

PETROLEUM INDUSTRY ORAL HISTORY PROJECT
TRANSCRIPT

INTERVIEWEE: Harry Woodward

INTERVIEWER: David Finch

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DF: Today is the October 27 in the year 2001 and we are with Dr. H. W. Woodward at his home in Ottawa at 2220 Louisiana Avenue. My name is David Finch. Thank you for meeting with us Dr. Woodward.

HW: A pleasure.

DF: Could you could just start by telling us when and where you were born?

HW: I was born in Britain in Norwich, England, 1923, February 1st. I have an older sister, 2 years older, also born there of course. My family, mother, father and the 2 children came out to Canada in August 1924, landed in Quebec and moving on to Windsor, Ontario. 5 years later I had a brother and that was our family, Ethel, Harry and Ronald. Both my parents and siblings are passed away now, most recently, the last one was 1985.

DF: What were your parents names?

HW: My father's name was Benjamin Woodward, my mother's was Lily. He was employed when he came out here to Canada as a station engineer in charge of the coal fired steam plant for the Board of Education, heating.

DF: Tell us about your education.

HW: It goes back I suppose again, to Windsor, I had my elementary and secondary school education there starting in about 1930 I guess through to 1941, when I had my junior matriculation in April that year. At that time I joined up, enlisted in the RCAF. Maybe I can just interject a little bit, a few comments. I enlisted in the RCAF as a radio mechanic. There was a great need then in Canada for about 5,000 radio mechanics to serve the British radar system which was installed along the coast of Britain, defensive early alarm system. The training there was 3 months at the University of Toronto on the technical aspects, theory, physics and radio theory and so on. Then we proceeded to the RAF station erected at Clinton, Ontario in September of that year for about 12 weeks on the hands on. This is 1941. So the summer of '41 was at the University of Toronto doing the theory and the fall of that year was doing the practical work. I went overseas, essentially embarking on about December 19th, 1941, deployed essentially 8 of us on a tanker to handle machine guns. So my career started up at northern Scotland and came down to Bournemouth to Manning Depot and then coasting to a radar station at RAF Kingsmere near Dartmouth, on the south coast of Britain, immediately opposite to the Sherbrooke peninsula. So we were a year and a half there of almost daily hit and run raids and things, never involved in the department until about the last day I left there. We had a couple of bombs come in through hedgerows and down into the valley, no one injured on the station but a few sheep killed down below. Then I remustered, came back to Canada for air crew training and went to the navigational school #4 at London, Ontario for that 1943

winter,

#044 became a navigator, commissioned and went back overseas and was assigned again, to the RAF as radar navigator. Did operational training first on Bullfighter's then on Mosquitos and by that time, of course, the war had come to an end as far as Europe goes in May of '45. Just prior to that or in anticipation I suppose, of the termination of war, we had RCAF officers come around and try to determine where Canadian potential veterans were going to go when they got back, were they going to go back, want to pick up land and farm, want to go back to university and so on. They conducted aptitude tests and interviews, probably a couple of hours apiece. I think it was determined then that probably my potential lay best in university work, probably in forestry and/or geology. But that purely reflected my general out of door youth activities I'm sure rather than any intellect that's relevant to those professions. Anyway I came home then, in July of '45 with the expectation that there be a far east posting. I was on disembarkation leave during August of that year and of course, the VJ day came midway through August and about 2 or 3 days later I got a telegram to report to Manning Depot. Right then and there I went round to the DVA Veteran's Tutorial School which were just opening up and being staffed with the principals and staff to really, train people in their senior matriculation course, Grade 13 here in Ontario, which of course, I had evaded by joining up back in '41. So anyway, I was more or less retired into the Special Reserve about Sept. 7th, of 1945 and was back to school on Sept. 11th. Then it was essentially, about 12 weeks of very intensive work on the senior matriculation subjects. I finished that up in December of that year, and pending entry to Queens, which had a special session starting in May for us, I was offered the job of tutoring in the school. So as a consequence I had another 3 months of very intensive application to the senior matriculation stuff and I think in that fortuitous event I really had a good grounding in a scholarship essentially, of education. So I went to Queens and ultimately on to graduate studies. I always found that intensive background because once upon a time I could identify the questions in mathematics or in physics which were confounding the students I was tutoring just by the looks on their face. I used to marvel at a Latin professor of mine in high school who had a photographic memory and knew the page, place and everything for every grammatical problem in Latin and so on. But after my experience there for 3 months I realized it wasn't the facility that was really significant, it's one you acquire. But it served me well. So anyway, in the spring then of '46, April, I went to Queens. As I say, they were running a special session there throughout the summer to handle the veterans overload. It was essentially veterans that were registered there, about 400 of us in our first year. We finished our first year in September and sort of 2 or 3 days off and started our second year, also in September and of course, ran right through then to the normal termination of the second year in April that year. And we were involved then, as a consequence, in so called, Science '49 and that's when I graduated from Queens with a Bachelor of Science in Geology and Mineralogy. It was largely a hard rock school. In fact I'd even taken the mining option which was not only mineralogy and geology but actually was involved in mining ore dressing, mining methods, mining design, those types of things. So actually the first year I had vacant during the summertime, I actually went up to the mine, Kerraddison Gold Mine in

Virginia town. It was a brand new mine, more or less just opened, state of the art, big ???, beautiful and very nice bunkhouses and food and

#103 all the rest. I forget the salary there but it was essentially quite good for a university student. There again, I was fortunate, many of the college students or university students working there, they were assigned to mucking trenches and so on but somehow or other, through good fortune, probably a bit of age, you know I was always, as a consequence 4 or 5 years older than the general people at that stage because of the war time vacancy I assumed. Anyway at Kerraddison I was assigned as a so called chucker, mining assistant actually in the stokes and we were on stoke bonus and so on. So as a consequence one had the opportunity of working with the very enthusiastic mining crew, generally another two miners, I chucked for both of them. So there was 3 of us in the stoke and on the bonus, by the month you sort of drilled off and blasted and so on, and in the course of a month that was enough to double your salary. So it was a very nice opportunity. But I did learn from that summer that probably mining wasn't for me. I didn't find that being down in the dark 8 hours a day and the cold and a little bit of wet that it was the type of geologic labour that I could see was the nature of the business was going to be fascinating to me. At the same time, that was the year of course, of the Leduc discovery and of course, there was lots in the press and I began to think that maybe indeed, the petroleum industry was the direction I should take. Then I guess, in the summer of '48 my good fortune, Walter Link, who was the Exploration Manager, Chief Geologist for Imperial Oil at that time came through the universities interviewing potential applicants for the summer employment. Fortunately I was hired on by him. I'll maybe leave that portion there because it will integrate better I think, later on when I get into my role in industry work, I think. But at the conclusion of graduation in 1949, May, I decided to go on to graduate work and applied to MIT, Stanford and Wisconsin. Wisconsin didn't necessarily have the better deal for me but my professor, the one I admired most, Dr. Hawley, a mineralogist during my 4 years at Queens, he'd taken his doctorate. . . He's now dead of course, in fact my professors at Queens were largely Dr. Ambrose, Dr. Bruce, Dr. Hawley, Dr. Berry and Dr. Macdonald and Dr. Rose, there were 6 of them at the time, they've all passed away by now. Of course, that school has advanced considerably. When I was there is was 3,500 registration and Queens always fixed their registration to about that for many years and they only allowed it to expand in the last decade. Now I expect there's somewhere about 10,000 students there on average. Anyway I finally elected to go to Wisconsin and went there as a consequence, in September of '49 and was there for 4 years finishing my doctorate and finished up there in '53. I had five years actually with industry field parties and consequently knew fairly detailed, you know, the personnel and the objectives and the nature of the various senior companies anyway, Imperial Oil, Shell, California Standard. Gulf however, had a program where they would give you 2 years initial training by bringing you in ????. So anyway that attracted me, I thought I'd like to get that portion over, complete and done with so I could get on and do something a bit more inspirational. So I applied to Gulf and was interviewed in late spring of '53 by Ed Baltrosidus who was then the Exploration Manager of Gulf, Oscar Erdman who the Chief

