't got three months, the thing would likely collapse before that happened. So at that point we decided to approach the government of Canada, who had expressed great interest for several years in this project, and ask them if they'd be prepared to consider equity financing, either on a permanent basis, or if they wished, on a temporary basis until we could complete other methods. So at that July 1st weekend, several things were decided, one was to approach the federal government, in fact we had telegrams going back and forth during the weekend and we got a serious expression of interest from the government during the weekend while we were still meeting. At the same time I was authorized to go back to all the 75 companies and see if they would be prepared to renegotiate their agreements on the basis of a \$20 million figure and we had a sliding scale for all the different percentage earnings and different blocks and how much drilling we could do. We had to persuade companies that. . .

#298 NM: Did you have a lot of convincing to do?

GJ: Quite a bit. On the other hand, in a way, the gun was at people's heads. If they wanted the thing to happen they had to cooperate. If they were prepared to let it collapse, then they could say no. In fact we did a lot of friendly arm twisting and basically people were most cooperative. It was a tremendous task to get off all the amended legal agreements. There was many, many, many hundreds of pages of new legal paper that had to be developed and

signed and initialled. Some of these companies were not just single companies, for instance Domex, or Dominion Explorers Group, is 16 partners, so you had to have permission from each of the 16 partners before that group could change their mind. And many of the other companies were in multi company groups. Some of them had key people on holiday or travelling on business. There were lots of headaches in trying to get all the key signatures but basically within the three weeks or so, we were able to go back and say that yes, essentially everybody has agreed to this \$20 million figure and they are prepared to change our original targets of half industry money and the other half coming from Nesbitt, Thompson government, changing it to 55% industry money and 45% coming from the federal government as equity. We got all those different authorizations and this was quite a task. Now I should emphasize that I talk as if I did everything, of course, that wasn't true, this was a team effort. Basically I sort of headed one aspect of it, which was the land negotiations and the agreement, working with the lawyers to produce the legal agreements and the promises of how much drilling should be done and this sort of thing. I helped out with the financing but Sproule and Connolly spent more time on the financing and then we all helped out with the government relations. But it was truly a team effort.

End of tape.

Tape 3 Side 2

030 GJ: So late in 1967 we finally got Pan Arctic off the ground. We were able to finally

make public statements that this was financed by 19 different industry interests plus the government of Canada and that some 75 companies had pooled their lands and that we would prepare for geophysical work and not long thereafter we'd be ready to start drilling. Prior to that, for 3 years, we'd been trying to keep a lid on publicity. Obviously there were rumours all over the industry and the press had got hold of it but nobody had the full story of exactly what was happening. They knew a big deal was being put together and we'd had to bring certain industry people into our confidence. For the first couple of years we didn't tell our industry partners where the money was going to come from, that was just kept within a very small group. But finally we were able to sort of start talking freely to people. All the Sproule geology accumulated over the previous 7 or 8 years was made available to the new company Pan Arctic and Sproule finally agreed to consult for Pan Arctic for a minimum of one year. At one time it had just been assumed that several of us from the Sproule organization would just go over and run Pan Arctic. But by the time we had finished all the financial negotiations it became fairly apparent that some of the financial interests would prefer Dr. Sproule not to be running the company. Many of them had a great respect for his prowess as an exploratory geologist and as an idea man but they were very nervous of him on financial matters. Perhaps he was a little wild at time in their view. So when the financing was finally completed, it was decided that since Canadian Pacific Oil and Gas, which is now Pan Canadian, was the largest single industry financial interest and the other big industry financial interest came from Cominco, which was 50% owned by Canadian Pacific, that it was appropriate

that John Taylor, the President of Canadian Pacific Oil and Gas, should become the President of Pan Arctic on an interim basis and also he was Board Chairman. At the same time, because Dome Petroleum had some experience in drilling the first onshore well in the Arctic back in 1961-'62, at Winter Harbour on Melville Island, they volunteered to become the interim operators, until Pan Arctic was able to hire its own staff. So Dome took that role and I personally worked very closely with that early Dome team and the first few employees of Pan Arctic, who were hired a few months later. And we worked together, we had an exploratory committee, who decided what geophysical programs we should undertake and what geology should be done and eventually we were deciding on the early drill sites. And of course, we got into the logistics, trying to build airstrips and get supplies moved up by ship or by Hercules freighters and so on. During this period Dr. Sproule did get somewhat squeezed out, perhaps because he was a little impetuous. He wanted to have field parties up in the Arctic within a week or two of completing negotiations. Whereas the other people were still trying to digest what it was they'd agreed to join and they were also trying to learn about the geology and we handed over many hundreds of reports, some of which had several hundred pages and obviously they wanted to understand what was in them before they started committing to detailed programs. So I suppose it was almost inevitable, that he was better at starting something rather than running it on a day to day basis later. He had a different sort of personality. For some period after Pan Arctic was started I was sort of middle man between the old initial organization of Sproule and Connolly and the new organization which had financed it and was growing up. And of course, we had a tremendous lot to do on the legal agreements. We had completed the bulk of them but there were still probably 15 or 20% that needed completing and we had agreed that certain other companies should be approached, who we had previously chosen not to approach, for various reasons. In order for Pan Arctic to have virtually all the acreage it was felt that we should try to round up these last few companies. So there was quite a lot of continuing legal work, which I continued to spearhead but gradually we had the new employees of the new company were gradually phased in, so they were able to take over, perhaps 9 months or a year later. By the summer of 1968, it was possible to put seismic parties into the field, mainly on Melville Island and to start the systematic, second phase of the exploration, to supplement the previous geological exploration by Sproule. Prior to that time there hadn't really been much geophysics, a little of gravity and magnetics, but very little seismic which is the main tool of the exploratory industry. Then this all led up to the early drilling in 1969, in which two rigs were sent in. A shallow rig to work on northwest Melville, on the Sproule Peninsula, which came up with a dry hole and a deep rig, which was sent up to Drake Point and made the discovery of one of the largest gas fields in Canada, perhaps the largest single field. And that brought a lot of unfortunate publicity, in that the Drake Point well blew out and it belched out a lot of salt water, as well as gas and then the salt water froze and formed a sort of ice volcano of a couple of hundred feet high close to the rig. So there was a lot of publicity on that. One of the problems in, as always when you start a new company is that you have new staff who are not fully welded together as a team. A lot of very capable individuals but perhaps the team work is lacking, it takes time to develop that and Drake Point, as one of the largest and most prolific gas fields in the country was a tough one to start on. Although it was a very spectacular start and it

certainly showed people that there was a lot of hydrocarbons waiting to be found in the high Arctic. Perhaps I should say that I'd had a very exciting 3 years or so in setting up Pan Arctic and I was still running the geological department at Sproule, which was I suppose about 40% of the company but had taken a bit of a sideline and the people that worked for me had to do most of the work. I did what I could in my spare time but setting up Pan Arctic was pretty much a full time job and a rather exciting one. It was a 7 day a week job for 15 hours a day probably, most of that 3 years and it was very hectic. The Sproule organization had stuck out our necks financially as well as other ways. In fact for a relatively small company we had accumulated tens of thousands of dollars of lawyers fees and things which we were hardly in the position to pay. And we had stopped doing a lot of our regular consulting geology. Most of our clients in the Arctic were waiting for Pan Arctic to form so they didn't give us any consulting contracts

#129 for 3 years, because they thought Pan Arctic was going to do the work for them at no expense. So there were many things that Pan Arctic had disrupted the company in many ways. It was good for it in certain aspects, but it was a long shot and a very risky one. If it had totally collapsed we'd have been left with a lot of bills and nothing to show for it. So I came back from day to day full time work for Pan Arctic to coming back to this trying to pull together my geological department. Most of our work was in Canadian frontiers but we did have some work in overseas areas, with a few field parties and so on, in Australia and Central America. And we were planning to work in Greenland and so on. But I personally felt it a little bit mundane coming back to this sort of normal slogging away at running a department after I'd had the excitement of all the negotiations and things leading to Pan Arctic. And it wasn't too many months thereafter that I was approached by my offshore clients, Global Marine, who was really my sort of personal client, without much intervention from Sproule, who didn't really believe in what I was doing. They asked me if I would set up some companies and offices for them here in Canada. So a few months later, instead of joining Pan Arctic, as perhaps had originally been envisaged, I ended up joining another company and getting involved in the next phase of Arctic exploration, which was really the offshore phase. And in fact, later on Pan Arctic became one of the pioneers in that offshore phase. Because it was found that the geology offshore was much better than the geology onshore. So that's more or less the gist of the phase with Sproule and the setting up of Pan Arctic. There were a tremendous lot of people in the oil patch involved in that whole phase. There's still people around town that I spent months with over that period and a lot of very prominent people got involved in some way or other. A lot of people tried to be helpful, some of them that tried to be helpful in fact were a hindrance because they took up a lot of time. But it was a rather remarkable effort and I don't think we've ever had anything quite like it before in the Canadian oil industry and nothing quite like it since. It's ended up setting up something unusual, that we have a regional oil company. It just works in one area, the high Arctic, which is unusual, which is a complicating thing. Because most companies like to be diversified, Pan Arctic has only one object, which is to find oil and gas in the high Arctic. They've been pretty successful, they've found many, many trillions of cubic feet, quite a high proportion of Canada's total reserves but they haven't been successful in being able to market it. We're still waiting for a transportation system. Of course, in the meantime we've found so much gas in southern Canada that we have much less need for gas from

the north than we had at the time we started looking. Fortunately over the last year or two, we have been, or Pan Arctic has been finding some oil and hopefully that will become commercial before too many years go by.

NM: Thank you very much for this second interview, Dr. Jones.

Tape 4 Side 1

NM: This is Nadine Mackenzie speaking. This is the third interview with Dr. Gordon Jones. Dr. Jones, who was the first President of Pan Arctic?

GJ: Well, Pan Arctic's only had one President in its whole history, that's Charles Hetherington. When Pan Arctic was finally formed, by a consortium of companies and the federal government, on an interim basis, Dome acted as operator on behalf of the owners and sponsors. Gradually in that first 18 months, while Dome was operator they began hiring personnel for Pan Arctic. One of the initial senior employees was Gordon Crombie, who became the Vice-President of Exploration and several geologists and engineers and others were hired during that period, before they found a President. Charles Hetherington was chosen and subsequently continued building up the company and has been in that role every since. I personally hadn't known him, although he was fairly well known to many of my colleagues at Sproule, particularly those dealing with gas and pipelining.

NM: Was there any controversy when he was hired?

GJ: Not that I recollect. We had one or two other candidates that were seriously looked at but I think he was felt to be the most appropriate of those. At an earlier time it had been assumed that the Sproule organization would have provided the senior personnel for Pan Arctic and in fact Dr. Sproule himself had wished to be President at one stage. At a later stage, Eric Connolly, who was also involved in the organization, actually he was President but it was President of a shell company. Charles Hetherington was the first President of the actual operating company. So I suppose technically speaking I was incorrect in saying he was the first one. But once the company was financed and ongoing it was assumed that they would bring in some outside person, with operating experience in the oil business and Charles Hetherington had been prominent, mainly in the pipeline business.

NM: Can you tell me about his contribution to Pan Arctic?

GJ: I think certainly in the last 10 years, a very important role has been continuing to enthruse financial interest to keep on putting money into the Arctic, given that despite finding very large quantities of gas and some sizeable amounts of oil, there's still no market available. And for the original backers and new backers to keep on putting very large sums of money into an area where the outlet to market by pipeline or by tanker is still quite remote, is a considerable feat.

NM: The costs must be astronomical too.

GJ: The costs are very considerable. I haven't got a recent figure but it must be well in excess of a billion dollars and of course, the people that I was first involved with were putting money in, in 1959. So that's a 24 year period in which people have been putting money, without any return on their investment.

NM: So they do not get anything back until now?

GJ: No. Not only until now, but until maybe quite a few years for now. So that I think Charles Hetherington's contribution has been as a sort of super salesman to enthuse people to keep stay with it and to keep putting money in to keep it moving. And it has managed to remain reasonable well financed and keep up a fairly significant program year after year ever since it was formed. That's quite an achievement. Many of his colleagues, the Senior Vice-Presidents and other people carry on the day to day business and I think that has been his particular role and he really is a man who does engender enthusiasm.

#053 NM: Going back to your career, can you give me more details about your role with Global Marine?

GJ: I think I already discussed, in an earlier interview, a little bit of my early contact with them, whereby this highly technological company, one of the world's pioneers in the offshore, had been looking around the world for places where they could develop offshore technology to meet enormous challenges, from an engineering point of view. And do so, preferably in a manner in which it wouldn't upset their main clients, which were the major international companies. Many other offshore drilling contractors had started going to the oil business as opposed to just the contracting business and Global Marine, rather nervous that the Essos and Shells and other large companies might resent that if they started taking lands adjacent to their own and possibly there might have been conflict of interest. So when I approached them shortly after they had drilled Canada's first two offshore wells on the Grand Banks, they were very interested. The fact that the Arctic Islands offshore had geology which looked very, very interesting and yet none of the oil companies had dared venture into it because of their concept that the ice conditions and other environmental conditions made it virtually impossible to work in. As a result I just happened to come along at a time when it fitted Global Marine's policy to move into the area. Their concept was that they wanted to spend the time doing engineering and environmental research but they couldn't afford to do it unless they knew somebody wanted to drill it. So if they could get the lands in their own name then they would be in a position to spend money and time on the development of these technologically advanced systems. So one of the first things we did was to go down to Ottawa to see the federal authorities, the then Minister for the Department of Indian and Northern Affairs, Arthur Lang and Digby Hunt and several of the senior civil servants and discuss the fact that we wanted to spend money on engineering in an environment and yet we wanted that effort credited against our promise to work on the lands that they would grant us. Normally it was at that time, one had to do geology, geophysics and drilling in order to obtain credit. It was much less common to do research effort and be given the credit for it against your work commitment. So we had to establish that this was possible and in fact. . .

#085 NM: Was there a lot of negotiation then?