Geologist and essentially was on hire. I reported out there in early July 1953, driving by car and so on. Just incidental in there, during my graduate school work I got acquainted with my wife who was then in her graduate school geography in the same building, science

171 hall. We were on the 2nd floor I guess, and she was in the geography department on the 3rd. Anyway, met on the staircase sometime, I think I ran into her with a bunch of fossils in my hand or something like that. So she tells me, I don't recall the incident. Anyway we sort of courted for 3 months and get married, decided to get married anyway. We got married on September 15th of 1951, we had our first child Ronald, named after my brother of course, in 1952 and as a consequence, I had a small family then, my last two years at Wisconsin. Then we moved, the 3 of us, to Calgary in July. Just unfortunately, bad timing, or bad planning on my part, that so happened to be just prior to Stampede week. And of course, all the motel accommodation was tied up. We got in I think, or were allowed to stay 3 days at the motel so we had to get very busy, at least my wife had to get very busy in looking for a house while I was getting settled in the office and so on. So we ultimately got a basement apartment with the Switzer's who was then the General Manager of the House of Modern, you know, the furniture store in Calgary. We had very nice accommodation there but with Gulf, after an initial 2 weeks I guess, on sort of mechanical log evaluation, e-logs, radioactive logs etc. I was then immediately deployed out to sit on development wells in the Westrose field, which was a discovery of Gulf's on the south end of the Leduc, Bonnie Glen, Pigeon Lake reed trend.

#198 DF: What was that like?

HW: It was quite good, I enjoyed it. As I was saying, all my youth, right from the time I was probably 3 or 4 years old was always spent camping out at the lake so somehow that build what you call an outdoor person I think. As a consequence I found the field work very good. We were in, as I recall, a summer cabin which we rented. Stan Waterwich, another geologist trainee and myself, were there with Nick Ediger, the three of us. Nick was the somewhat senior geologist with Gulf who was supervising. We had a doghouse and its case, there again fortunately, a brand new one. I spent the first 2 or 3 days painting all the interior and the floors and so on, which apparently had never been done before. And as a consequence as soon as I left that facility the engineers grabbed that, that became their permanent facility there. They didn't allow the geologists to use it after that. So there I think I probably went through about 3 wells, mainly to anticipate the encounter with the Niscue and the Leduc horizons so you got minimum penetration, conduct your drill stem tests and so on. So that was quite good. As a consequence you learned the subsurface stratigraphy, you know, the Cretaceous, Mississippian and Devonian systems. Then I guess Gulf opened up a district office in Red Deer and I was assigned to that and from there, then went on to further development well sitting at Stettler, Fenn and Big Valley fields, all Niscue and Leduc reservoirs. Subsequently I sat on the Gulf-Munson wildcat well which here again, fortuitously turned out to be an unexpected gloconite gas discovery.

DF: What kind of gas?

HW: Just a gas discovery.

DF: You said gloconite?

HW: Gloconite yes. It's a lower Blairmore horizon, random and sort of erratic prospects but it turned out there to be. . we got I think, drill stem tests of about 17 million cubic feet a day, a substantial flow. So that's the only wildcat I actually had full responsibility for. And as I say, fortuitously it was a discovery, subsequently developed, just north of Drumheller by the way, just a couple of miles out. I guess then I was back in the office doing. . well, no, I was out on working interest well, contribution wells. Not our own but where we had placed money, largely to get access to the geologic information. As a consequence, in the dead of winter, I remember in 1944, temperatures sometimes down around 40 degrees. . .

#243 DF: '54?

HW: '44.

DF: No, but what year was this?

HW: This was '44, the winter of '44. But anyway I was on these contribution well so I maybe visited as many as 2 or 3 contribution wells a day in that general area, Nevis, Fenn, Big Valley, down through that trend and checked the logs and those things, in order to make sure we got our interest in the drilling program. So I think that ended my well sitting experiences. As a consequence that portion which comes to the trade of many geologists in the industry, my intention was to get those things out of the way and get back. . . So I then came back in and was assigned to the research lab and ended up I guess, here again, monitoring the field operations which I'd had 5 years experience myself, with Imperial, Cal Standard and others. Anyway, essentially supervising Gulf's field work that year. Those projects were, they had 4 going I guess, and that was stratigraphic studies of the southern Rockies, photogeologic interpretation, drainage analysis of the Peace River area and we had a major exploration party working up in the Yukon, doing the Richardson Mountain range and the British Mountains in northern Yukon, Eagle Plains area. Dr. Hans Nipping was doing that, a marvellous man. It was quite an experience anyway, that year. And it was my first real exposure, other than the partial exposure on the Liard River to the Yukon geology. And it was probably about that time that I began to develop a great interest in Arctic geology in particular, with the publication of GSC's memoir on Operation Franklin, a 5 year program of geologic mapping and stratigraphic studies for the Arctic archipelago. That came out about 1959 I guess. Anyway and then I subsequently took internal courses in geophysics and of course, seismic, a little bit on gravity. And then was put on a sort of rotation assignment with one of the districts initially doing land evaluation, monitoring other industry activities in the area and so on. Then I found special projects, as a consequence, one of them anyway, we went out and got authority of course, and approved a project and went ahead and took out land in the Straits of Georgia. That was in the early days when companies were, some more or less heroic companies like Shell and maybe California Standard were beginning to venture out into the offshore. Both on the east coast, opposite Nova Scotia, and the main. . . I guess Shell had drilled a well up in the Queen Charlotte Islands area. But anyway, this was

quite new. And then I was assigned to supervise the field work the following year, we went in and did all the perimeter area where I tried I think, to get the best field we could for the submarine geology for the Straits of Georgia. But we went in then, with a gas exploder study. It was mandatory because we couldn't get provincial authority. In those days of course, there was some doubt as to whose authority you should be seeking, whether it was the federal governments. What we did here when we filed on that land, I accompanied the legal man