GJ: Well, maybe not a lot. The people in Ottawa seemed to grasp what we wanted to do and they very much welcomed the fact that somebody was going to look at this ice infested offshore, which had hitherto been just written off as being inaccessible and of no value. It really potentially opened up a vast area of Canada's Arctic, should it prove possible to work in these waters. Of course, subsequently, the offshore has turned out to be much more promising than the onshore, so it really opened up a new phase for Canada. Now I

should say that in the Beaufort Sea, Esso in particular or Imperial as it was then called, had crept up gradually into 6 or 10 feet of water, in the very shallow water. So there had been a little bit of effort in the ice infested offshore but nobody had consciously gone out into the deeper waters. So in a way, we did pioneer something which has subsequently become rather significant. When I had been working for Global Marine as a consultant for some time and after we'd got Pan Arctic off the ground and I was back to work at Sproule and the more mundane role of running my geology department, I continued dealing with Global Marine as one of my clients and one day in conversation their need to set up offices and some subsidiary companies in Canada came up and it just happened to sort of fit my needs at the time, that I should leave Sproule and take up a new challenge with Global Marine. We started fairly modestly and one of my specific roles of course, was to guide the exploration of the rather extensive lands that we'd taken in the Arctic Islands offshore. But in addition I had to work very closely with the environmentalist who were studying ice conditions, oceanography, meteorology, the ??? that's the bottom of the ocean. And also with the engineering team that was then trying to work out which drilling methods were most appropriate to work in these ice infested areas. So from being just a geologist and perhaps working closely with geophysicists I began working more and more closely with oceanographers and meteorologists, engineers, a whole bunch of interesting people. And I suppose for me, it was a real turning point in my career when I widened out from what I'd really been trained in which was the earth sciences and started moving more and more into engineering and environmental areas. Now Global Marine, while being a fairly big offshore drilling contractor, in terms of oil companies working the frontiers, nevertheless still a fairly small company. I suppose it's true to say that I myself was a little disappointed when I realized how limited the funds available for some of the things I wanted to do was. And it was almost inevitable that we had to take on partners and quite a lot of my effort was to work closely with the partners. The first one that we brought in was Sun Oil company and they joined us almost at the same time as I joined Global Marine. Here was a large oil company with a lot of experience in many places but virtually no knowledge of the Arctic. So one of my roles was to help educate our partners and to work with them, advise them and sometimes to fight with them.

#131 NM: Was it difficult to find partners at the time?

GJ: Yes. Just as it had been difficult to find people to finance Pan Arctic, where some people felt we were trying to sell plots on the moon. That was to finance an onshore exploration program, here we were talking of going to the offshore, one of the most hostile places in the world, or it certainly seemed to be to the people at that time. And waters actually were almost permanently covered in ice and yet it did move sometimes so you couldn't just sort of say, this is a nice convenient platform because sometimes it moves and breaks up and you have big storms and so on. So when we started to try to interest people in coming into this, there were a lot of people that were very dubious about it. It's curious, the whole filing, from the time in I think it was -I believe it was March 1967, it might have been as late as May, where we did the first filing- we did it under the name Canada Trust initially because Global Marine wanted to alert their main worldwide clients to what they were doing and they thought they wanted time to talk to them before actually, officially admitting that they were responsible for this brand new thing. I found many of my friends

around Calgary, as I met them on the street and in conversation, they'd say, did you hear about those nuts that filed on this acreage way out in the ice covered waters. I said, I'd heard about it and I never admitted that I was the responsible party. But it was surprising that a little later on, I think for political purposes, Arthur Lang and his cabinet colleagues felt that this new play should be advertised and I suppose as all politicians he wanted to take some credit for it. So they asked Global Marine if they'd mind having an announcement made in the House of Commons and a public statement that this had taken place and that a major offshore oriented company was exploring and developing engineering and studying the environment. So at that time Global Marine, somewhat reluctantly, came out of the closet and sort of announced who it was. And it was surprising the effect on these same people that had been so critical, thinking what a stupid thing that somebody was doing.

#162 NM: So then they took it seriously.

GJ: Oh they took it very seriously and within a few months of that announcement being made about 400 million acres were taken in the ice infested offshore, off northern Canada. It became just a land rush, a gold rush sort of effort. Now there were other things that happened which helped cause that to happen. One was that Pan Arctic did finally get financed, that happened after Global Marine had moved into the area. And the other one was that late in '69, the first Prudhoe Bay discovery was made and early '70 that became known to people. I may have slipped a year on those dates, I'll . . .

NM: We can always go back to that.

GJ: But there was really no relevance to Prudhoe Bay, geologically with the Arctic Islands, very tenuous resemblance and it's a long way away. But to many of the investing public and some of the people within some of the oil companies, on a small scale map it looks pretty close and it looks relevant and it certainly helped get this sense of excitement.

NM: It was good publicity.

GJ: Yes. So really, what had become a rather cautious move by one company to move into very selected places. In fact we selected Global Marine's acreage very carefully on the basis of whatever information was available. But we used existing knowledge of bathymetry???, which sometimes reflects the geology. We used some gravity and aero magnetic information and the knowledge of the neighbouring onshore geology. It was fairly carefully selected. We never went out and took a sort of blanket block of permits. There was a good reason for each one. We had originally recommended they took 10 million acres and they only took 2.2 million, because I think . . .

NM: Why?

GJ: The President of the company was perhaps a little nervous that he was stepping on to a pretty wild scheme and maybe his colleagues and directors didn't really give him carte blanche to move ahead too rapidly so unfortunately for them, they backed away from the other 7.8 million acres, which included several of what have now become very major gas fields. Now subsequently, 18 months later, by which time this whole land rush was taking place, they did pick up another 2,8 million acres. And then when they joined with Sun, Sun contributed a block of about 1.6 million acres, so they ended up with more than 6.5 million acres, but even so, they could have had more and at very modest cost. But I personally always regretted it and I had quite a lot of arguments with senior management

as to why they weren't a little more aggressive but then I was labelled as an Arctic enthusiast and they were hard headed business men.

#211 NM: What about the research being done at the time?

GJ: Well, before Sun Oil joined Global Marine, Global Marine initiated a general study of the environment, the ice conditions, the coverage, how thick the ice was, how strong it was, whether it moved and how much, when it moved. The studies of the oceanography, the waters under it for currents and also the meteorology, the climatic conditions. We also had a general study of the logistics, what bases were available, where other bases could be formed and so on. Now after Sun Oil joined us those sort of studies were continued. As well as desk studies and studying all existing literature we did send field parties into the Arctic, we had people camping on the sea ice off Sabine Peninsula, Melville Island and they did the first ice movement measurements. Everybody knew that the ice must move to some extent because there were cracks forming in it and so on. But no one really knew how much it moved and when and whether it was a matter of a few feet or whether it was much bigger.

NM: So research had to be done for that.

GJ: Yes. And we had to find ways of measuring it so we tried out two new systems which hadn't been done anywhere else in the world previously. One included having a taught wire from a surface installation on the ice down to the ocean bottom and measuring the angle on the wire as it moved, inclinometers. The other one involved an electronic system whereby you have a sound signal on the ocean bottom and you have recorders below the ice and you measure the movements that way. These are fairly complex when you get down to the techniques involved and we had to do a fair bit of experimentation. . .

NM: Was it very accurate?

GJ: The early ones, I think they were accurate enough to tell us what we needed to know at that time but subsequently those were refined and became more accurate. And various other approaches to the same problem have been used. But that's something that's continued right to the present day but this was an early pioneering effort. When Suncor, or Sun Oil as they were then called, joined us, these sort of studies continues. We sent field parties to do geology to supplement that which had been done by the Sproule organization. We had bought a lot of the Sproule data. And so we enhanced this. At the same time we were working on underwater seismic and we did quite a lot of gravity work. Gravity was fairly easy to employ and it gave us fairly good results within the limitations of that articular geophysical tool. Seismic is always the most precise exploration tool for the oil industry. The problem when you move offshore into the ice infested areas, that you can't do your normal marine seismic, towing a mile long streamer behind you with lots of sensors. You can't do your normal land seismic, making fairly deep holes and putting explosives into the land. You have to have new techniques. It was fairly easy for us to find techniques of drilling through the ice and putting sound sources in, usually some form of explosive. But to then. . the actual acoustic signal or the information that comes back to you, was very difficult to interpret. Because you send a sound down to the ocean bottom and into the rocks beneath it. Instead of just reflecting back from the hard rock layers and giving you a nice sort of picture of how the layering and the structures within the geological strata occur, you would get the signal coming

back, hitting the bottom of the ice, and rebounding back to the bottom. All sorts of extraneous acoustic information which was of no use to you.

#286 NM: Not needed at all.

GJ: Completely masked what you wanted to see. So the early offshore under ice seismic, we got very, very little data. And it was costing us I think we were getting up to about \$11,000 a line mile at a time when the going rate was probably, well down in the province, say \$3 or 4 hundred and in the mainland Arctic was probably a couple of thousand dollars and we were up to \$11,000 and still not getting good results. So we had a lot of research and then just as we were making quite considerable progress, 1971-'72-'73, at the same time Pan Arctic was beginning to go offshore. They had started onshore and they also realized that the offshore had probably more potential than the onshore. And so we often joined with companies like Pan Arctic and also the French company, Elf??? was doing some offshore experimentation. Collectively between us, we gradually, by about 1973-'74, were beginning to get adequate results. Enough to give us the courage to start drilling some of these anomalies. At first we didn't know enough about it to be completely trusting that we really had drillable anomalies.

NM: How long did it take until you start drilling?

GJ: The first offshore drilling, actually oil field style drilling was in '74, so it was really from about '68 when we really started a fairly conscious field effort through to '74, we really were working on defining the structures that we had and deciding whether they were drillable. There's an interesting research effort happened in '72, which was somewhat unique and didn't in the end give us quite the results we wanted but I think could have been promising. That was, to use a mini marine system. Whereas ordinary offshore techniques, using 180 foot vessel trailing a streamer were not practical because the vessel couldn't get into the ice infested area, or if it could it had the danger it was going to get stuck there or that the ice would move in and stop it.

End of tape.

Tape 3 Side 2

GJ: Normal marine techniques couldn't be used or at least you couldn't trust that they would be successful. You could bring a vessel all the way to the high Arctic, a couple of thousand miles from the east coast and when it got there it might be completely stopped by ice and not be able to get into its area. So that was a tremendous lot of money to lose. In subsequent years some work was done in this area, on an opportunistic basis and there was some success, but initially people felt it was too expensive to try. So in '72 we tried this mini-marine approach, which was to take I think it was a 17' vessel, very, very tiny by seismic standards and to carry it by helicopter and then to put it into leads, that is the gaps or cracks within the ice, which can be a matter of a few tens of feet across to sometimes a few miles, depending on the season. Obviously a 17' vessel couldn't carry the heavy sound sources which are used in the conventional system, nor could it tow the long heavy streamers that were used so a mini system was formed with much smaller, shorter streamers and much more delicate instruments and we used air guns which were smaller

than the ones conventionally used in the seismic industry now. But we got some quite good results in limited areas. Unfortunately we chose probably the worst year for 10 years, in that there was very little open water. So the helicopter sat on the islands waiting for the water to open up for quite long periods and then unfortunately we had to use the heaviest helicopter available in Canada at the time and there was only one of them and it.

#027 NM: Only one.

GJ: Yes. And it managed to break its tail rotor and we lost 3 weeks when we had the best water conditions. By the time we got that fixed the water was beginning to get a thin sheet of ice on top of it, our small 17' boats were having to break their way through thin ice and it was rather bad conditions. But we in fact did get some quite good data, some of the best that had been got to that time. Had we not found better ways to operate from the ice sheet we probably would have pursued that. But about the same time our ways of operating from the ice sheet became better so we didn't pursue it. But I think subsequently that mini-marine system has been used in places like Lake Titikaka, in Bolivia, where you couldn't just take a large vessel up the mountains. So it was an interesting research experiment. It just didn't happen to work out in the particular circumstances. But there were many other forms of research. The next one was in the drilling method. We had been, during all this period, looking at a whole series of different techniques, from drilling from under the water, in some sort of submarine method to building casons, somewhat along the lines of those now being used in the Beaufort Sea, sheet metal piling around. . .

NM: Were you looking at techniques in other countries?

GJ: Oh yes. Obviously, I mean, Global Marine had been the world's first ocean going drilling company and had been pioneers in many areas and had been the first or among the first two in Cook Inlet and had drilled off Cape Horn and in various remote areas, some of which were ice infested. So they had a lot of experience but no one had experience for anything quite like the Arctic Islands. So yes, you'd learn things in other countries and you'd look to see if some of those might apply. Certainly one of the things we looked at, at that time, was artificial islands, I recollect making a speech in ??? in Montreal in the spring of 1969 in which I mentioned the possibility of using artificial islands as one of the techniques. In the Arctic Islands, where we were operating, most of our land was in relatively deep water, 300-2,000 feet, which was too deep really to consider artificial islands. But we had a few places where they looked as if they might be possible. As it happened that technique has been developed in the Beaufort Sea and been very successful. It wasn't pursued really, for the Arctic Islands. We looked at helicopter transportable rigs which could be moved over the ice and used on the ice. As it happened, although we did considerable work on a number of methods and probably the favourite one in Global Marine and for a time, in Sun Oil, was the use of an air cushioned vehicle as the basis for carrying a drilling rig. But while we were working on that fairly sophisticated system Pan Arctic moved ahead with the use of a light rig on the ice sheet and that really became the sort of bread and butter way of doing it, which has really persisted to today, with some refinement. I suppose in a way I'm straying out of my own experience to that of my neighbour Pan Arctic, but in '73 they just put a truck mounted

rig on the ice sheet, very, very light rig for coring. Well, not a real oil field type of rig and it showed that fairly shallow cores could be made from the natural ice which was 6-8' commonly, sometimes more. So that was enough that by 1974 they were able to put a normal small oil field rig out onto the sea ice but they had to artificially thicken the sea ice by spraying sea water onto it at a controlled rate to make an ice pad and then that could sustain the weight of a 500 ton rig.

#074 NM: Was this ice pad very, very thick?