#301 Mike Caission to Ottawa to file at the same time we sent 2 other people to Victoria. So we took out the rights under federal legislation and took out the rights under provincial legislation with the idea that we were protected one way or the other. Even they didn't know who really fundamentally had control of those resources. But as I recall the gas exploder study simply revealed the superficial ??? sedimentation. My interpretation of the results was essentially, it was a glacial material. In fact it was a rather profound observation at the time and the reports went down to Gulf, Pittsburgh and were distributed around and so on. So we felt pretty good about that. I'll tell you the rest of that story a little bit later just because I sort of got Gulf into that predicament, particularly that land. And then when I went with government, when indeed they were more or less precluded from proceeding ahead, either with more definitive seismic work or even indeed there is a reticence on the part of the B.C. government, particularly even to allow them to ever think of drilling in the Straits of Georgia, being congested shipping and so on. So anyway, I think Gulf by that time, senior management didn't think they should probably drop the acreage. Being at the other end now, when they dropped the acreage we arranged the deed. . .we allowed them to pick acreage in my dominion, that was in northern Canada. So they actually selected acreage in the Beaufort Sea or in the Mackenzie Delta. So indeed I got them into a predicament but I got them out of it. It's a curiosity of events. Anyway, I guess over the rest of that 10 year period, from 1953 to 1966, I retired from Gulf in November of '66 and reported to Ottawa to a position which I had attained. Here again, this is a little personal story. I had really applied for a position which was advertised of course, as a public service position among industry and in probably July and August of that year, was interviewed. Just curiously Cam Sproule, who I'll mention more about later on, was on the Board and more curiously my Exploration Manager, Stan Pearson was on the Board. He, unknown to me, was on the Board but it became clear of course, when my interview came up. So anyway, in the end I got the word from Ottawa that I had won the competition and the job was offered to me but conditional upon my clearing the security check. And that bloody security check went on for 3 months. All the time there were RCMP to different people I had indicated to be subject to personal interview. As a consequence the rumour, because of Stan Pearson having been on the thing, knew I had been a candidate, that I was the successful one and so on, I suppose from that source. So the word got around so people talked to me all the time for 3 months, when are you leaving and so on. And of course, in those days, normally when you left you put in your notice today and you were out of the office that afternoon, particularly if you were going to a competing company. I guess in this case, seeing as how I was going to the federal government management wasn't overly

concerned. But anyway this embarrassing situation of sitting there for 3 months waiting for the security check to indicate that I could come. And then come November, I'll be damned, I get a call from Digby Hunt to indicate that the security check was approved and that he'd expect to see me, you know, almost the next day. And here again, this was something similar to my story about the Stampede week upon arrival there, in this case it was the Grey Cup game was on. I'm not sure whether it was Calgary but anyway, one of the western teams that was going to Toronto for that. So when I got this notice I phoned up of course, about train passage and everything was

#383 booked up, there wasn't a hope for about a week of getting a reservation for a berth or a compartment. So anyway, I think it was almost the Friday morning I went in to personnel department for the clear out review with personnel and that lunch time just after I had finished I got a phone call from CN, indeed there had been a cancellation, they had a berth for me that night. So as a consequence without the opportunity for bidding adieu to my colleagues or anything else I had to tear home, pack and make that exit. In the meantime of course, between the security review and so on, the delay in getting the okay to go ahead my 3 children were in school, both elementary and secondary school and my wife was taking her additional training in education at the University of Calgary and she was in her last year of that. She had previously had her bachelor of arts, major in geography and of course, a potential Master in Wisconsin. Then when our kids were grown up, or at least all in elementary school or other, she decided to go back and get a degree in education so she could teach. So that was the case. And then when we moved to Ottawa she took one year off while we sort of got the house in shape and so on, and settled in and she had the opportunity in 1968 of being interviewed for a new high school, just a mile from here, Canterbury High School and she had the interview in the evening and by the time she got home that evening she had a call from the principal and had the job tied down. So she spent her career of almost 20 years in high school, 10 years at Canterbury and then other years in different high schools about the area. That's a bit of an aside but anyway, it worked out very nicely except for I spent my first year, as a consequence, batching here in Ottawa. But it was advantageous too because then I, as a consequence, had no sort of immediate family responsibilities and as a bachelor, nothing else to do, I could essentially spend 12-14 hours a day attending to my new job. And it was always quite onerous because, well, I won't go into it I guess, right now. So where are we, I guess I'll continue on. Then in November 1966, I came in essentially as administrator of oil and gas, that's what they call a PM-6 at that time. The salary level was about \$13,500 in those days. It was essentially the same money I had in my last years as senior staff geologist for Gulf. So at the time I essentially lost nothing there. But I did take the opportunity of going after, what in my mind was the Arctic geology and getting access to all the industry information coming in which was very attractive to me. So that position had been previously filled by Dr. Crosby who originated from California Standard Co. and he had occupied the position for about 3 years prior to that it had been occupied by Digby Hunt who was now Director of the branch, which was oil and gas, mining and economic development. There were three elements in there. So I came in as the administrator but within probably a year and a half, the Chief of the division, Harry

Caldwell, vacated it and I went through another interview process with a committee. The project was up again, for an internal competition. Anyway I received that job and that covered my former area of oil and gas but also mining. So then I became Chief of the division for oil and gas and mining. That's for all of northern Canada, north of 60. Then probably another year went by and in about 1970 I was appointed Director essentially of the same branch responsibilities then, of oil and gas, mining and we also had infrastructure, roads and airstrips. So that became my domain. And then the immediate problems begin to fall. I suppose this was just about the time I came, in early 1967, Pan American discovered the Pointed Mountain and Continealy???

#495 gas fields and proceeded with their development and plant construction and the construction of the pipeline from there down to Fort Nelson. It required some desulphurization, essentially, the gas and so on. But that was the first sort of project we were involved in and the other, as I indicated, we had the ownership essentially, of 33% of Norman Wells, which was one of Canada's foremost discoveries prior to Leduc. About 400 million barrels of oil in that. That's in a surficial Devonian reef formation, only about 1,000-2,000' subsurface. As a consequence very easy to drill. It was of course, discovered way back in 1924 I guess, here again, by Walter Link. He had been a geologist for Imperial Oil at that time, went up and drilled, located the first well adjacent to the oil seeps. Oil seeps had been known for 200 years.

#516 DF: Was this Walter Link or Ted?

HW: Ted. Theodore, yes. I had acquaintance, I'll tell you later on, with Walter, the brother. In fact, even with his other brother who's a professor at Wisconsin. He had been the discoverer of Warfarin, the rat poison which is widely used now in heart treatment. So I had a fair acquaintance with Ted all the way through. But this was the background of the discovery in Norman Wells. It's nicely written up by the way, just in a recent ASPG paper, it came out last year, the historical aspects plus the update on the background to the development and the extension of that. And that was of course, subject, in the CANOL days in the period of the war to an extension of the reservoir. In fact, that's how the government got its 30% interest in it was that as they began to develop the pool in anticipation of war time requirements, they found that the reservoir extended out into adjacent Crown lands. Rather than give those up to Imperial they just took them on themselves and worked in a sort of ??? agreement where Imperial developed those lands and as a consequence we took a share then, of the ultimate profits and always of course, the 10% Royalty interest. So we had the 2 sources of income from that all the way through.

End of tape.