GJ: The ice pads initially were in the order of 15 or 16 feet, to sustain a 500 ton rig. Later rigs up to about 800 ton were used and then by the time they got to a 1,500 ton rig the pads were of the order of 21'-23', depending on how much was old ice and how much new ice. Now in many of the more northerly locations of Pan Arctic they've been able to use just the natural ice which sometimes is 20-30-40 feet thick. But that's multi-year ice. The one year ice gets up to about 8 or 9 feet. At the end of spring, before the summer break-up, but if you're in an area where the ice never moved very much, has been there for a long period, then it can be maybe 60' or more. Which also presents some problems. So the method of drilling there has tended to concentrate or almost exclusively on slight refinements on what Pan Arctic originally did. The more sophisticated system that Global Marine emphasized was very interesting and still has great promise for a number of things. In 1971, having looked at air cushioned vehicles existing in various places in the world, we built a 300 ton gross loaded capacity, air cushioned vehicle, which was the worlds biggest at the time. That was built in Edmonton and it was tested first, as soon as the snow went off the ground, it was tested outside Edmonton on this rough hilly terrain. It really amazed the people that built it and the contractor in that it lifted off the ground and it could be moved around because these people that built this steel vehicle, not an aluminum one as had hitherto always been done, that you could lift this heavy vehicle and move it around. And that was moved up to Great Slave Lake and operated for the whole winter on the ice in Great Slave Lake. It also showed it was a very effective ice breaker as well as a means of moving heavy goods over rough terrain. Then it was moved up the Mackenzie system, operated in Tuktoyaktuk, Inuvik, Arctic Red???, various places in the high Arctic and fairly effectively as a transporter. It showed that a large heavy duty transporter could be moved around. But the next phase of building a larger one, up to, we were thinking of about 4,200 tons and putting a rig on it and in effect having a drilling vessel which was amphibious, that phase never got to fruition. There was never anyone who had enough drill sites ahead of them that they wanted to say, well, we've got a 2, 3 or 4 year program that we could amortize this relatively expensive piece of equipment. It was cheaper to use the land rigs, slightly modified and do one well at a time. Had someone had a really large program that they were confident of, they would have probably moved ahead and built the more sophisticated system. Subsequently that prototype vehicle was used for ice breaking trials in Thunder Bay by the Canadian government and it's been moved up to Alaska, it's been operating on the sea ice off the north slope of Alaska. So we proofed up a lot of new technology and some of it still holds considerable promise. But some of the things we hoped to do didn't get done. At the time when we finally got the transportation system for the Arctic Islands, instead of drilling one well per rig per year, right now, Pan Arctic normally uses four rigs on the sea ice, so

they get four wells. If we get to the point where you have to develop the Drake Point field or the Heckler field or the Whitefish one, one of these large fields with several trillion cubic feet of gas each, they would certainly need to drill 20 or 30 wells per field in a fairly short time. Particularly if a large pipeline was going to be used. In which case it would be possible that they might want a more versatile, longer season drilling system and something like the air cushioned vehicle might then be used. So some of our research efforts may well be of value in the future.

NM: This is the end of the 3rd interview with Dr. Gordon Jones.

Tape 5 Side 1

NM: This is Nadine Mackenzie speaking. This is the 4th interview with Dr. Gordon Jones. Dr. Jones, during the last interview we were talking about an air cushioned vehicle of 4,200 tons. Was it ever [built??]?

GJ: No, that particular unit was fairly expensive, not expensive by present day terms but in terms of the money being spent at that time it was fairly expensive. It would have necessitated a program of perhaps 15 or 20 wells to justify building it. The problem in the Arctic Islands offshore geophysics was fairly slow and very few companies had very many definite drilling prospects ahead of them, so it was easier to continue on, on the more sort of horse and buggy method of drilling from the ice platforms.

NM: The cost of a vehicle like that would have been astronomical.

GJ: No, I think it was about \$17.5 million, which in present day terms is fairly small but it was fairly expensive. As I say it would have needed a fairly big program to justify. The other problem that we ran into was that the government, in reviewing new technology and concerns about possible blow-outs or oil spills and things of this sort, was reluctant to have a single unique vehicle. If we had built that vehicle and it could have operated for perhaps 10 months a year and no other method could have operated for more than 3 or 4 months a year, had there been any damage in the blowout, then it would have been difficult to repair it. So there was pretty well pressure from government to have duplicate units. So instead of looking at say \$17.5 million, we'd have had to look at \$35 million. And then you'd have needed even more wells to justify the program. So while many people agreed it was a very promising technological design the economics at the time didn't permit it to be pursued. Later, after I'd left Global Marine and joined Petro Canada, the new Crown corporation was looking at new technology for frontier areas and they, together with a number of other oil companies, looked at a different version of this air cushioned vehicle. To overcome the government's desire to have duplicate vehicles or to have a relief well capability, we split the unit in two and we ended up with two units, which I think were about 1,700 tons and one of them had the drilling rig and the other one was a vehicle to house the personnel, the supplies and radio communications, but could have been adapted in an emergency to put a land rig on it so we could have had a second drilling unit at very short notice. This scheme went quite a long way, there was quite a lot of money on further research and again, it sort of fell into economic problems. One problem with the Arctic Islands, as I think I've probably mentioned earlier is that it's very slow moving. We found lots of gas and a fair bit of oil but in terms of getting the product to market it's always been pushed into the future. I think in 1959 when I got deeply

involved in the Arctic Islands, I envisaged that we'd probably have production going to market perhaps by 1967 or something like that.

#043 NM: And it did not happen.

GJ: 1967 we were probably looking at 1975 and then a few years ago we were looking at the mid-80's, now we're looking at the 90's. From Canada's point of view it's a nice sort of emergency reservoir of oil and gas. But from an economic point of view, it's still rather distant. So I think companies have become increasingly reluctant to spend money on new technology. If and when we see a polar gas pipeline or an Arctic pilot project, some other means of transportation of oil or gas from the Arctic Islands then it will suddenly become necessary to drill perhaps 20 or 30 development wells in each of the larger fields. And at that time you would need something like this air cushioned drilling system to drill many, many wells a year.

NM: So that's something for the future.

GJ: Yes, the present system, really we get one well per rig per year, because they can only operate on the ice for 4 or 5 months, which doesn't give long enough to drill more than one well. And also there's some limitations on ice movement. Every now and then the ice moves beneath the ice platform and they have to resput the well. Under present conditions we've been taking that risk but I think if we had to drill a lot of wells and we needed to do it fairly quickly we couldn't do that. We'd have to have something that could operate on a longer period. And there was another scheme by one of Global Marine's rivals, Sedco Sealog???, developed an ice cutting semi-submersible and the Arctic Petroleum Operators Association carried out some prototype research and testing. That looked as if they might have a means of drilling on a 12 month basis, we were looking with the air cushioned vehicle at perhaps anything from 7-10 months, depending on the particular year and the part of the area we were working in. This other one had the promise of the longer season but when it was costed out it was about \$150 million per unit in 1975 dollars and then the government said you had to have two so that was \$300 million and that became prohibitively expensive. So that was dropped. Of course, there were other schemes looked at too. They've mainly just been put on the shelf for some future date.

NM: You mentioned the Arctic Petroleum Association, what is it?

GJ: Well, traditionally the oil industry has been somewhat of a competitive, one might almost say, cutthroat competition type of industry. In terms of geology and geophysics, particularly here on the prairies, where we have land sales by governments, people keep very secretive about their information because they don't want people who are going to be bidding against them to compete with them. So we tended to take the same spirit up to the frontiers when we moved north but by 1970 it became apparent that as we moved into the north and spent time and money on environmental work, studying ice conditions and things like this, it was just prohibitively expensive for everybody to work separately. So in 1970 at a time when the government was trying to open up the Beaufort Sea, they were offering offshore blocks to oil companies for exploration, a number of the oil companies got together in the Beaufort Sea and said well, how about us cooperating on studying the ice conditions and the oceanography and the weather, all these problems that we all have in common and are going to have to face and affect the safety of operation and affect its economic viability. So I think in January 1970 a small association was formed, a

gentleman from Esso, Alex Hemstock was the leader at that time. And it was essentially just the Beaufort Sea group. A couple of months later, in March 1970, I was at a conference with Alex Hemstock. We were both representing Canada in a sort of Arctic think tank down in New York state and we were chatting about the Arctic Petroleum Operators Association and my concerns in the Arctic Islands that we should do something similar and we decided that it was a good idea to widen the small Beaufort oriented group into an Arctic oriented group. So I think by May we widened the area and companies such as my own company, Global Marine and Pan Arctic, joined in and so ever since then we've had this research oriented association working in the whole Arctic. Subsequently the idea spread to the east coast and the East Coast Petroleum Operators Association was developed and shortly after that the Alaska Oil and Gas Association was formed and used the Arctic Petroleum Operators Association charter as a sort of basis for setting up their association. And the three associations have continued to cooperate over many years.

#109 NM: Do you have a magazine?

GJ: Yes, we have . . .the Arctic Petroleum Operators Association initially just sponsored research projects for the benefit of its members and we were up to about 240 projects that we've done, some of them costing a few tens of thousands of dollars and some of the costing many millions of dollars. By about the mid 70's we were engaged in a very large program in the Beaufort Sea and prior to that being opened up by the government to allow drilling and it became apparent that it was one thing to do all this good research and so on, but it became necessary to let people know that we were doing it. Because the public has a keen interest in what's being done in the frontiers, particularly in the offshore. So we first put out more or less a tabloid newspaper that was circulated widely in the Mackenzie Delta area, in connection with the special research program there. Then having done that for 2 or 3 years it was felt that we should widen the audience and we started the APOA Review and that continues to the present date. The emphasis for the first 4 or 5 years was mainly on reporting our research and it probably was most interesting to university professors and government scientists and regulators. We did put an Inuktotuk version out for the benefit of the Inuit people who didn't speak English too well and that has continued. We had to somewhat simplify the language and tried to put some of the pictures in which Inuit people were among our research workers and so on.

NM: So they would know what was going on.

GJ: Yes. So we're bilingual but not in French. In the last few years the APOA Review has tended not only to report research but report industry news as a whole. We're still looking at how we can communicate further and better with the native peoples and we possibly will come up with another version which has perhaps more emphasis on pictures, because some of them have difficulty with the scientific terms and that sort of thing.

NM: Where is this newsletter printed?

GJ: The APOA Review is printed in Calgary. The Inuktotuk version, we have a translation that's done in Yellowknife. I think at one time we had some done in Frobisher Bay. And we distribute it from Calgary, widely through the north and through universities and government departments and quite a lot go to Scandinavia and UK, France, you know, other places with Arctic interest.

NM: What is your role in it?

GJ: My role, I suppose, is sort of editor and advisor. Really an advisor. We have contracted out the work of writing it to a private company and our Board of Directors and our public information committee provide a lot of advice and guidance to that company. I've been active on both of those since it's inception.

NM: Does it come out every month?

GJ: No, normally three times a year, occasionally we go to four times a year. We've gradually expanded from about 8 pages to about 24 pages and it's got colour pictures on the outside and it's kind of a little more glossy. We try not to be too glossy. Perhaps in this context I should mention a sister organization, the East Coast Petroleum Operators Association, they also felt the need to contact the public. Now their public is somewhat different and they took a slightly different tack. Initially, we had some differences of opinion as to whether we needed a sort of glossy big publication or whether we needed just a simple page size xerox. But we did feel the need to communicate with the people, particularly in the villages of Labrador and Newfoundland and Nova Scotia. Generally speaking the public in the east coast cities, probably through their newspapers and radio stations and TV and so on, are kept fairly well informed but we felt some of the smaller communities really didn't know what was going on.

#171 NM: So they would prefer something to read.

GJ: Yes. So when we discussed it there was a lot of debate and pros and cons and finally, I was a member of the executive and I said, well look I'll put something together, sort of intermediate between the two extremes that were being discussed. So we started off as an 8 page publication with just a limited number of photographs. That's gradually widened into something a little bigger and perhaps a little more professional. But we found it very good means of communicating. In a very short time we were deluged by letters and phone calls from people from fairly small places like Mud Lake, Labrador, which most people have never heard of and small villages and towns in Newfoundland.

NM: And they asked you for more information?

GJ: Asking for more information or just thinking us for what we're giving, suggesting things to put in. What we used to find is that the oil industry was always being accused of being secretive. We had no particular desire to be secretive in these frontier offshore things.

NM: What are the reasons for accusing the oil companies of being secretive?

GJ: Well, as I mentioned earlier, traditionally on the prairies and this, I suppose we inherited from the U.S. where most of the oil industry originated, because of the way that lands were made available, each company if they had some idea that an area was good geologically, they didn't want their neighbours to know about it because they were having to pay a land owner or pay the government. And it may be in competitive bidding so they were very secretive and had to be by nature of their work. And of course, we have a tradition of oil scouts who developed. These are people that are sort of industrial spies but on a more or less legal basis, trying to watch what your neighbours rig is doing and see if it was maybe a discovery. So there was a lot of secretiveness in that phase of the industry. But as I said earlier, when we moved up to the frontiers, everything is so expensive you really couldn't afford to do everything separately. In fact if you're moving to virgin terrain without roads and things then you can't really afford to have seismic lines rushing all over the place, chopping down the bush if it can be avoided. So there was a tendency

to do more cooperative work, just for the sake of environmental protection. And then in matters of environment we also felt we couldn't be secretive. If we had a better way to do something that was safer operationally or would protect some species of animal better than we really had to share that information.

NM: So do you think that the company image has improved?

GJ: I think it probably has but we still found some problems. On the east coast we decided there was some need to set up this newsletter fairly quickly and that's really where I jumped in and got on with the job rather than continuing to argue about it in committees. What happened there for instance, say, [Total East Can??] who was very active on the Labrador coast had a 7 company group and many, many times they couldn't agree within their group with what they wanted to do next. Whether they were going to drill here or whether they were going to drill somewhere else or whether maybe they were not going to drill for a year or two. So if people questioned Total East Can as to what their plans were, they'd say well, we don't really know, we may not drill this year and be rather, perhaps, evasive because really they didn't know because they depended on their partners and until they had 100% agreement they couldn't move. But in the meantime as a prudent operator they had to try to be ready to get on with the job if and when they were given permission by their partners. So they would perhaps have a helicopter landing on a cliff and putting a navigation device on the top of the cliff or they'd be doing various things in preparation for work. Well, then the local people would say, look, you people are liars, here you're saying you're not going to do anything but what was that helicopter doing up on the cliff there. So there was a real communications gap between people and the oil company was trying to sort of be honest because they really hadn't a definite plan. But people at large didn't understand that. So in our early newsletter we tried to explain how a joint venture agreement works for instance. This is a complex matter many people in the oil industry don't fully understand. But we tried to get some of these matters so people understand that . . .