Tape 1 Side 2

HW: Then the next one, in fact, almost immediately when I got there was this Cam Sproule

and Eric Connolly's proposal for a Pan Arctic syndicate essentially, to obtain by farm out all the prospective or farm in, all the prospective lands then held by a multiple of small oil and gas companies, mostly Canadian, throughout the Arctic Islands, mainly the Sverdup Basin, the central basin of the Arctic and try to generate an initial capitalization of about \$20 million to begin the sort of unified exploration and ultimately the drilling of that. As a consequence that fell on my desk too. So in the early efforts then in late '66 and early '67 Cam Sproule finally had in his hand the commitments for about \$11 million. But as he used to say at that time, you bend down to pick one up and like eels, you lose one in your hand. Eventually he came in almost with tears in his eyes I suppose, that he was unsuccessful at putting together the necessary \$20 million and began to look to us for the other \$9 million. It just so happens that Sproule again, several years before had been in and proposed to the then administration that they introduce an exploration assistance program to stimulate oil and gas in the northern Canada, which was really fairly dormant. There was a little bit of activity, people still looking around for reef finds and so on, along the Territories, provincial border area and so on but there were only, probably 2 or 3 wells a year being drilled, mostly in the wintertime. So activity wasn't very large. But when he'd suggested this exploration incentive program so we brought in, at least the previous administration, with cabinet approval had established, I guess we had almost a \$20 million appropriation for that program where we provided incentives, sort of dollar for dollar for Canadian companies explorations in the north. The principal benefitter of that was Western Leaseholds, Bill Farmillo and Hod Meech's company there on 9th Ave. and about 4th St. W. beside the old silos that used to be there at the railway tracks. So we had a great deal of money sitting in that and Cam Sproule knew it and thought that would be a good source of funds. So anyway we had to go to Cabinet and get approval to anticipate and got a commitment, we could put in the complimentary \$9 million, he had 11, we put in 9 but as a consequence of that, we decided like we did with Imperial Oil that seeing as we were putting up some of the financing we'd take part of the benefits. So we demanded ownership, shares and equity ownership to an extent. Originally it was 45%. That project of course went on, essentially was finally approved with the Pearson government and at that time Arthur Lang was our Minister and that was essentially approved at the end of 1967. In the meantime of course, I had a lawyer assigned to me and between he and I and Dick Matthews, who was the lawyer for Pan Arctic, we worked out all the requisite legal requirements, amending their patent and taking prudent steps to make sure they did indeed have those farm in and farm out agreements and so on. Anyway, so it was in December that we went to Cabinet for final approval, after we had the whole thing tied up in a pretty package. John Macdonald, who was our Deputy, he was our senior ADM I guess, he was made Deputy just shortly after that, possibly because of this successful venture. But anyway, we went to Cabinet and Prime Minister Pearson, it was a Cabinet committee meeting I guess, but Pearson Chaired that meeting, about half way through he had to leave and he turned it over to Arthur Lang who was the Minister of course. Arthur Lang is from Vancouver, resource oriented, in fact we used to go over and have weekly luncheon meetings really and keep him apprised of activities and stock and so on. He was very interested in what was going on so he followed our activities all the way through

#076 negotiating the deal and was gung ho. The only protester we had was Pierre Trudeau, who was the Justice Minister. He was bemoaning the fact that this whole thing hadn't been vetted by justice. I remember John Macdonald stepped in right away indicating that the legal officer seconded to me to assist me through this thing was indeed a justice department member. This was Fred Macdonald and apparently he had failed to keep the justice administration apprised of what we were doing. But anyway, that was my first introduction to Trudeau and it was a rather disappointing performance I thought, on his part. He was certainly spectacular after that I thought. So then as a consequence, during this course of events, albeit we put this money together and got the Pan Arctic venture going, some of the senior companies, Dome, Pan Canadian and so on were becoming a little bit disenchanted with Dr. Sproule and his gung ho, enthusiastic thing. It was initially Cam Sproule's idea that his firm, consulting firm would take over the management since he had essentially ??? for the operations up there. They were reluctant to see that and as a consequence finally, edged him out. Of course he had no money of his own other than this \$11 million from the contributors put in. So it ended up with a net carried interest of 2 or 3 % you know, in ultimate potential profits I suppose, which never materialized. But it was rather sad that it came that way. But anyway we had to go along with it and what we determined in December was that Jack Gallagher and Dome Petroleum would provide the staff to get the operation active immediately and they maintained the operational control and management essentially of that project, for about a year and a half, until they had done the executive search and so on for people to replace that. And they got people like Charlie Hetherington who became President and so on and Minnealy I guess and others. Anyway a chief geologist, a production engineer etc. That became then, Pan Arctic Oils, separately managed from Dome Petroleum's interests. I guess that winter. . .no, I guess it would be spring, spring of 1948. In the meantime what happened, Dome immediately got busy, heli-lifted in, set up a logistics camp at Drake Point and moved some of that old equipment that was still in place from Dome's Winterharbour well which had been drilled with Peter Bawden and company several years before. Moved that camp up to Drake Point and air lifted a heli seismic operation with mobile heli-lift compartments and so on, to start the seismic up in that Sabine peninsula in the first instance. That same spring Jack and Walter Link, who was then a consultant, he had previously of course, been exploration manager for Standard of New Jersey, the prior Esso corporation and had been much engaged in world wide exploration ventures. And Jack had brought him down and the three of us, Gallagher, Jack, and myself, we went up and . . . Just to interrupt there, that was '67 and the operation was sort of mobilized and going in '68 and come spring of that year of course, Prudhoe Bay was discovered. And there's 10 billion barrels of oil defined by 2 wells, one well on the north end of the structure and one well on the south end of the structure, the whole thing continuous. It was about the 6th largest oil pool in the world I guess and of course, the companies involved, BP and others got busy immediately to start to develop that pool and then of course, the Alyeska Pipeline proposal came in and the Manhattan Venture was initiated in what, '69. There was you know, the tanker transportation feasibility study in place, '69 and '70. I can tell you a story about it too, but anyway. So as a consequence . . .

#123 DF: What's your story about the Manhattan?

HW: I can tell you that I think probably in a moment. As a consequence, when Gallagher, Link and myself then ventured up to do a sort of early reconnaissance of the Pan Arctic conquest in the Arctic Islands, we went directly first to Prudhoe Bay. And Jack of course, is very glib and a tremendous organizer and enterpriser, so he laid on and we got into Prudhoe Bay when it was still sort of hush, hush and secret and were shown around and so on. Anyway then we flew on in to the Arctic Islands. The only places then of course, were Resolute and the other joint Arctic weather stations set up between the Canadian and U.S. government that were spread around, Mould Bay, Isaacson, etc. So we made a complete circuit of the Arctic Islands and down through the basin to give, mainly Walter Link a visual appraisal of the things, because I think Jack was seeking from him some sort of judgement as to how sound this venture might be. Walter Link's experience, I think was entirely, from the GSC report, based on the Franklin Operation, 5 years of geologic mapping. So the whole area was covered reasonably, there was a map anyway. But we flew on, it was a glorious trip, up through Axel Heiberg Island and so on. I've flown subsequently in the north very extensively but that was my first real experience other than the one I'd mentioned before when Gulf's operation in northern Yukon. But I found it tremendous. So that was that portion and then in early 1968 Arthur Lang, our Minister had left and lo and behold we had Minister Jean Chretien, then as a young man join the department. Then we had the Board of Directors and all the other officials who had been involved in the origin of Pan Arctic go up there in a large aircraft, I have a picture here. Sort of an inaugural conception, up to Resolute Bay really and then had visits over to their heli-lift camp, which was then in operation, early '68 and the handing out of tokens. This ashtray here was what Cam Sproule had. . . [interference with the microphone]. I was going to indicate the visit here and this is the complimentary picture of the group here at the time and signed off, the National Film Board actually took this picture and I guess somehow or other Jean Chretien go it and signed it off, compliments of Jean Chretien. Here he is here as a very young man, you can hardly recognize him. This is John Macdonald, I guess myself up here in the glasses here. The reason this one is somewhat interesting is, I came in with a picture essentially, if you will, of Jean Chretien, our first Minister on this trip to Pan Arctic and when I retired in '85 David Crombie signed off on a picture in thanks to my retirement etc. and my contributions to the north but there again, it's against a picture of my standing there at Bent Horn. The oil and pipeline development we had there for production of oil in 1985. So beginning and at the end, two different Ministers but Pan Arctic association.