#238 NM: What's happening.

GJ; Yes. It's a complicated business, various phases of it and if the people have some idea what you're doing and why you're doing it then they're more inclined to be sympathetic. If they think you're just trying to . . . you know, some great big plot. And also they have the feeling that there's masses of money and everything can be done, money no object. And when they realize that oil is just so much a barrel and it's very hard to make any return on that investment in many cases. And also when they realize perhaps, that in these frontiers some companies been investing more than 20 years without any money back, they perhaps realize that we have some constraints. We can't do all the things that perhaps they think we should do. So I think these research associations, I've been deeply involved with them since the beginning, they have changed their emphasis a bit from just purely research associations into getting more and more involved in public information. Because what's the good of doing these good things if people don't realize you're doing them. And there's a lot of people that are naturally apprehensive about the environment and really we've been doing rather massive research over many, many years to try to protect the environment, to learn ways and means of operating more safely. People say well, what's going to happen if an iceberg comes. Well, 15 years ago, maybe we didn't

know, but in the meantime through our research projects, we've learned how to tow icebergs, how to measure them, how to find out more about the direction in which they'll drift.

NM: That's a new technology also.

GJ: Yes, there's a great deal of new technology developed and it's gradually being incorporated in the new drilling rigs and the operational methods and so on. So although some of this work I did as a member of these associations when I was with Global Marine and later on, when I was with Petro Canada, I've continued it since I set up on my own and have actually become Executive Director of both those associations over the last few years. It's become a fairly fundamental part of the frontier oil business.

NM: So in fact you have several extra careers.

GJ: Well, I suppose. They're all sort of rather intimately inter-related and it's very difficult to say where one stops and the other begins. I hadn't yet talked about my time at Petro Canada but at the time I was leaving Petro Canada I was a Director of both these associations. One of the volunteer directors from the more active member companies. By that time it was becoming apparent that it was very difficult to continue with just volunteers and so when I said I was going to set up my own consulting business the two associations said, well how about doing some work for us and taking a bit of a load off the shoulders of the other directors. So we've gradually evolved into being more formal associations but we've tried to maintain the enthusiasm of a volunteer organization.

#293 NM: Dr. Jones, why did you leave Global Marine?

GJ: It was with very mixed feeling I left. Global Marine was a very innovative company, a rather exciting company in many ways and that's I suppose, why I had joined it. It had built the world's first ocean going drilling vessel, it had drilled in over 20,000' of water when nobody else was drilling in more than a few hundred feet. But that was for oceanographic drilling for government purposes rather than for oil industry purposes. It had developed the first underwater TV, which was used by the oil industry, it had many, many innovative things in offshore technology. At the time I joined it, it had got into a deep sea drilling project which was a fascinating project working in the oceans all over the world. And it had pioneered in almost all the continents. So it was an exciting company and as I say, they were the company that became interested in the offshore of the Canadian Arctic and the ice infested offshore and so I was very excited about it. But as the years passed I think the management became a little more conservative and some of the things that they'd done very well and prospered at, they seemed to draw in their horns a little bit. I could see that the way the terms of the world trade were going and in particular the offshore drilling business that my Canadian operations were a bit marginal to the total operations of the worldwide company. I thought there was some danger that they might want us to gradually do less and less. In fact as far as our exploration operations, we had first farmed out half our lands to Sun Oil, now Suncor and then later 1/4 of them to Gulf Oil and then we had initiated discussions with Phillips and we were going to end up with 5%, although we would have retained 25% of some of the gas fields we'd discovered. And I could see that my role could diminish unless they changed the management and philosophy of the parent company. So I suppose, although I was enjoying the job and there were many challenges and I was involved in some of their

overseas work, in the North Sea and elsewhere which I liked. I nevertheless, I suppose when another challenge came along, I was perhaps receptive, although I hadn't really planned to be.

End of tape.

Tape 5 Side 2

NM: What was the challenge there?

GJ: Well, it was rather curious how it developed. While I was still at Global Marine, we were members of the Canadian Petroleum Association and naturally I received correspondence from the association as a representative of the company. And one day I received a letter containing a series of questions about new regulations proposed for frontier oil and gas, by the government. It was asking us to comment on the new regulations. It also had some extra questions about this new national oil company that was being proposed, which eventually became Petro Canada. Most companies that received this questionnaire, I'm pretty sure, put it into the hands of a committee and there was long deliberations and they gradually came up with a fairly solid and maybe rather stodgy committee style report and commentary on the regulations and similarly on the questions about Petro Canada. In my case I sat on it for about a week and didn't do anything and then I suddenly realized there was a deadline and I sat down and wrote a 20 page letter, just all in one go. I just sat down and wrote it, giving a fairly detailed commentary on each of the clauses of the regulations and then I continued with a discussion of the pros and cons of a national oil company, what it should do or what it shouldn't do. It was off the top of my head but I suppose based on a fairly wide experience in the frontiers in particular. This was really the first time I thought much about Petro Canada, apart from just as a citizen reading the newspapers. And I sent off this letter to the Petroleum Association and I suppose about 2 or 3 weeks later, I was surprised when I got a call from this person, John Poran??? the President of the Canadian Petroleum Association and I think a day later from Fred McKinnon who was Chairman of the Canada, I think it was Oil and Gas Lands Committee. And they both independently, said much the same thing, was that they had read my letter with great interest and felt that it shouldn't just be wasted on the association but that I should send it on to the 3 cabinet ministers most involved with the oil industry. Namely the former Minister of Energy, Donald Macdonald, who had become the Minister of Finance and obviously held the purse strings of the industry, Mr. Buchanan who was the Minister of Indian Affairs and Northern Development and Alistair Gillespie, who was Minister of Energy, Mines and Resources. Curiously enough during that interim 3 weeks, between writing the letter and having this request to send it to the cabinet ministers, I'd had some rather brief discussions with Donald Axford, who was the first industry man appointed to Petro Canada, had been appointed as Vice-President of Exploration, a few weeks after some government, Maurice Strong and Bill Hopper had been named. But Axford was the only industry man named to the company and I had had some discussions with Axford during these 3 weeks and I was somewhat intrigued by the new company. I think I was not too enthusiastic about national oil companies in general

but I could see, in thinking about these questions that the Canadian Petroleum Association had posed that there were certain areas where a national oil company could work in the frontiers on a much longer term basis than a private oil company with shareholders and a need to have profits in the short term. So I thought about some of things we tried to achieve at Global Marine, which were rather long term and we were finding tough as a private company to keep on going year after year. It seemed to me that if Petro Canada had the right sort of individuals running it that with a bit of vision, that it might do some very useful things. So I had sort of mixed feelings as this private enterprise oriented type of individual as most people in the oil industry are. On the one hand I was apprehensive of a government oil industry and I didn't think it would be too efficient and I'd looked at other national oil companies around the world and I'd worked with one in Uruguay and they basically were noteworthy for being inefficient and bureaucratic. On the other hand I could see the good things they could do. So it came as a bit of a challenge to me when suddenly the possibility of joining this new entity came up.

#061 NM: So your letter was very successful.

GJ: In a way. In other ways it was very unsuccessful. By the time I actually sat down and wrote these letters to the ministers, I actually enclosed the 20 page letter to the Petroleum Association with a detailed discussion, plus put a more philosophical discussion of a national oil company and various other things in the letters. And then it became so long that I had to write a 2 page introductory letter so they'd read that in case they threw the rest in the waste basket. By the time I finished writing those I had pretty well decided that I really would apply to Petro Canada and possibly join them, provided that there seemed to be an opening that would lead to a challenging job and allow me to do some of the things I felt needed doing. Why I say in the long run my letter wasn't successful is, inadvertently I was criticizing and commenting fairly harshly on regulations that had largely been written by Bill Hopper, who turned out later to be my boss. There were some things in those letters, which he got access to rather rapidly, in fact before I joined the company, there were some things said in them that he was really amused at and intrigued by, despite the fact they were criticizing himself. Which was quite inadvertent, I had never heard of Bill Hopper at the time. But other things that he maybe totally disagreed with and I suppose I had a more private enterprise orientation than somebody coming from government. I felt there was a real need for a government oil company in certain areas, long term things like oil sands research, some of the high Arctic and deep water offshore. I could see that was a real benefit but I really couldn't see why they needed a national oil company in the shallow gas and things in Alberta where at the time we had 400 rigs sort of climbing over one another trying to drill and there was no shortage of money in the industry at that time, for that type of drilling. I couldn't really see why we needed to do that. So before I actually joined Petro Canada I had long discussions with Don Axford, who I found to be somebody with a very similar philosophical outlook in many ways. He had been like myself, instrumental in opening up new areas of the frontiers and I was sure I would get along well with him and compliment some of his skills. The thing I emphasized with him was my concern that most large oil companies and most government institutions tend to be very bureaucratic and tend to be very compartmentalized. My vision at the time was perhaps impractical and pie-eyed in many

ways. I was hoping that somehow in this new national oil company we could avoid some of the artificial compartmentalization. I had observed, when I as a representative of a small oil company, Global Marine, I used to work closely with my opposite numbers in the large companies, like Gulf and Esso and Suncor and Shell and so on, and in the industry associations like the Arctic Petroleum Operators and the East Coast Operators it was the same thing, that I would have other people in these companies. Whereas I could speak for our company on geology or geophysics, on engineering, on environment, on legal matters, on land matter, native rights, all these things I had some knowledge and had worked in and could act as a spokesman. I found my opposite numbers in the other companies could strictly talk about engineering or land or geology but they often weren't aware of a lot of the things in the other fields. My training happened to start in geology and had moved into these other areas. I thought it was a big advantage, for instance in negotiating, if I was negotiating a big farm out with a major oil company, I didn't have to rush off to our other departments on other floors or even in other cities and get permission or get advice. I usually was sufficiently knowledgeable in the area that I could do a great deal of it myself, and maybe a few quick phone calls with colleagues I could just confirm that what I was doing was okay. I found this beneficial, this sort of inter-disciplinary approach. It always horrified me, when in an area say, like the Beaufort Sea, companies would go in because their geologist got enthused about it or because their land men came along and said, oh there's this big area available, why don't we get in. And it only seemed to be a year or two later sometimes that the engineers were dragged in and somebody would say, well look we've got all this land and the geologists have started their geophysics and we may want to drill here, how do we drill. And then the engineers would say, well, we don't know anything about the oceanography and what about that sea ice and so on. So then there would be a long lag before that research was initiated and in fact they wouldn't have any idea of the costs of drilling and the costs of operating, production, until quite late in the game. Whereas I sort of felt that before you moved into an area you should have a fair appreciation for all these factors. Now you might be wrong, because obviously new research was needed but I did feel that a knowledge of most of these factors at the beginning would have been a tremendous asset. Then some of the environmental studies that we'd been deeply involved in, in these associations, we really ought to have initiated some of them a few years before and then the public would be less apprehensive if they knew you'd had time to do these things and you would be in a better position to answer people's concerns.

#135 NM: To explain to them.

GJ: So I hoped with the new national oil company, instead of just becoming a carbon copy of the other large oil companies, I thought maybe there was a few things we could build in fairly early on, that would make it a bit different. This is where perhaps I was unduly optimistic. It seemed to me that there was a prospect of having a strong inter-disciplinary group, people like myself and I knew a number of other people who had perhaps wandered across the normal bounds of their subject and had mixed very closely with colleagues in other areas. We call this technical coordination. Global Marine had done a fair bit of it and we had been involved in very complex projects. To mention one or two that the public knows about for instance, there was the lifting of that Russian submarine

from 18,000' of water in the middle of the Pacific, was done sponsored by the CIA, using Howard Hughes as cover. But a project like that involved a tremendous lot of different disciplines and we had the geologists working closely with the engineers and the engineers with the environmentalists and so on. Many projects we'd done there, we'd had a rather wide cross disciplinary coordination and this is what I felt was lacking in many of the companies I dealt with here in Calgary. So . . .

NM: It was mostly a question of coordination and communication?

GJ: Yes. So in talking to Axford he understood what I hoped to achieve and it was hoped to set up a technical coordination role at a Vice-Presidential level, a fairly senior in the company. And somehow force or coerce or cajole or do something to make departments talk to one another and aware of each others needs. So that the geologists and geophysicists wouldn't wait until the last minute before they told the engineers that they might want to drill but they're given ample forewarning so that in turn the engineers could work with the environmentalists and start planning systems and so on. I suppose every company tried to do this, but most of them it's just been a very hard thing because of the natural boundaries and jealousies which exist. The problem I encountered in Petro Canada, when I first went there, I still was having to work with Global Marine trying to wind up my job there and I had several weeks of trying to work days at Petro Canada and nights at Global Marine. So I was terribly busy and when I arrived there I found that instead of doing the things that we maybe, theoretically planned to do, in fact there was so much urgent work to be done that you really couldn't sit down and do the things you wanted to do. When I arrived we were just moving out of a hotel room into small temporary offices with a few temporary secretaries and people sitting in corridors and very few offices. I think there were about 16 people on the staff, most of whom were temporary. We'd already taken on a commitment to drill 6 wells off Nova Scotia.

#180 NM: Where was this office?

GJ: We were in Canada Place, nicknamed Red Square because of its red bricks, having the national oil company. We were on the 4th and 5th floors in temporary offices and we were hoping to occupy the higher floors, I think the 14th and 15th floor, a month or two down the road. They were beginning to put in the partitions and so on. In fact one of my jobs later on was to lay out all the shape and size of the rooms and the electrical outlets and decide how big the drafting department was going to be and all sorts of jobs. We all had to pitch in and do different things. We had a commitment, Don Axford was a very dynamic individual and in his first few weeks he had persuaded Petro Canada's management to join in various areas in the frontiers, to try to stimulate activity. At that time offshore drilling in the east coast had pretty well ceased. Off Nova Scotia there had been very little geological success, just a few minor gas discoveries but nothing very big. Off Newfoundland we were already beginning to have a jurisdictional dispute and a lot of people had sort of said, well, let's get back to drilling when the governments have sorted out who was in control. And really, in 1976 practically nothing was happening. Shell had been drilling for a number of years and they were just on their last wells and going to take the rig to another country. Mobil had stopped drilling and several of the other companies who had been in more briefly had stopped. Amoco, Esso had been on the Grand Banks for many years and had got discouraged with virtually no discoveries of significance. So

it was a very quiet year and Axford came in with lots of ideas, some of which he would like to have done when he was Vice-President of Exploration at Mobil and Mobil had got discouraged with the amount of money they'd spent with not much result. So he came in with lots of suggestions about how it could be done. And Petro Canada decided to start doing these things. So by the time I came a few weeks after Axford, in early March 1976, we had this commitment to drill 6 wells. Shell had agreed to provide the rig and some of the expertise but nevertheless we had to have somebody in Petro Canada who could look after this. We were spending more than \$50,000 a day on a rig which was a lot more money at that time than it is now. Obviously this has to be looked after, you can't go and just drill. You have to get permission from a whole host of federal government departments. Environmental issues have to be looked at, navigation people are concerned about where you are going with your rig and they have to put out notices to mariners and all sorts of things had to be done. So when I got to Petro Canada I suddenly found myself having to look after these things because nobody else in the organization had any background in doing that. Axford was an excellent explorationist but he'd always had an operational staff. Now my training was in geology as an explorationist but because I'd been with an offshore drilling company I did have a fair awareness of the engineering side of operations. So I sort of had to pitch in and do that. That was a very hectic period for 15 months there. One of my responsibilities was looking after the offshore operations so I was in effect, sort of a de facto operations manager. At the same time I was the #2 man in the exploration department so I sort of acted as chief of staff of the exploration department, busy hiring geologists and geophysicists and so on. Particularly as Axford travelled quite a bit. He had to go to Europe for quite a long period and so on, so I really had to run a lot of the exploration. At the same time we had to set up a drafting department and a library and just dozens of other things that a new company has to do.

#245 NM: What was your official title, since you were doing so many different types of jobs?

GJ: Manager of Technical Coordination. As soon as they had built up to a staff of enough size to justify having a few more Vice-Presidents then it would have been changed to Vice-President of Technical Coordination. But they didn't want to have more Vice-Presidents than secretaries, which there would have been a danger at the beginning. So I never really had a chance to get round properly to technical coordination, just because we were operating at sort of 18 hours a day, tremendous rush for weeks, putting out brush fired, just doing the things that had to be done. One of the things I had to do, which I found very embarrassing was go through the applications, people that wanted to join the company. This was so different from any other company that we've ever had in Canada. Other companies have begun small and taken years to grow big. With Petro Canada we had a \$500 million budget from the day we had started with two men in a hotel room and with the right to borrow another billion dollars and prospects of a lot more borrowing and financing beyond that. So everybody knew we were going to be big, even although we were so small at the time.

NM: So did you receive a lot of application?

GJ: Well, when I arrived, among the first handful of people, we had 2,000 applications. Now they'd hired Price, Waterhouse, a very prestigious accounting oriented company to do this, but unfortunately, I don't like to be over critical, but they seemed to have difficulty

handling all these technically oriented applications. In effect they put about 2,000 applications into 3 big 4 or 5 inch looseleaf binders. One labelled senior, one intermediate and one junior and I went through these and was just horrified sometimes when you find a Chief Executive Officer of a large company in Ontario and he was in the junior file or in the intermediate file. I think they were pressed for time and possibly dealing in areas that were outside their normal competence. So I inherited quite a bit of this and found great difficulty in just having the sheer time to go through these application. I seemed to be Lord High Everything Else, if you know your Gilbert and Sullivan. You know, if there were any odd jobs that didn't fall in somebody else's area, I seemed to get them. Going through those applications, it was strange, so many people that didn't really seem naturally qualified to join an oil company, because it was the national oil company and they seemed to have some sympathy with the idea, they were applying to join.

#303 NM: Just for this reason.

GJ: People in industries completely remote from oil and gas, with experience totally foreign to our industry were applying and we had to write polite letters. I found my Price Waterhouse colleague was a little embarrassing in that he wrote to, I believe it was about 82 people, without my knowing it and said that sorry we're a little slow reviewing your applications by Dr. Gordon Jones would shortly be in touch with them. I was unaware he'd written this and I was getting black looks from various geologists and geophysicists and engineers, people I would meet on the street in Calgary and I was quite unaware that they'd been told that I was going to deal with their application.

NM: Did you find a lot of people from Calgary applied for positions in Petro Canada?

GJ: A great many. Many like myself, were very dubious about the pros and cons about a national oil company but I suppose when you know it's going to happen whether you like it or not, it may as well be run by people that understand the business. So I think a lot of people in Calgary thought, well, this is a challenge. It's possible they wouldn't have chosen to have the company but once it was there, it ought to spend the taxpayers money using good engineers and geologists and geophysicists and so on. And I think a lot of people were apprehensive it might be run purely by bureaucrats from Ottawa and felt it really should be run by oil men. So there were a lot of people, very skilled people, many of them with very good jobs already.

NM: So how many people did you hire?

GJ: Oh, I don't know. We went on sort of hiring fairly steadily but not too fast, over a period of 6 or 9 months. Each department drew up a plan of how many people they needed in various positions by year end and then some of the department seemed to be out of line so the management chopped back their requirements. A lot of things that people hoped for didn't materialize for one reason or other and very rapidly a lot of our plans got affected by the fact that they were going to take over an existing oil company. In fact that was the biggest shock I had in my whole Petro Canada experience I think, was to walk in the door the day I first went to occupy my desk and was told about an hour later that we had an option to acquire Atlantic Richfield. Because I had thought we had the chance to build up an oil company from the ground up and do it systematically and logically.

End of the tape.

Tape 6 Side 1

GJ: At the end of the last tape you had asked me how many people we hired and it's so hard to say because I personally hired a number of people but then others I recommended to somebody else that they should hire them. So there were different people involved in the hiring process and some we did collectively and some it was individuals that took responsibility. I believe in the first, I suppose by the end of December 1976, we'd hired probably about 100 people, something in that order and we had perhaps another 50 or 60 that we were looking at very seriously. In the meantime as I said, we had this option to acquire Atlantic Richfield which I heard about early in March and that gradually materialized and became a real thing by about June, July of '76. So we acquired about 300 people there and that really affected our hiring because until about April we were hiring people we thought we needed and as we could slot them into the various jobs. As soon as we knew for certain we were going to have 300 other people we were apprehensive about hiring people because we had to see how they would fit in with the people that we were acquiring. Personally I didn't like this idea of merging with somebody, I felt it would have been so much better to go a little more slowly and actually get the right sort of people that you really wanted for your job. If you take over an existing company it has historic reasons why it has the people it has, that are connected with the work it has done over many years. In the case of Atlantic Richfield, because it was the discoverer of the Prudhoe Bay oil field in Alaska, the largest oil field in North America, many of the more aggressive and best qualified Canadians had gone to Alaska to join that company's activities there. So it had left some of the most active people, there were gaps in the Canadian organization. Similarly they had been involved in the Syncrude project and had dropped out for financial reasons, also largely because they wanted the money for Alaska, where they were in partners with British Petroleum and with Exxon, two of the largest oil companies in the world and here was a medium sized oil company trying to match dollar for dollar with these large companies. So they had really taken out money and personnel out of the Canadian organization. So we had this sort of, in a way, I don't like to be impolite but you might say, the leftovers of what had been a more vigorous organization in early years. Obviously we had some very good people but there were other people that I don't think we would have chosen to hire. And then they were very active in things like shallow gas in Alberta, things that I didn't think there was a pressing need to spend the taxpayers dollar on. Now my vision for Petro Canada, if we were going to have a national oil company was to get on with these long term projects in the frontiers. The ministers always used to talk about the need to know policy, Canada needed to know what reserves it had, that it could count on in the future which would help us to decide whether we needed atomic energy or whether we needed tidal power or sun power or whether we should be importing oil from the Middle East or Venezuela. If we knew we had these reserves in the future it would govern our whole planning policy. That seemed to me a fairly important role but I couldn't really see why we needed to be drilling all these wells in Alberta when private industry was accomplishing that rather well. From my point of view the acquiring of an existing oil company was a distortion of what I felt to be the role of the company. And it certainly affected the whole personnel

situation as I mentioned. Now in defence of those who set about the mergers and acquisition of oil companies, they had a very real reason why they wanted to do it and if I was in Bill Hopper's shoes, I might have some sympathy for what he was doing. But the problem with a national oil company, if you depend on government for your funds and you have no immediate cash flow, if all you're doing is putting money into long term research, and into distant areas like the frontiers, the Arctic and offshore, you may not receive any revenue for many years. And that means you have to go cap in hand to government asking for money all the time. And I'm sure the people whose main responsibility was to manage the company from a financial point of view and to set some of the major policies, they wanted to get out from under this dependence on government and as soon as possible have a cash flow so they could count on so many million dollars coming from oil and gas sales. So it was quite understandable that they wanted to grow big quickly and to get some oil and gas production. But it did distort some of the other aims and objectives of the company. I don't know whether you want a further discussion of the early days of Petro Canada

#060 NM: Oh yes, please.

GJ: I think possibly I should comment a little bit on the early personnel. You recollect Maurice Strong was appointed its first President. He was a man who of course, I knew of.

NM: Who was he, what was his background?

GJ: I'd only met him once. At that time he'd suddenly come to the fore as an important executive in the Canadian business world, had just been appointed I believe it was Executive Vice-President of the Power Corporation, a very large Canadian holding company, with very significant financial interests throughout Canada. That was I think, in 1962, when I met him.

NM: Did he have a background in oil and gas?

GJ: Prior to that, which was I suppose his first role in big business, prior to that he'd been with Dome Petroleum and I think had grown up in this very small company that was rather rapidly growing. He'd grown up from I think, a sort of financial assistant, maybe Assistant to the President with a rather assorted role, he'd grown up and become a Financial Vice-President I believe, somewhat self taught. Prior to joining Dome I believe he'd been with the Hudson Bay Company living in northern outposts, running Hudson Bay stores, trading with the native peoples and he had also travelled widely in Africa and various places, gaining experience and taking fairly odd jobs, as many young people do. I don't believe he had formal training in finance but obviously when he was hired by Jack Gallagher at Dome he had showed an aptitude in those areas and had I suppose, some people would have called him a financial whiz kid because he was still a very young man. And he acquired a lot of experience in acquisitions and mergers and had a real flare for that side of the business. After I had first met him briefly in 1962, he'd gone on from Executive Vice-President I think, to President of Power Corporation and then he was asked by Canadian government to set up the Canadian International Development Agency, CIDA. He had shown interest in overseas matters in his travels as a young man and I think he was fairly active in politics and was well known in government so I think that was the reason they picked him to set up that new agency. From that he moved on, after I think about 5 years to UNEP, United Nations Environmental, I can't think what the

P stands for. It's the environmental agency of the United Nations and he helped set that up and became the senior executive of that organization and later was organizer of the Stockholm conference, which was a sort of international environmental conference on a scale which hadn't previously been undertaken. It tried to focus a lot of these environmental issues that had become rather important in the late 60's and 70's and to get some sort of international policy. By the time Maurice Strong was asked to set up Petro Canada he had a record of I suppose pioneering those agencies. I don't think he's a man that ever stays long with one particular thing. He sees a challenge and helps set it up and then moves on to something else. I believe since leaving Petro Canada he's been very strong in the ranching business and the paper business and quite a number of other businesses. When he was asked to set up Petro Canada I think it was always with the view that it would be a somewhat temporary role. He was more a man in the sense that he had worked with a company like Dome in its early years of expansion, so he had some background in the business. He had a strong financial background and he had experience of setting up quasi-government or inter-governmental agencies so I suppose there was some fairly definite reason why he would be a suitable person to set up Petro Canada. His real job I think, was to try to find a President for the company. He took on the role as President and Chairman with a view that he'd find a suitable oil man to head up this new company. In the early days of Petro Canada it was a very suspect organization in Calgary in the oil patch. A lot of people realized it was going to come and it was probably here to stay but they didn't know quite whether they should cooperate or whether they should fight it.

#129 NM: How was Maurice Strong accepted here in the oil patch?

GJ: He was fairly well known to quite a number of executives in the industry. Some through his earlier acquaintance when he was with Dome, in the late 50's and early 60's as a young man. Other people knew him through politics or just by repute through somebody's business connections. Somewhere I've missed out a phase of his career because I know he was involved in setting up Canadian Industrial Oil and Gas, which was one of the Power Corporation affiliates or probably subsidiary. Canadian Industrial Oil and Gas had been a coalescing of a whole bunch of small companies. So he'd been involved in that side of the oil industry, so he was reasonably well known but he was known more as a financial man and a sort of merger, acquisitions expert, rather than as what we consider a genuine oil man who's normally a geologist, geophysicist or engineer or occasionally a land man or sometimes a financial man in the more traditional sense. So he wasn't the normal sort of oil man but he did have some knowledge, there was some knowledge of him and I think a lot of people were prepared to accept him but a little bit nervous because he obviously didn't fit the normal mould. And of course, having government financing and government power behind him, obviously private enterprise oil industry people were apprehensive. I would say Maurice Strong got on very well with some people and there may have been others who were a bit reluctant to deal with him. In the early months he interviewed many senior executives of Calgary based oil companies, with a view to try and recruit one of them as President of Petro Canada. After some months it became apparent he wasn't going to get anyone from the top ranks. A Crown corporation.

..

NM: Why is that?