#179 DF: You were going to tell us about . . . ?

HW: Oh yes. Actually Cam Sproule of course had had an operation in the Arctic Islands for 6 years preceding all this. Dr. Gordon Jones, his principal geologist was doing contract field work, you know, for Sproule and Associates, the consultants. So he had a logistic base for all this geological operation located at Resolute airport. He invited all these Directors and Ministers and other officials over to his establishment and he had turned out this ceramic

ashtray.

DF: What's inside of it there?

HW: This is a map of the Arctic archipelago, this ice field of course, and in fact it's the map of the Arctic, so there's Russia on this side, Canada down this side and the dark part of the sedimentary basin extending up into the Mackenzie Valley, the Delta, into the Islands and representing as a consequence, most of Pan Arctic's interest in through here. That was back in 1968, it's been damaged, I've repaired it since. But I understand I'm probably the owner of one of the few that have existed for the last 20 years. Most of the others I know people received them, our Deputy Minister, John Macdonald, our ADM. Digby Hunt, have all found theirs destroyed at one time or another so at least mine is still here. So that #203 was that. As a consequence then, things got rolling, after the seismic work of Sabine peninsula of '68 then they moved in by sea the drilling rigs and luckily, you know, the first well drilled at Drake Point, discovery. Soon afterwards, drilled on the other side, Hecla, discovery. So the first few years of exploration there were fantastically successful. Then subsequently of course, they moved off over to King Christian, another discovery. The other point of interest here of course, is the first well drilled, the Drake Point well was a gas blowout. King Christian drilled only a couple of years later was a gas blowout. The Drake Point well just sort of fizzled a little bit with gas, largely was water vapour, as a consequence built up a huge volcano essentially, of ice during the winter period. We had an embarrassing situation in my agency being caught a little bit in a conflict of interest here between being owners and partners in this operation and in my case, having managed that portion, but also being accountable by legislation as chief conservation officers for the technical safety of this operation. And of course, it had to come in to the office essentially, to get permission to move the rig off that wildcat rather than stay in there and get it under control, so they could get on with the business really. Because they essentially, imagine they had to wait until spring when things were a bit more ??? to go at this thing. But in the meantime as I say, they went over to King Christian where another big blowout there. And that one was an amazing discovery, that was about 270 million cubic feet a day was the drill stem test results of that. One of, probably the most lush gas producers in the world. But there it was flaring up and of course, being used by all these polar navigated commercial flights, it's a real beacon, the only beacon they had out in the dark Arctic night was this bloody thing. Jim Strain who had been my colleague in the engineering section in Gulf Oil had become Pan Arctic's chief engineer and they went in subsequently of course, and tunnelled through the ice volcano at Drake Point and brought that one under control very quickly and then went over to King Christian and through a massive scheme there, you know, pumped insulation into the wells, big tank capacity and so on, doused that one. In a rather conventional operation but still, under the logistic and environmental problems they were both amazing operations. That was the extent I think, of real calamity in the Pan Arctic work. They also lost an aircraft rather soon, about 30 people I think, killed in that, changing the crew. But that was about it. And then of course, with Hecla and Drake Point, as they drilled subsequent wells to confirm the discovery they found, and of course the seismic picture too, indicated the structure and the reservoir, continued on both sides out into the offshore portion, adjacent to Melville

Island. By that time the original mandate of Pan Arctic was to do these farm out, explore these farm out agreement lands, which were principally on the land portions and as a consequence recognizing that much of the prospects were in the submarine portions, they then got into a pattern of taking out the land which was still vacant and permitted. And as a consequence they took out most of the submarine area. Through this technique of drilling, of creating ice thickened platforms, they get a bunch of pumps out there and pump water and as it sunk they sink it more, ending up with a saucer shaped platform of thickened ice and were able to ??? drill off those. So all the submarine work was done that way and they came up eventually, I guess in the course of '67 right through to '85 is when my responsibilities left but through about. . . about '85 I guess the drilling was over, but they drilled just over 170 wells. Had

#275 many, many gas discoveries, some oil discoveries but largely in the submarine area and apparently small. The only one was on Bent Horn Island, just immediately west and a little bit north of Ray Point and anyway, Charlie Hetherington decided that they'd develop that well just as a sort of a token and demonstration they would actually export that oil down to Montreal. So they did that and about 1985, in fact, we went up there to their inauguration of the first oil to come out of Bent Horn. They'd put up a couple of tanks and they had late season production into the tanks and then had a pipeline coming down for loading a single tanker load and out it would go. They repeated that for several years. I think I saw some while back that whole project has been abandoned now and the Pan Arctic operation in effect, is over. So they've established very extensive, probably 10 trillion cubic feet of gas potential up there and this limited oil potential. They did several things there, I'm trying to think. . . well, one they provided for, with Canadian consultants, with Lindsay Franklin then as their chief engineer, the capability of remotely connecting, you know, field gathering pipelines to the submarine well at Drake Point. That was done somewhere, probably about 1980 I guess. That was quite an amazing performance. We went up there for that. And then the other one was I guess, Bent Horn itself in 1985 when they had this really completed and really to start this marine transportation and lo and behold we went up there with a group, including Pat Carney, who was then Minister of Energy, Mines and Resources. Just for curiosity, they way things that go around come around, was that Pat had been involved as the invited journalist when she was a journalist for the Vancouver Sun to come along on this inaugural trip here with Chretien and all this, at the beginning of the Pan Arctic venture and here she was, 1985, also at this thing as Minister then of EM&R, essentially at the termination of the Pan Arctic thing. So the thing was properly concluded and wrapped up. The other thing, in the course of that thing was essentially the Esso testing out the capabilities essentially, of penetration and access to Prudhoe Bay through the Canadian waters with the SS Manhattan. That was in '69. There again, I have the happy association of accompanying the parliamentary standing committee which was bent on going up and joining the Manhattan there at Resolute but at the same time of venturing out to the Baffin-Lancaster Sound entry to welcome them to Canadian waters. It was a political ploy you know. Because there was some resentment there that the States hadn't asked for permission to venture through this area and the thought that at least we have a place just opposite Resolute, essentially where the Strait is

less than 3 miles wide. As a consequence we had the gate essentially, here to claim it was in territorial waters. Of course, even our retention of the high Arctic was at different times, subject to some doubt as to whether we had effective occupation there and that's always been the background of the legislation and the fact of our support for the Pan Arctic venture. Of course, even getting the initial wells drilled, there are 3 wells drilled in the Arctic in the course of the 1960's I guess, or late 1950's, 1960's. And then indeed, Operation Franklin, they were all based on establishing our rights to those islands. And there was quite an element here in the financing and giving ownership to Pan Arctic was essentially that same sort of thing was to fund and get busy and take control essentially, of the Arctic Islands. But in the Manhattan venture, we went through that in the summer of '69, this parliamentary standing committee essentially was going to do this ploy, not only #359 of landing on the vessel and expressing their views I suppose, but also before it got to Resolute, as it entered so called Canadian waters it to give a welcome to them, sort of a symbolic gesture. The reason I'm bringing this up because there again, Pat Carney was on that trip, she'd been invited by the standing committee to join that group. She had her brother who was I think, with the National Film Board along with her. Anyway, on the way up there we got grounded at Coppermine because of the fog in at Resolute and we were there I guess, overnight at the radar station there and the next day the possibility of moving on and anticipate the Manhattan passing, Resolute came up. Most of the parliamentary committee decided they'd prefer going to Resolute to make sure indeed they had the opportunity of getting a heli-lift onto the Manhattan as she went by. But Pat Carney, I think Walter Disdale and probably a couple of others on the committee, and myself, elected to go with the aircraft to try to encounter the Manhattan as it came into Canadian waters. We did, we went out that morning while the others went to Resolute and lo and behold we did get sight of it through the fog bank and so on and had the radio message sent down to the captain of the Manhattan, welcome to Canadian waters. So we fulfilled our mission. Then we went back to Resolute, most of the standing committee had boarded the icebreaker, Macdonald, who was accompanying the, or trailing essentially, the Manhattan through there and they were airlifted onto the icebreaker with the idea that later on in the afternoon they'd be moved from the icebreaker to the Manhattan itself. We got there later of course, they were all gone, they were on the icebreaker. So they took the helicopters, instead of taking up over to the icebreaker we went directly to the Manhattan. So there was about 4 of us, we were the first ones on the Manhattan, the other party arrived an hour later.

#399 DF: So how were you received on the Manhattan, what did the Americans think?

HW: Oh they were very gracious, smiling, they were fully aware. They'd been briefed on the subtleties of all this and acted the perfect hosts. They gave us a captain's dinner, walk around the vessel and so on. We were on the vessel I think, about 4 or 5 hours and then heli-lifted off. So then they were successful that year, after getting to Prudhoe Bay, getting back out and out to Strathcona Sound, just near Pond Inlet. That and our new icebreaker, the St. Laurent, were there in the spring of 1970. At that time Chretien decided he'd like to exercise his ministerial rights and go out there. So anyway, he and I

guess Paul Demerais, you know, Power Corporation and a few other people and by good fortune I was elected to go along with them as scientific advisor. So as a consequence we went up to Pond Inlet that spring of '69 and then mounted the new icebreaker St. Laurent in the ice field Milne Inlet and then I think, broke sort of 5' and 6' ice all the way out to the Baffin Bay, Strathcona Sound where the Manhattan was and we mounted it again. So at least I was exposed again to their welcoming routine, handing out of souvenirs and so on that I still treasure. One of the nice things was a paper weight, a very bright ??? medallion with the archipelago on there and the route, maiden voyage of the SS Manhattan etc. All in a nice jeweller's box and of course, caps and one thing and another. So anyway we walked off with all the goods and there again, we had dinner and there again, Jean Chretien took the. . . well, no I guess what we did there was pass around out menus, all

#441 the participants, captains and so on, signed them off. So I have that as a souvenir too of that 2 occasion thing. Then Esso and the rest of them at Prudhoe Bay, then as a consequence, elected that even though the icebreaker tanker thing was quite feasible, economically, I think the trade off was that the pipeline was better. Anyway based on that sort of research effort that the decision was made to go ahead with the Alyeska Pipeline. There again, another trip came up a couple of years later I guess, it must have been 4 years, about 1974 and the Minister, still Chretien, had invited his equivalent, the Secretary of State for Energy, his name slips me, he was the previous governor for Alaska. But he was then Secretary of State for the United States energy. So he invited him up to do a trip of the north and I guess he brought the Director of the U.S. Geological Survey and as a consequence I was elected to go with Chretien and the 4 of us did a tour of the Arctic Islands and Delta area and then went over to, the Americans brought over their float planes and we then flew into Prudhoe Bay again. So that was my second visit there. And of course, by that time, the pipeline was in, the thing had been developed and so on. And then down to Anchorage and home. That was the second or third occasion that as a consequence I had occasion to travel with Chretien on that, also once went down, we had worked up, in the meantime a very large prospectus for the north of 60, showing all the benefits of mining, oil and gas, of land, water, forests. A very nice thing. And then we got charged, as a consequence of selling this program, as actually a pitch to investors and with the trade counsellors with Foreign Affairs, to lay on financial meetings in Houston, Los Angeles, Washington, Paris, Frankfurt, London and so on. And Chretien fell heir to all this, when he came to the department he was the proponent. That I swear now, was his introduction to, his proclivity to travel to foreign nations to provide for trade and so on, was his early introduction to seeking out investment interest in Canada's north through this publicizing and distribution of this large prospectus we'd turned out. Actually, it was Earl Grey, the consulting firm in Toronto, put this thing together. It's quite a marvellous thick book, I have a couple of copies. But it's essentially a compendium of all the essential information relevant to investors interest in the north. And as I say, Pan Arctic essentially concluded its operation about '85 as far as exploration goes and with that little trickle of oil coming out there as a . . .

#518 DF: Token.

HW: Token yes, for the effort. The next operation that was actually in 1970 and that's again, Jack Gallagher, you know. And here he is wanting to venture into the Beaufort Sea. What had happened there of course, with Prudhoe Bay, when Prudhoe Bay was discovered, that's Triassic. There happened to be an oil sand up in Melville Island, Triassic and of course, as a consequence the oil industry is hooked, straight line geology, one to the other, and here's the Beaufort Sea in between which has always been looked at as analogous to the Mississippi Delta and all its oil and gas, salt dome prospects and so on. As a consequence, what had been vacant land or surrendered land prior to '68 and the discovery of Prudhoe Bay suddenly became a hot thing. We were getting \$10 million for small tracts of that in the submarine area. Imperial Oil took up most of the coastal portion of the Beaufort-Mackenzie Delta perimeter in waters less than about 60'. But all the rest of the land had been picked up also, speculatively, by small companies. Dome had almost like the Pan Arctic venture, had got farm ins of these things and decided to mount itself a massive operation to explore that land.

End of tape.

Tape 2 Side 1

HW: Am I being too exhaustive here?

DF: No, this is great, super.

HW: Okay. I'll just continue on then as it tumbles out to me. I was thinking, I guess we missed out the CSPG involvement but . . .

DF: We can come back to that.

HW: We'll come back to that. Anyway in 1970 when they came forward with that proposal it was very dicey, even though Pan Arctic was already drilling from ice islands and we had that tied down by agreement to sort of, provision for same season relief capability. So they had to move off the ice islands. They would have to anyway, otherwise they weaken with spring thaw and so on. But we had provision there. So when Dome came in it was very tenuous about drilling in the Beaufort Sea, even the Americans had concerns. So I had to draft up memoranda to cabinet to indicate the proposal, the sensitivities, the risks, that type of thing. We had a lot of trouble getting people to commit to give me advice on the matter. The Department of Environment hadn't yet been established, it was conceptually there but hadn't been given legislative action and so on. So it ultimately, Environment took national parks and Canada wildlife which were actually in our department, northern affairs was somehow the repository for them I guess. Took over fisheries, all those things were put into the environmental portfolio. And it was only Dr. Barber who I could find who was an expert in fisheries, he's now with their, or has been in past years, he's now a researcher I guess, with the federal fish hatcheries and so on in British Columbia. But in any case he was the only one I could get to state in their terms or their concerns, the environmental risks as they saw them. Anyway, he'd give me a statement so as a consequence I could use that in the reports. Probably not much more

than one would have concocted himself but at least it was done authoritatively so you had some fall back position on that. Anyway, we went to cabinet and finally got approval to go ahead with executing our authorities to issue drilling programs, drilling systems approval etc. And got approval, but subject to such things as consultations with the northerners. So after each years operation we had to do a dog and pony show through all those northern communities, Tuktoyaktuk, Inuvik, Coppermine, and so on, sort of do the dog and pony show and get the general consent or not necessarily consent but anyway, tacit consent essentially. That they were satisfied they were getting their little share out of it in employment and one thing and another. Then each year we had to go back, as a consequence to Cabinet, to get further approval for the next years program and it was always, of course, the Environment had been established and their Minister would be there expressing the elevated concerns, essentially of their senior advisory staff, etc. so it was