GJ: Well, a Crown corporation, as it was set up at that time anyway, had a salary limit for its top executive, which was more or less commensurate with other Crown corporations but was probably 1/2 - 1/4 of what opposite numbers in private enterprise were getting, without some of the fringe benefits and some of the things that were very common in the industry. I think that was one concern, certainly it was a concern of some of the people who might otherwise have come, that they would take a very sizeable cut in salary. The other thing was I suppose Petro Canada was liable to be a political football. It was a child of the Liberal government with strong pressure from the NDP at the time David Lewis held the balance of power. They were influential in it being formed and obviously sooner or later there would be a Conservative government and some people were apprehensive about what might happen then, whether it would be continued or whether it would be changed or what. So I suppose there was some concern among people as to whether they should change their career and risk the thing being shut down after a few years. And then I suppose the other thing was what its role should be. Many people, private enterprise oriented people who feel that the role of government is to set regulations and to provide the climate in which industry operates, that basically private enterprise should be the entrepreneurs in a risky business like the oil business, many felt that the taxpayers money didn't belong in a sort of gambling type situation which is what the oil business is. So I suppose a lot philosophically were against this, so one way or another they didn't find a Chief Executive from the oil industry. Bill Hopper had been recruited by Donald Macdonald in the days of the energy crisis, at the time of the Arab boycotts and so on and had been a rising star in the Energy, Mines and Resources Department, a senior adviser and then an Assistant Deputy Minister and had been involved on missions to Venezuela with the Prime Minister and cabinet ministers looking at how they organized their national oil company. And had been one of the people involved in drafting up the charter of the national oil company. So when Strong was unable to find somebody from the industry, his name was put forward as a possible candidate. Although he hadn't got any oil industry experience in a senior role, as a very young graduate geologist he had had very a short period with Imperial Oil as a junior geologist but subsequent to that he'd been in the consulting side of the industry and had moved more into business and administration and finance. So he probably wasn't the natural person but in the circumstances that was the way they moved when they couldn't get the sort of person they'd initially been looking for. You asked me how industry accepted Maurice Strong and I suppose you're likely to ask me how they accepted Bill Hopper. I'm sure he's had a difficult time becoming accepted, certainly initially ??? a senior civil servant who had been advising Arab oil companies or Arab governments as to how to deal with the multi-nationals and things like this and there he was in the forefront of Canada's national oil company. Some people have been very critical of Bill Hopper but he's always put a great emphasis on the bottom line. I suppose in my case, although I'm a private enterpriser, I felt in a national oil company there maybe should be less emphasis on the bottom line. Somebody like bill Hopper, I think he was very keen not to be criticized for running an oil company that wasn't run efficiently and in a business like manner and he wanted to achieve revenues rather quickly.

#222 NM: What was his official title at the time?

GJ: I think he was Executive Vice-President at the beginning and then I think about June '76, he became. . .

NM: This is the end of the 4th interview with Dr. Gordon Jones.

Tape 6 Side 2

NM: This is the 5th interview with Dr. Gordon Jones. This is Nadine Mackenzie speaking. Dr. Jones, last time we were talking about Petro Canada and then Richfield Oil merged. Were there other companies doing the same?

GJ: Yes, the Atlantic Richfield takeover happened in the first year of Petro Canada's active existence and the next major takeover was that of Pacific Petroleum. I personally left just as that merger was beginning to happen. Still later and long since I left they have taken over Petrofina Canada, a subsidiary of a Belgian oil company and they also took over the refining and marketing assets of British Petroleum. So that Petro Canada has changed very markedly from the sort of company that I anticipated.

NM: And getting all these other companies.

GJ: Yes. I had sort of anticipated that it would be a company which would start from scratch and build up in the particular mould that it wanted to build. Whereas naturally, when you take over other companies, you inherit a lot of the traditions and the habits and the assets and the people of those other companies. So you tend to become somewhat similar to the people that you take over or you become a composite of a number of companies. Which has meant that Petro Canada is somewhat different from what I anticipated and of course, as you probably are aware in the last few months, they've been persuading large numbers of people to take early retirement and also anticipate cutting back staff even after that. Because they now have, or they had several thousand extra employees, with a tremendous duplication of jobs from the companies that they had taken over. Naturally each company has more or less similar functions, so you have several people doing more or less the same job.

NM: What happened with Pacific Petroleum?

GJ: I suppose you mean why was it that they were a target for merger or takeover. I think essentially their parent company or the controlling shareholder, Phillips Petroleum, of Bartlesville, Oklahoma, had other, more lucrative investments elsewhere in the world and perhaps need for cash. In particular Phillips had been very successful in the Norwegian North Sea and to a lesser extent the UK North Sea and probably needed large amounts of cash to bring those fields onstream. So although Pacific had been a relatively profitable investment, they probably felt there was other places they could use the money. And in particular with the more nationalistic trends in Canada, they maybe felt that their future prospects as Phillips being a wholly owned American company, maybe they felt they were going to be constrained in their expansion. At the same time Petro Canada was looking around for a company which not only had land assets but also had significant marketing retail outlets and Pacific was a fairly natural target for them. Actually at the time, Pacific was taken over by Petro Canada they had tried to acquire Husky and were beaten out in a fairly complex manoeuvre by the Nova group of companies. So that Petro Canada had geared themselves up for a large takeover and probably had worked out how

they would finance it and so on and more or less Pacific was taken over somewhat on the rebound from the rebuff over Husky.

NM: How long did you stay with Petro Canada?

GJ: I was there about 3 years. As with my two previous jobs, I had a certain amount of overlap between my new job and my old job so it's difficult to put an exact date of leaving. I was trying to wind up the things that were on my desk and at the same time I was already obliged to start doing the new things I had planned to do. And among other things I was going to work more actively with the two frontier industry associations, of which Petro Canada was an active part. So there was no objection on Petro Canada's part to expanding my activity with the associations while I was still on the Petro Canada payroll. I left I suppose for many reasons. Several of my associates in the early days had already left. People like Don Axford, who had been my immediate boss and Ernie Pelser??? who had been the Chief Geologist in the early days and quite a number of other fairly close associates. I think the corporation had developed in a way that was different from the vision we had of it and . . .

#067 NM: Were you all disappointed?

GJ: I suppose we were personally disappointed. There's not a single right way to develop a corporation. I think many of us that joined in the early days would have put more stress on frontier exploration and things that we felt were of national importance for a national oil company to do things that private industry couldn't do. Whereas after Bill Hopper became President, I think there was greater stress on being a more normal oil company, rather more similar to the multi-nationals and putting considerable stress on the bottom line and immediate profitability. Which is a desirable thing but we felt that that made it rather more similar to the ordinary companies with a profit motive and maybe many of us questioned whether we needed to spend the taxpayers dollars on doing that. So I suppose the sense of mission that we had, had somewhat gone. And then with all the takeovers there was an influx of other people who hadn't joined from any sense of mission, they just happened to be there when they got taken over. It just became a different sort of company, with different priorities. I still have considerable admiration for some of the things it's doing and some of the departments I think are doing a fine job. Others I get less excited about.

NM: So after you left Petro Canada what did you do?

GJ: I really stumbled into what I'm doing now. I indicated to a number of my colleagues in the Arctic Petroleum Operators Association and the East Coast Petroleum Operators Association, where I was one of the directors of each of those associations, I mentioned to them that I was leaving Petro Canada and I was toying with the idea of setting up a consulting company. Each of those groups asked me if I would start working for the association on a part-time basis. At the same time a company that I had worked with a certain amount as a client, that was the Newfoundland Ocean Research and Development Corporation, normally called NORDCO, they also asked me if I would help them by keeping them in touch with what was going on in the oil industry. And so I really had 3 entities, each asking me to spend quite a bit of time on their behalf. So before I was looking for a job I really almost had a full-time job. And it seemed to be the three things meshed together, there was not real conflict between them. They were all frontier

associated things that I was already familiar with. So I decided to set up my own consulting company.

NM: Which year was this?

GJ: I think I officially set up my office in March '79, I believe. I had already been doing a few things for the associations, like editing the East Coast petroleum Operators newsletter and I had done a few things like that. But before that date, I started that already in '78, while still with Petro Canada. So it was a fairly logical thing just to continue and expand. I theoretically ma a consultant and in fact, have done some consulting over and above these commitments, but what I do is on a rather low key basis. I don't go out actively trying to sell my services and what I do has to be in such a way that it doesn't conflict with the associations particularly.

#115 NM: So that can be difficult sometimes.

GJ: Well, I have to be selective in what I do. I can't be a salesman for anybody, I have to be a very low key sort of person. Quite a number of the association members, some major oil companies operating in the frontiers, will ask me to do certain things for them, over and above what I can do for the association. So in a way it's a sort of extension of my association work. And sometimes working with companies advising them as to what they should do in the frontier has also led to us getting new members for the associations. Because one of my first pieces of advice to any company that wants to operate in the frontiers is that they should join these associations.

NM: To get information.

GJ: They get information and they share the problems and solutions found by the other people in the industry. And government likes to deal with these associations rather than with the individual companies. It saves them a lot of time and trouble if they can speak to a collective representative. So actually any consulting I do has been pretty close to the work with the associations.

NM: Which technical areas are you consulting in?

GJ: At the moment I suppose I have to classify myself as a jack of all trades and master of none. As you know from previous discussions I have a PhD in geology and spent many years in that field. I suppose I was normally labelled, up till the late 60's, as being the principal expert on the Arctic Islands geology as far as industry was concerned. I had opposite numbers in government who were more or less equivalent in expertise but in industry I was the one who had spent the most time on that and led a team of people and we had done a great deal of work. So I could claim to be an expert at that time but over the years I changed from geology and got more and more involved in oceanography and engineering, meteorology, logistics of aircraft and shipping, engineering, drilling systems, to work particularly in ice infested areas. I didn't become an expert in any of these things but I had a fairly broad knowledge and in Global Marine and in Petro Canada and subsequently now, it's been my sort of grasp of the inter-disciplinary problems that has been useful. Makes my experience a little bit different from anyone else's. I may not be able to match somebody else on their expertise in a particular engineering problem but I probably know more about the neighbouring sciences that they have to deal with. Which sometimes enable me to give useful opinions or warnings or show concern for particular areas that might be neglected. So people often use me as a sort of second opinion. If they

want, you know, if they've got a whole program, maybe developed by experts in many different disciplines but if they want a single person to sort of look it over and see if anything is missing or anything seems to be wrong, I sometimes get used in that manner. Because people normally tend to have careers which develop in a more specialized way, and I happen to have widened into a sort of broader general sort of frontier expert, offshore and Arctic. And also have worked pretty well, from the U.S.-Canadian border on the east coast to the Alaskan border on the Arctic coast and also have worked on the west coast. So pretty well covered the Canadian frontiers. So as I say, I'm really not an expert in anything but I have a sort of rather wide, broad knowledge and that sometimes useful. I get into things like public relations and sometimes advise governments on policies which affect different matters. I get involved in looking at regulations and of course, working with these associations, we're covering a whole series of problems and concerns which affect everybody working in the frontiers.

NM: Do you travel a lot?

GJ: Not as much as I'd like in some ways. I tend to travel to the same places. Yesterday I just came back from the Arctic.

NM: What were you doing there?

GJ: That was an Arctic Petroleum Operators, partly members of the Board of Directors and partly members of our public information committee and we travelled up to Norman Wells and looked at Esso's expansion project, where they're building artificial islands in the Mackenzie River and increasing the production there and building new facilities and will be building a pipeline very shortly to bring that to southern Canada. Then we went on to Inuvik and then on to Tuktoyaktuk and looked at some of the dome drilling vessels, including their new SSDC, which is the Single Steel Drilling Cason, which is a fairly revolutionary way of drilling in the Beaufort Sea. Later we looked at Gulf's new Colik??? Conical drill ship and Esso's new cason retained islands. So we saw the three main operators efforts in the Beaufort and met with quite a lot of the local people while we were up there. This is the sort of trip I tend to do nowadays. I go to the west coast fairly often where we're having quite a lot of discussions with the B.C. government and with federal government officials and with local groups, such as small businessmen, fishermen, environmentalists, as to the possibility of opening up the west coast again to the oil industry. That's been in an environmental moratorium for several years.

#206 NM: Is there a lot of problems there?

GJ: The governments on the whole would probably tend to welcome the activity and the economic stimulus as would the small businessmen. The fishermen are apprehensive. Their fishing industry is a little bit specialized and I think they're a little scared of the unknown and afraid we might do them some damage but we're trying to explain a little bit more about our activities and what protective measures we'd have so as not to interfere with them. We've also introduced them to some of the east coast fishing people and generally speaking, we've been welcomed into the east coast and have had a good relationship with that industry and don't look as if we're going to have any major problems. Because both industries have worked together and have tried to solve problems before they arise. Other travel is mainly to places like Ottawa, to meet government official or to occasionally give a speech. To St. John's and Halifax for east coast matters,

sometimes visiting with our Board of Directors, sometimes giving speeches. And then I go to places like Yellowknife where we have conferences from time to time and occasionally and overseas trip. Earlier in the year I was speaking in Sweden so I managed to take in a little bit of Europe to and from that talk. I sometimes represent industry in a broad sort of way by talking about developments in the frontiers, rather than one person giving a specialized talk on their particular project, I give a sort of overall, bird's eye view of what's happening in the Canadian frontier or in the offshore or the Arctic in particular. So I have a fair number of speaking engagements, some of them in the U.S., but I don't usually go to anywhere very exotic.

NM: Can you tell me about your publications?

GJ: I think my first official publications were in South America, which was very frustrating. I really should have published a great deal more but it took me 6 years to get the first one through the government printing press and as a result I got a little bit discouraged in the efforts. Some of the things that should have been published after I left, I think sort of languished in somebody's desk and didn't get published. I did put out a very large publication with perhaps 100 photographs illustrating it and coloured maps and so on, of the geology of a particular province in Uruguay. I think it was a useful publication. I know that geologists I've come across in subsequent years said that they used it quite a bit. There were a few sidelines from my normal geology, for instance, I pressed for improvement in erosion control techniques. There was a tremendous lot of soil erosion through people's carelessness and I drew attention to this in the publication and I believe the United Nations Food and Agricultural organization people zeroed in on this a bit and followed up with trying to improve some of the conditions. Most of my publications have really come out of speaking engagements. For instance I gave a paper at the International Geological Congress in Mexico in 1956, so that paper was published. That again, was on an Uruguayan topic. Then when I came to Canada and became involved in the Arctic, for a number of years I really didn't publish because I was involved in doing geological exploration for clients and I was a very prolific writer, wrote hundreds of private, confidential reports but we weren't really in a position to publish. Had we been a little more relaxed, I suppose we would have dreamt up some publications, which is a good thing for consultants to do. But I really didn't start publishing much until I went out of geology and then I started writing articles about various aspects of technology in the Arctic and the offshore. In a way I've sort of acted as a bit of a spokesman and a popularist for some of these things. Whereas there are many highly technical articles on specific systems, I've written a number of summary papers, covering a lot of different types of technology and interlinking the one sort with another. Some of these again, came out of conferences. For instance in 1972 we had a sort of high powered think tank in Mt. Gabriel, Quebec, which was organized by the Canadian government, the idea being that we'd have about 20 experts from government and 20 from industry and 20 from the academic field and we'd put our heads together and try to come up with guidelines for development of the Canadian north. In the course of that I produced a publication about the drilling in the ice infested waters. I think that sort of gave rise to a number of other ideas that people have subsequently developed. Similarly in 1969 we had the Man in Cold Water conference in Montreal and a number of us were sort of dreaming ahead, looking at what might happen over 10-15-20 years and some of the things that were mentioned fairly

casually then, such as the building of artificial islands and drilling from the ice sheet and various things of this sort subsequently happened. But at the time they were just gleams in our eye, a slight possibility that it might happen. Whereas other things we thought about haven't yet happened. So quite a few of those publications just came directly out of such conferences. Whereas other ones such as the ones I've done for the Petroleum Engineer, were I suppose as a result of them seeing my speeches or hearing speeches and deciding that they wanted a similar sort of article for their publication. I've given talks about air cushioned vehicles and drilling systems to specialized conferences on that subject but mostly I think it's been sort of a review of the state of the art of the technology from a general point of view. Hopefully I do it as a sort of layman. I'm not an engineer by training so I have to be careful as I move into engineering, I don't go into the detail which my engineering colleagues do but I hope to put what they're doing into context so that it's understandable to the layman. I have also done some historical type reviews, for instance the Royal Society of Canada, had a conference in Yellowknife in 1980 which was the centenary of the Arctic Islands becoming part of Canada and I covered the history of the petroleum industry in the Canadian Arctic Islands for the conference, which was quite a landmark one. Other people covered the mining industry, government activities, the early explorers and various other things that happened over the 100 years.