#040 always, every damn year it was back there, demonstrating that the previous years program had been conducted satisfactorily, social aspects had been satisfied, the environmental aspects in our view had been satisfied and get approval. Always of course, with the provision for this so called, same season relief well capability. This was one of the reasons they had to, ultimately, Dome-Canmar had ??? for operational matters, bring in the icebreakers, designed their own because indeed there's a limited capability for the Department of Transport to provide icebreakers to them at the critical times of the year. But this whole thing was based on terminating the season abruptly and that was indicated the first part of the year, the probably termination date for drilling. The I had the Departments of the Environment and Transport meteorologists and ice experts there to give me guidance at the year as to the probably of freeze up and all those types of things. So we had a little bit of a margin to allow them to extend their operations but not a great deal and always based upon this best advice by my advisors as to when it was prudent to shut down the operations for the year. We're always pressured of course, they would like to have gone on until they're driven off. But in that case, you know, you might not even have a conceptual possibility of doing anything if you got in trouble the last few days of drilling. But in any case, with that approval of course, then it fell back and the other side of my portfolio was to monitor the program, provide for . . . The other thing we were required was to put on an oil conservation engineer which I had a staff, a limited staff of about 2 originally in Yellowknife, on the vessels all the time they were drilling. So when they started out they had one drilling vessel and they ended up with about 3 I guess. But I had to put on oil conservation engineers 24 hours a day. But you couldn't argue, that came out of environment, we indicated we had full control, we had capable engineers to regulate the operation sector. Having them back in Yellowknife is not good enough. So anyway, this just brought in a whole bunch of problems from the viewpoint of staffing, which was always a bug bear of my 20 years there. I travelled to London, England to get people from the North Sea, to Tehran to get them from Iran and so on. So we got approval and then as a consequence, got into the drilling process. I guess that started about probably 1971. Gulf brought in a converted drill ship, one of the Liberty vessels converted into a drilling rig and they brought in a very large 40,000 ton cargo vessel, I

forget the name of it with all their equipment, camp facilities and so on and started drilling. In the deeper waters they used the drill ships and then they started approaching Esso's land in the 60 meter depth and began to use ??? their vessels, essentially ??? up from the sea bed, go in with a ??? vessel. Essentially flood it and sink it under the ???, build a nice perimeter during the winter time to give it some protection. That worked not too badly. I went up there one year to visit that vessel and there is was with its bow punctured with ice. So that was the end of that. As a consequence they then went into following Esso's plan, which was to build artificial islands, in Esso's case it was in water 60' or less depth, so it was fairly easy. Big dredging fleet up there as a consequence, most of Holland's dredgers. It was fantastic, I don't know how many of those world class dredging vessels committed to the Arctic Islands, and making money I think. Anyway Esso built these artificial islands and it had wave permeable barriers planted around, sand bags, that type of thing. And carried on very well, no big problems. In the wintertime they were in shallow

#092 enough water they too would build up ice ridges essentially around their islands and protect them from either drifting ice or moving ice anyway. So what happened with Dome, they began to construct these caissons you know. I think the Tartseit??? well was the first one they tried to use this on and went up there, towed them up from the Vancouver area, up around Prudhoe Bay and into the Beaufort Sea in the summertime and established them, bottom founded them and then back filled the centre of these steel caissons grouped together, almost in a square pattern as I recall, they're 4 sided. And back filled those with the dredge material and then planted their drilling camp on top. That worked not too bad. In the spring though I think that year, high waves come in and the site had to be abandoned for awhile anyway and then when they went back a lot of the sand had been washed out and so on. They moved the rig off and one thing and another and finally disassembled the caisson and that was the end of that experiment. They subsequently went into better methods of island and burm??? construction and the use of their vessels in that. The other thing, so Esso kept on the normal track, Dome was out there in the deeper water and then Gulf Oil joined in on the program probably about 1977 and came in with a magnificent creations in caisson, floatable caisson islands. Come in with a whole ring, float it in place, sink it down, back fill it and so on. Much better idea. They proceeded with those, they also had drilling vessels and so on. So the project, generally between those three companies, Dome/Canmar, Esso and Gulf was the way the Beaufort Sea was initially drilled. Here again, probably between the three of them, I don't recall but something approaching 100 wells anyway. Many questionable discoveries, particularly Dome's. They were drilled bu very commonly ended up not so much be evidence from drill stem test but actually by log analysis and so on. Jack of course, would seek DeGolyer Consultants in the States to do these evaluations and there were some rather speculative figures drifting around as to the nature of these so called discoveries. That probably still exists. Esso of course, was fairly successful in theirs and they went on to drill offset wells and do a proper evaluation up there with their discoveries. Gulf Oil found one of the better fields and there were proposals to actually go ahead with the development of that at the end of the season there about 1980. It didn't come about

anyway, it's all tied up with the prospects for a pipeline up the Mackenzie and so on. And the old inquiry commission with Judge Berger that transpired there in what was it, the mid 70's. You know, with the dictate that probably any contemplation of a pipeline up the Mackenzie Valley should be deferred at least for 10 years.

#138 DF: What did you think of that?

HW: Mainly it's this social aspect of the natives, mostly Indians of course, being concerned about employment, there's no treaty resolutions and so on. So right after that the Department got very deep into trying to resolve those treaties and that went on, at least for the last 7 or 8 years I was in the department, we always sat in and were the principal advisers there. My view is one, in the case of the environment thing is that industry is as responsible in regards to environmental department as the environmentalists are, you know, really. I even argue unless, as the geologists do, spend your time in the wild you don't really know, hunted and travelled and toured and climbed mountains and all the rest,

#150 you get a sensitivity. I agree that industry should pay for its environmental impairment but take due risks and see there's none in the first place. In the north particularly, commitment to winter programs and so on, when the damage is least done. There's some horror stories, deep seismic tracks and permafrost collapse and so on. Same as were considered, when they Alyeska pipeline went in. But those things are resolveable and I see them resolved now in Alyeska. We toured the USSR when we had a technological trading with the scientific technological access in the USSR and Canada, the agreement there back in 1971 I guess. There again, I did all the preparative work for the visit of the Russian group and we toured most of the facilities in Alberta, the McMurray tar sands, then the various pipeline facilities that were established in the Mackenzie Valley then up to Pan Arctic and so on. Then the following year we went to the Soviet Union as a reciprocal thing and there just by good chance, my life is sprinkled with these fortunate opportunities, but Gord McNab, the ADM of EM&R and Digby Hunt the ADM of Northern Affairs, who were actually the Chairmen of the gas group and the oil group respectively and those groups were made up besides one or two of us in government, but mainly by Vice-Presidents of engineering and so on in the oil industry. Ed Lakusta who's now President of Pan Arctic was Gulf's representative on this thing, Walter Hindle, Vice-President. . .