End of tape.

Tape 7 Side 2

GJ: . . .for sort of sanity. A lot of people get to extremes on environmental matters and maybe in the earlier days, industry perhaps tended to be a little too redneck, so you had two sides and. . .

NM: Do you think now it has gone overboard?

GJ: I think there was a time when the environmental movement tended to go overboard, there was an overreaction after things like the Santa Barbara blowout and oil spill and the Tory Canyon, the tanker, which sank off southwest England. Some of these things were well publicized and people became extremely concerned and perhaps rightfully so. But there tended to be a movement to protect everything and to stop everything and it was a little unrealistic. I think I and the associations I've worked with, we try to take a middle force. We try to promote effective research, to understand the environment and we're working even then to try to engineer to handle it safely.

NM: So to be more direct.

GJ: Yes. So I think most of us believe that we can operate responsibly and safely in difficult environments and that the industry has a better tradition of doing that and now are more conscious of the specific need to do it. We really have bent over backwards to do a good job and actually we have promoted a great deal of research on the frontiers. Had industry not been there, a lot of this could not have been done from a normal government or a university budget. So we have been a cause of focussing a great deal of information and gathering it and interpreting it. So I sometimes find myself going into the lion's den of environmental conferences with a lot of academic environmentalists and trying to put an industry standpoint and try not to be a redneck. I try to feel that I share the concerns of

many environmentalists yet at the same time, believe that there is a place for industry and that modern society needs to continue to have energy sources developed in our frontiers. We're always treading a tightrope really between the different consideration. I think even the most rabid environmentalist in North American, he still drives a car and has a TV and he has a heated house and so on, he needs the energy from the industry. And he probably wears suits made out of Petro-chemicals and so on, so you know, it's not possible for us to put the clock back and go back into primitive society again. So somehow we have to find a way of balancing our energy needs and our needs for other resources. As I think I said before, we are walking a sort of tightrope between two different philosophies and two different sets of needs. I think most of us in the frontier industry are fully conscious of the need for environmental protection, in fact many of us personally are fairly active and environmentally oriented societies and working on conservation matters. Some of us have cabins in the mountains and things, where we appreciate a clean environment and the beauty of the mountains and so on. Many of us are keen on photography and wildlife subjects and this sort of thing. So I think sometimes the image of rather rabid industrialists and financiers and this sort of thing, which the oil industry gets is often a totally false one. There is a need for development. I think anyone who looks at modern society realizes that development has to proceed. It's a questions of how we can do it in the most responsible manner. Same with native rights matters, I think all of us realize that these claims have to be settled in some reasonable, fair way. At the moment a great many of the environmental concerns in the Canadian frontier have nothing to do with the environment per se, they're really just a facade or smoke screen for native land claims, which is the fundamental problem which has to be solved. A lot of the desire to stop development is not a real desire to do that but it's just a way of exercising leverage to help solve another problem which they have.

NM: Dr. Jones you belong to many associations and societies, can you tell me about them?

GJ: Well, I've already mentioned the Arctic Petroleum Operators and the East Coast Petroleum Operators and of course, I've also belonged at different times to the Canadian Petroleum Association and the Independent Petroleum Association and the Canadian Association of Drilling Contractors, as I've changed jobs and different sorts of companies, I was often active in one or another of those associations. Apart from the more strictly industry associations I have belonged to some Arctic oriented organizations, such as the Arctic Institute of North America, which I've belonged to for more than 20 years. I've helped them out from time to time with conferences and at one time or other we sed to provide them with aircraft support in the Arctic when they had researchers travelling through. At one time we had a fairly active Alberta chapter and I've spoken at meetings and helped them organize various things. I sometimes referee publications, when their editor has publications submitted, he wants outside referees to indicate whether it's scientifically acceptable and I sometimes have helped in ways like that. I belong to the American Polar Society which is not particularly active, it's just a way of disseminating polar information. I have belonged to that since its inception and I have maintained links with geological societies, I'm gradually dropping out of some of them after 30 years or so, more or less being active. As I'm doing less and less geology I've tended to drop out. The Canadian Society or Petroleum Geologists, formerly the Alberta

Society of Petroleum Geologists, I have been a member for 25 years but I haven't really been active in recent years, except to occasionally go to speak at a conference. I suppose I'm one of the relatively few geologists who's wandered off into engineering and environmental matters so sometimes if they're looking for somebody to speak at a conference to geologists about other subjects I have sometimes been chosen to give those sort of talks. We had the 3rd International Symposium of Arctic Geology was held in Calgary and I gave one of the introductory speeches at that. And occasionally at their update conferences which they hold every few years, I've spoken. But otherwise I can't say I'm very active. I've maintained contact with geographical societies in various countries, I guess out of general interest in geography. Not necessarily strictly to do with my work, although I think a fairly wide background of geographical knowledge is useful in many of the things I do. One specialized area that I've been pretty active in is the Calgary Zoological Society, I got dragged in by a fellow geologist who worked with me at Sproule about 15 years ago I became active. I had been a member since I first arrived in Calgary in 1959 and for the last 6 or 7 years I've been Chairman of the education committee. We have about 80,000 school children that go through our educational program as well as the general public and we've expanded our staff and I and my committee take general responsibility and work closely with the Executive Director and paid staff of the society to see that the educational program is carried out in an effective manner. The zoo here, like zoos in many parts of the world is changing from just a place for people to go and look at strange animals in cages to a more educationally oriented organization. We're also involved in research and the conservation of species. In fact in many of the species in the world, there's now more surviving in zoos than there are in the wild and if it wasn't for the zoos, some species would completely die out. And of course, we're involved in the breeding programs and things of that sort. Another considerable interest, which links more closely with my work is the prehistoric park. I was on the natural history committee for a number of years and that evolved into the prehistoric park committee and then more lately into the prehistoric park task force. My last job was as Chairman of that task force and we were putting together the final design and the choosing of the dinosaur models to put in the park and we finally got that, at least the first 2/3 of it opened on June 28th, 29th of this year. We hope to open the next third next year. Now this may seem a fair way from the energy industry but in fact about \$3.5 million of the funds towards that park were donated by the oil industry here in Calgary. We hope eventually we'll have an interpretive centre and as well as explaining the dinosaurs and other forms of fossil life, it will also relate those to modern life and it will also relate them to fossil fuels. So we will be explaining the origin of oil and gas and coal and perhaps uranium, and other energy sources. I'm afraid we're going to need quite a lot more money before we can build that centre but it's still a gleam in our eye. So that really has been, in a way separate from the rest of my career but in many ways it's still fairly close to it. My fellow trustees and people on the executive at the zoo, many of them are members of the oil industry. We have Vice-Presidents of the university and Presidents of coal companies and various people, so we tend to work together, not only in business but outside business. As for other societies of course, I belong to one like the Association of Professional Engineers, Geologists, and Geophysicists of Alberta, APEGGA. Anyone in those three professions more or less has to belong. If you're an active person in the

profession, particularly if you're consulting. I have belonged for a number of years to Alberta Wilderness Association, I can't say I've been really active but I follow their publications. I don't necessarily always agree with all their views but I have sympathies for a lot of the things they're trying to do. From time to time I've belonged to other associations but one gets so many publications it's almost impossible to keep up with them.

#146 NM: You studied geology in Europe, do you think there's a lot of difference the way people are trained here, comparing to Europe. And you have travelled a lot so you came across a lot of people with different backgrounds in geology.

GJ: I don't know that my experience will necessarily be typical, in that I went to university just as the war was drawing to a close and was there in the immediate post war years. So I suppose a lot of things changed fairly drastically thereafter. For instance, at the time I went to university we had a staff that was decimated by people having to go into the Armed Forces, we had a few older people who'd hung on way beyond retirement years and then we had a few people who were just beginning to get back from the war effort. But it possibly wasn't a typical geological department in that sense. But I think it is typical of European universities that we were perhaps left a little bit more on our own and less spoon fed maybe than North American students. In England you don't use the word . . . oh, quite the same terminology. For instance we talk about reading for a degree. That's almost foreign to the North American system, you go to a bunch of lectures and I think everything is laid out for you on a plate. We had I think, a more research oriented element entered right into our university from the beginning. If you didn't really buckle down and develop some of your own initiative and get on with the job you would be left out in the cold and perhaps wouldn't benefit. I think here there's more tendency to have compulsory classes or effectively compulsory ones, everybody goes to them. It's maybe more lectures. In my bachelor's degree we did a thesis for our honours degree, which is almost equivalent to I think a Master's degree thesis in this country and in our PhD period we had no classes whatsoever, unless you chose to do a few voluntary ones in perhaps some subject like German for science students or something like that. But within your own field you effectively were doing research from the day you started. To me it always is amusing when I meet somebody working on a PhD here that says well, I've practically finished my PhD except I haven't done my thesis yet. Well to me, I started on my thesis the first day I started working towards it. That was the degree. In my particular case this element of being on one's own was even greater than normal because the man who was my research director for my first year, he moved to become the head of the Museum of Comparative Zoology in Harvard University and so he was on the other side of the Atlantic. They did appoint a sort of replacement research director but he knew less about the subject than I did, so effectively I was on my own. And I certainly found that stood me in good stead. For instance when I went to South America and I was the only geologist in the country and I was having to work independently. I believe the way we were sort of dragged up was beneficial, I think it created a little more initiative. I know one of my fellow students, he took his bachelor's degree and his PhD at the same time, he went on to the University of Illinois and was a professor there and he had a number of PhD people working under him and he complained that they expected to be sort of spoon fed. He later went right

through the American system and is currently President of Cornell University and is fully familiar with this and I'm sure has been trying to develop some of the more European methods as opposed to some of the North American ones. But I'm way out of date in this and many things may have changed. I also had the feeling, dealing with say, Swiss geologists and Dutch ones and ones from other European countries that whenever we'd travel in other parts of the world, we usually could hold our own very much. There was no problem in competing with geologists from North America so I feel basically the training in Europe was pretty good. Possibly where some of us may have been a little too theoretical, possibly. Maybe compared to some of the Texas universities or ones in Oklahoma, some of the universities in Europe would have been less industrially oriented. Although in my particular case in Birmingham, we actually had the university built on top of an old coal mine which had been retained as a student teaching facility and we had a fault running right across the geological grounds and we had very good variety of geological formations close to us. We certainly were able to get a lot more field experience than is feasible in most North American universities.

#226 NM: Because England as a country is a good place to study geology.

GJ: England was excellent because we were so compact, it was a sort of microcosm of geology. Also it was a country where the science of geology developed or certainly stratigraphy. In fact, William Smith, the father of stratigraphy grew up in my home town. It was building the canals in the early days of the Industrial Revolution that they began understanding all these rock formations they were going through and the idea that younger rocks sat on top of older rocks and they each one had different fossils. These sort of things were developed there. We also were an industrial society and in fact, we were well oriented to the oil industry, whereas some of the other universities were much more academic. In fact, while I was at Birmingham we had about 60 Iranians coming from the Anglo-Iranian Oil Company, came to Birmingham to study the oil industry. So we were probably better off than most in being fairly practical. I think the ability to do field work was a tremendous asset. For instance in my first couple of years at university, every Saturday we went on a field trip and often on a Wednesday afternoon and there was enough different places to go that we could go for a couple of years in a row. You could find new geological sites to go to. Whereas if you're here, say at the University of Saskatchewan, or somewhere in the great plains of the States, if you wanted to see any variety of rocks you maybe had to travel a thousand miles and they would have a field camp in the Easter and perhaps something in the summer. We were spoiled in a way in that we could always find a big variety of things close to us.

NM: You saw the ups and downs of the oil patch in Calgary, what do you feel about it?

GJ: I think those of us who are geologists or geophysicists or engineers who are normally the heart of the oil industry, we're really the people that caused the oil to be found and to be produced, I think we probably feel that we're much less influential in the oil business than we used to be. The politics and sort of political side of economics have become so very important. Generally speaking we've been rather successful in finding a great deal of oil and gas, both here in western Canada and in the Arctic and the east coast. Our major problem on the whole has not been our lack of ability to find it or to discover how to produce it but we have been very vulnerable to economic cycles and to legislation,

regulations emanating from other parts of the country. I suppose it has been a real problem for us here in Canada, as compared with the States, where oil is found in many, many states, probably 2/3 of the states produce oil and gas, although there are some preeminent ones like Texas and Louisiana and Oklahoma and California. But generally speaking it's been fairly well spread across the country and I think politically that's helped because there's some sympathy for the industry in a number of different states. Whereas here in Canada we have the real problem that just the young western provinces that really have produced the bulk of the oil and gas and obviously politically we're not very powerful. We have small populations and so it's been hard for us to achieve understanding by the federal government. I think this has been and will continue to be a major problem for many years to come. Those who finance the industry or used to finance it, and those who regulate it, tend to have come from totally different backgrounds and only have a superficial knowledge of our problems and concerns. It's very hard for people to understand that when we've got 30 years of inventory of gas or more, that it's hard for us to continue putting money into it and yet it's a fact of life, even for the large companies that there's a limit to how much inventory they can get. They just can't remain prosperous finding gas which is going to stay in the ground and not produce revenue. In the frontiers we've had a lot of problems as I've told you in earlier discussions. I was getting people into the Arctic frontier back in the late 50's and not one of those companies that went in at that time has received any return on investment. This is a tremendously long time for private enterprise to put money in without any return. It's hard for companies to report to their shareholders they've invested and that they're not going to see any return for years and years and years. I suppose that was one of the reasons why I thought there was a role for Petro Canada. It is good for a country to know where it's resources are and how much they are and when they can count on them. But it's hard to expect private companies to do that and yet they've done it. As for where we're going in the future, it's difficult to know. Of course, not only do we have the political problems but we live in a complex world and world politics and development of other countries affects our development. At the time we were trying to put Pan Arctic together and desperately trying to get money to invest in that, we were competing with people who wanted to invest in the North Sea and the offshore of the U.S. and so on. When we tried to put oil sands ???, get them off the ground, we're worrying about what the production in the Middle East is going to be five years hence or ten years hence. So as an industry we're not masters of our own fate. We have these political considerations, we have these wide economic considerations.

NM: End of the tape. This is the end of the 5th interview with Dr. Gordon Jones.

Tape 8 Side 1

NM: This is Nadine Mackenzie speaking. I am interviewing Dr. Gordon Jones. Dr. Jones, how do you foresee the future of the oil patch here in Calgary?

GJ: Well, the way we predict the future continually changes with time. I suppose if we looked back on our predictions of 10 or 20 years ago, we'd be completely wrong and I've no doubt anything I say now will be wrong in many respects. There's so many things that impinge upon a local industry, world events, that it's extremely difficult to make that

prediction. Certainly the belief that many people had a few years ago that conventional oil and gas was running out in the prairie provinces and in northeastern B.C. I think, is not valid. Certainly the more convenient oil and gas to find and to produce is less common, less likely to be found than it was some years ago, but there's still a lot of oil and gas out there. The ways and means of finding it are more sophisticated, there's more risk and more cost involved. So that has presented a problem these last few years when the price of oil and gas has either flattened out or in some cases decreased. Which means it's somewhat harder to find this more difficult oil and gas, but there's still a lot out there and some of the companies are using a lot of ingenuity and quite a lot of new oil is being found. There's not much effort being made to find gas at the moment because we have a lack of market. So I'm sure the gas industry will stretch well into the middle of the next century, perhaps longer. The oil industry in Alberta, that's the conventional part of it, I'm sure will continue, perhaps for another 40 or 50 years.

NM: And then, what will happen?

GJ: But perhaps with a diminishing production. Obviously as our conventional production diminishes and if our needs for petroleum products increase, which we don't know really, to what extent they will increase because of the various petroleum substitution schemes that are afoot. If we still need it sufficiently then the oil sands will be brought onstream steadily, perhaps not dramatically suddenly. I think we will see gasification of coal, and perhaps liquefaction of coal and we've certainly got many hundreds of years of supplies of that, not always in the most convenient places but there certainly is a lot of it.

NM: What about the tar sands?

GJ: Well, I call them oil sands, some people call them tar sands. . .

NM: The cost will be astronomical to . . .

GJ: The costs are very high. There's still a lot of experimentation being done by industry and by government agencies and by mixtures of the two.

#038 NM: But it's a huge reserve.

GJ: It's an enormous reserve and what we're doing at the moment in the Syncrude plant and in the Suncor one using ??? techniques and the hot water separation techniques has some limitations and it certainly is expensive but there's so many different experimental projects being undertaken that there must be some expectation of a breakthrough in recovery techniques. Sooner or later we'll see more insitu??? production, that's production without having to remove the whole mass of the sands physically to the surface. And I should think that we'll be able to become competitive with the frontier oil, or certain types of frontier oil. Possibly as we scrape the barrel a little more in our conventional oil, possibly the tar sands will become more competitive but it certainly won't be cheap.

NM: So you think that Alberta will stay the province of oil?

GJ: Oh, I believe so. Maybe we won't have the sort of dramatic successes that you had say, in the 50's and 60's, where it was possible to find a brand new oil field and have a traditional bonanza. The tar sands and the heavy oils are known quantities. It's a matter of plugging away systematically and scientifically, finding the occasional engineering or scientific breakthrough and injecting a lot of money. And you do need stability to get those multi-billion projects off the ground and that of course, has been one of the bug bears of the oil

industry, that governments have changed policies. Not only governments but world wide conditions have changed, pricing conditions and therefore there's been some risk in getting into mega projects. I'm sure we're into the day when there's a ??? of mega projects. That's sort of a contradiction in terms but much smaller than the type of project that we were envisaging a few years ago. These small ones will become fashionable. People become nervous when they invest possibly more than the whole worth of their company into a single project, particularly if that's borrowed money, subject to the vicissitudes of interest rates and so on.

NM: What about the technology to extract this oil from the tar sands, are we working on that very . . .

GJ: Oh yes. I'm no expert in that area but that's what I mentioned. There has been a lot of government-industry joint work.

NM: But are we making progress really, on that?

GJ: I believe so. Perhaps not dramatic. A lot of promising experiments going on. Some are going into the pilot stage. I suppose you need a few years to go by before you see that these are really yielding fruit. Some people are experimenting on tunnelling techniques and various chemical methods, even electrical pre-heating, the whole series of projects being undertaken and mainly paid for on a 50-50 basis between the Alberta government and the industry. I'm sure these will yield fruit, it's just a matter of time and patience and persistence. Possibly not dramatic changes but enough to make it economic and I think these things will be done in time for us not to have a dramatic shortage of oil and gas.

NM: How many years have you spent in the oil patch?

GJ: Well, in the Canadian oil patch, a little over 25 years. Prior to that I was in South America and there I wasn't exactly in the oil patch because I was a sort of jack of all trades in earth sciences. Part of my duties involved oil but not all of my duties.

NM: Do you plan to retire sometime? That's something I've noticed with people in the oil patch, they go on working

GJ: Yes. I don't know. I'm ambivalent, I enjoy my work and I can imagine continuing some level of work for many, many years. On the other hand I very much enjoy travel and various things, that if one gets too locked into one's work it's rather difficult to take advantage of the alternative opportunities such as foreign travel. I suppose I'd like to work myself into a situation where I could maybe work for 9 or 10 months a year or perhaps 4 days a week and have longer weekends and somewhat longer holidays. Whether it will develop that way I'm not sure. There were many years when I was a bit of a workaholic and worked 7 days a week and a lot of nights and didn't take holidays. For the last few years I've been trying to reform myself and I do in fact take holidays fairly regularly now and try not to work too much on weekends. It doesn't always work that way but. . .

#105 NM: You have good intentions.

GJ: I have good intentions. I think it's important to have a balance in life between one's work and one's home life and relaxation and so on. I just have to take it a year at a time I think, I don't think you can just, at least I'm not the sort of person that will suddenly walk out, shut my door and start a totally different life I don't think.

NM: What types of projects are you working on now?

GJ: I'm still Executive Director of the Arctic Petroleum Operators Association and that normally takes something in the order of 40% of my time. Until a few weeks ago I was also Executive Director of the East Coast Petroleum Operators Association and we have just joined that association with the Canadian Petroleum Association and they wanted a full-time person to undertake the work of running that association and I had the choice of either staying with them and dropping all my other activities or of dropping out of that situation. So right now I have left them as Executive Director but they asked me to continue with them as a consultant to work with the new manager. So at the moment I'm still busy. I haven't suddenly found myself with spare time. I also do some consulting work, I've worked with Newfoundland Ocean Research and Development Corporation for a number of years, generally sort of advising them on policy and on what they industry is doing and maybe what government is doing that might affect their activities. For the last year or so I've been quite deeply involved with the small group of companies that is involved with new Beaufort Sea drilling systems and productions systems. I've been too busy to be spending a lot of time on my work but I have been giving them advice on how to proceed and who to talk to. They've come up with some radically different ways of approaching Beaufort Sea problems and methods or reducing costs. Through that group, it's also led me into a lot of non-oil business things, like that development of lasers and new business systems and new forestry technology. Quite a few rather diversified interests that I've been doing as a little sideline. But perhaps I might pursue some of these outside interests to some extent in the future. Potentially I've got a little more time becoming available to me in a month or two and so I will be pursuing the consulting side of my activities more than I have in the past. I still give a fair number of speeches on various topics. Currently I'm organizing a conference in Fairmont, one that we've had a number of years, to discuss a variety of industry issues in the frontier. I sometimes get roped into these jobs because I'm more or less a neutral viewpoint, as opposed to many of my colleagues who definitely assume the spokesman for a particular company. Today some of my colleagues persuaded me to Chair a rather tricky session which it was best to have someone who wasn't too closely identified with either a single industry standpoint or a government one.

#151 NM: So you can be more objective.

GJ: That's the intention anyway. I've done this for quite a number of years, sometimes I acted as a type of industry spokesman, where they wanted a general spokesman who, if the industry had 2 or 3 points of view, I could be somewhere in the middle. Most people would reasonably agree with my point of view. So life is still very busy, it's just changing a little.

NM: So that's why I just cannot imagine you retiring.

GJ: I don't suppose so, but I've always promised myself and you've reminded me of it by coming and getting me to talk into this tape recorder that a lot of interesting things have happened and it would be nice to sort of write about some of them at some point.

NM: In looking back at your career, is there anything you would do differently nowadays?

GJ: I think it's fairly difficult to tell. I don't think anyone would have planned the particular career I've had. There's so many things have happened, just a series of circumstances sort of juxtaposed themselves and you end up taking a particular turn in your career. I suppose

I wouldn't have planned it that way and yet I can't really regret that it's happened that way. I think many times when it would be nice to have 2 or 3 lives to do all the things you wanted to do. So there were obviously some things that I could have done, I had opportunities and I chose not to follow that opportunity. Even now, I've been recently made offers to go to a distant city and to take very challenging jobs in government and things like this and one half of me says that would be rather interesting and the other half says no, I'm too tied up in what I'm doing and enjoying what I'm doing. So I can't regret. There have been a number of satisfying things, a certain number of frustrations. I think one learns from the frustrating circumstances. Obviously I think I probably explained to you in the tapes of months ago, but I've forgotten the details of what I said, but when I went into Petro Canada I had a certain vision for what I might accomplish in that organization and for various reasons the organization went off in a slightly different direction. Therefore I pulled out a particular situation, however I think I learned quite a lot while I was there, I made a lot of friends. I think I had some impact for the better on certain things that were done so one just accepts that as sort of part of the mutual learning process.

NM: What do you think of your contribution to the oil industry?

GJ: It's very difficult to single out one's own impact as compared with that of a whole series of colleagues that I've worked with. In my first decade here I was privileged to lead a team of mainly geologists and the people that worked for the geologists in exploring a new area of Canada, at least it was new from a geological exploration point of view. I believe I contributed quite a bit to getting that task done. Obviously if I hadn't been around somebody else would have done it. We had a certain enthusiasm and vision of what needed to be done and in many ways I suppose we were before our time. It could have waited another 10 or 15 years before the market was completely ready. But I certainly helped that to happen sooner than it would have done otherwise. I think I possibly made some contribution in trying to get people to work together and the work of putting Pan Arctic Oil together was a place where we had a lot of small companies, or big companies making only a small effort. And then we put them together into a single collective entity and I think that was some benefit. I guess if I'm noted for anything in the industry it's a certain amount of patience and perseverance in trying to get disparate views brought together and try to persuade people to work in unison. Subsequently I think in the formation of the Arctic Petroleum Operators Association and I was only one of the early people, there were a number of colleagues that were involved and in the subsequent years working with that association and with the East Coast Petroleum Operators, it's been the same story, of bringing people together and trying to collectively solve a problem. Also a certain amount of bridging that I've helped to do between government and industry. I think I've played a part in that process. It's not dramatic but I think it's useful. I suppose some of our discoveries based on our efforts in the Arctic Islands will eventually be important economically but at the moment they're still in the distant frontier and haven't been linked to market. I think in recent years I've been one of a number of people in the industry who've tried to bridge the gap between the environmentalists and the anti-development people and the developers. We've gradually helped to bring them together to some extent so that at least we can proceed and hopefully we haven't done too much damage to the environment which we hope future

generations will enjoy.

#235 NM: And this is the last question Dr. Jones, on the whole what do you think of the oil patch?

GJ: I think it still is a very vigorous industry with a great many very innovative and rather hard working people. I think over the last 10 years, maybe 15 years, it's been somewhat shaken at time by the impact of governments and other exterior forces which have forced it to adjust rather dramatically to these other outside impacts. Which means that, whereas in the past, one could operate with geologists and engineers backed up by geophysicists and financial legal people, in a fairly simple way one could find oil and gas and one could market it and get on with the job. Now we live in a world in which there's so many other factors which concern us. When I look round the meetings I attend and see the number of lawyers and the economics people and biologists and people from all sorts of other professions who are now deeply involved in what we're doing and have a say in what we're doing. It has become a much more complex world. There are one or two veteran oil men that I've seen just prior to their retirement who I think were almost glad to get out of the oil patch because it was a new world and one that they weren't quite sure they liked. So for some at least, it has become a frustrating place. I think others are sort of rolling with the punches and learning to live in these new conditions. Although it's more complex and perhaps not quite so much fun, nevertheless it still provides some satisfactions. We are often on the verge of new technology and we're really helping to solve a problem that needs to be solved. If we didn't have hydro-carbon energy available to us there would be a tremendous gap. Our standard of living would go down all over the world and somehow we have to keep going despite the frustrations. So I think it can still be challenging. It's not the only world, we have to be conscious of other peoples worlds and other peoples values. There's one area I've got into a lot as I mentioned before is this sort of environmental dealings and the social feelings of native peoples and these things. We have to somehow learn to bridge the gaps between our own industry and that of the ways of life of the people around us. But I think the oil patch people have begun to take this wider view. We possibly take more interest in politics and things like this than we used to. At one time we just went about our business and hoped nobody noticed us.

NM: And then things changed.

GJ: Yes.

NM: Thank you very much for this interview Dr. Jones.

GJ: Thank you very much, I hope I didn't make too many errors rambling on.