DF: How do you spell the Gulf guy's name?

HW: L-A-K-U-S-T-A I guess. He was the principal engineer at Gulf when I was there and I knew him quite well. He's Ukranian, same as my wife is so that's . . . And Walter Hindle, Vice-President of engineering at Trans Canada. Anyway we had a good representative group in this committee, mostly as industrial members, senior engineers mostly. And we had to have two groups, one gas, one oil so we could interface with the Russians, who had ministries of oil and gas separate. And those ministries had something like 150,000 employees in each of them, headed up by Deputy Ministers. We brought them first to Canada and then in '73 went back. I guess what I was getting to was that our two committees were headed up by these ADM's. When it came time to go on the trip

both ADM's were retained in Ottawa. I forget the contentious matter, it was sort of all about interfacing ministers and so on, so neither of them to go. So as a consequence I filled Digby Hunt's Chairmanship position of the gas committee and I'm trying to think of the lad from National Energy Board, he joined the Northern Pipeline Agency, Bill Scotland Chaired the one that had been originally Chaired by Gord McNab, the Deputy Minister of EM & R. So as a consequence we went out, our groups of these industry representatives and being so called, acting chairmen of the group we were hosted of course, to the limousines and interpreters and all the attention of foreign affairs and one thing and another. You know, a photographer out taking pictures on the occasion of the visitors ????. Anyway it turned out to be quite an exciting experience, both when we brought them here and while I was just reviewing I ??? the first guide booklet of the itinerary, very detailed. But the thing that amazed me, I hadn't looked at it for 20 years and as I went through it, went through the itinerary, goodness me, I couldn't remember the itinerary. Of course, I remembered the tar sands, our visit to Calgary, the conservation offices, the sedimentary institute, the core lab, one thing and another. But when I saw it I recognized the whole thing again, but it's quite amazing you know, even though as I say, I even prepared this

#214 bloody tour schedule, the things that go out of your mind. And I don't think it's forgetfulness because once you see them again it all comes back. But just I think those things are displaced, your mind gets saturated with your experiences later on and something has to go out. It's back there somewhere. But the other thing I was going to mention, you know, even the Pan Arctic, of course, it's fairly well one of the best sources of course is the annual report from Pan Arctic. And they were magnificent, of course, their operations each year, the financing, the partners, all those things, documentation is pretty good there. But then Tom Kennedy, the journalist of Calgary, turned in a report and it's pretty good but it's 1987 I guess. There are some errors and misconceptions I recognize. In his report I'm Deputy Minister of Northern Affairs. And how we saved the project by bringing \$9 million to the table and so on. The rest of it's written flamboyantly but it's still got a lot of good material in there. A lot of which I'm not acquainted with because he had the opportunity of visiting and interviewing, just as you're doing now, the participants, Jim Strain, Franklin, Charlie Hetherington, many of the rest of them. And as a consequence a lot of personal details in there which I was never acquainted with. Anyway, as you know it's well documented ??? Pan Arctic, Canmar, of course, it collapsed too. Just because the house that Jack built fell apart when his . . . was it his exploration manager, but anyway, he's still there on the ranch outside of Calgary, that's when the ??? buy out of Hudson Bay Oil and Gas. Apparently unknown to Jack. And they found themselves, like Campeau and the Reichmann's, overexposed with big expenditures, big potential depth and collapsing market conditions. But anyway, this essentially happened to Dome/Canmar too. But they had pretty well finished their Beaufort Sea initial exploration. Anyway it collapsed. So as a consequence I came into the department in the first 2 or 3 years, the launching of the Pan Arctic venture, the Beaufort Sea venture, the expansion and production of Norman Wells and when I left, in '85, it was a downturn in world prices and essentially those ventures were abandoned

temporarily.

#256 DF: We need to go on and talk about the ASPG but while we still have you in the north I'd like to ask you a few very specific questions. What do you think about potential northern development now and in the future?

HW: It's problematic of course. It depends entirely upon pipeline construction. Without a means of transportation the stuff is not much use to you.

DF: And did you see that the Trans Alaska pipeline was shot by a hunter and a million litres leaked out, did you notice that?

HW: No. But that sort of thing has happened before. It becomes spectacular news of course, and I suppose considerable local impairment of the environment but that's probably a loss even to the companies, the loss of crude oil. But the horror stories associated with pipeline development over the permafrost and so on, before the thing was actually constructed were quite immense in people's minds. But I think the demonstration over these last almost 20 years now is sufficient really, to allay fears, even though there are these type of accidents that do occur. Even the case of our Trans Canada pipeline carrying gas, every once in awhile there's a major pipeline rupture, big explosion and so on. People are always afraid it won't happen when it goes through a built up area and so on. So these things happen and that is the same case on the development of the technology for drilling offshore you know, in deeper waters. In fact, when we got into that Straits of Georgia play, we had to reasonably demonstrate there was a reasonable expectation that the technology would progress to the stage where we could in fact, drill in those water depths. Because at that time they were drilling, maybe 400'. But since then of course, they're in water depths of 1,000 and more. Same with pipeline development, it was only in the early, about the mid 60's that deep sea pipeline, across the Mediterranean from Algeria and so on over to Italy, in water depths over 1,000'. And the ability of doing it, you end up with know, these pipeline barges, manufacturing the pipe, connecting the pipe, settling it down into trenches and so on already built. Those things are practical. They're all with risks in the end and those risks kept me awake most of my life in government, being ultimately responsible. And even in the case of Pan Arctic, the only embarrassing situation I ever got into was really, one of the drilling vessels, a storm came up and they were getting towards the end of the well and they commenced a drill stem test and as I mentioned, you had to keep drilling engineers on there all the time. In the end, because of the employment problem, I had to resort to using technicians, from the southern Alberta technology school, not qualified as engineers but technicians. They were well trained and could do what we wanted, that was observe and report to my oil conservation engineers located in Whitehorse and Yellowknife who could then take action. Anyway they were concerned because of the rolling essentially, of the vessel during the course of this drill stem test. And it's frightening you know, unless you've had experience. I had mine as I told you, on that oil tanker going across the Atlantic Ocean, the first time I went overseas. I was 14 days on that vessel and it's scary in bad weather. But anyway, with the rolling of the vessel and so on, even though there's safety limits in the degree of roll, when things have to be shut down, risers disconnected and blowout preventer and that type of thing, and that hadn't been exceeded but these lads got

somewhat concerned and frightened and their oil conservation engineers sort of agreed with them, down in Yellowknife, you know, just getting their reports. And we shut down the operation. By legislation, here I haven't gone into it but actually I brought it in, ??? where the chief conservation engineer officer to countermand those types of things, where he feels it necessary. In fact, there's even an oil and gas committee to make judgement in those sort of areas. Of course, it wouldn't work here, they want information. . . . So anyway, they shut it down and of course, I start getting calls from Murray Todd, the Vice-President of operations with Dome/Canmar in Calgary complaining. It's a matter of hundreds of thousands of dollars a day to shut these vessels down. So he came to me and I got my drilling engineer to get back with the conservation engineer on the phone and so on to get the rationale to see if he could get the sense out of this thing. In the end I had to make a decision, more or less in half an hour, and my impression was simply that the vessel roll in fact wasn't even approaching the normal limits set on that and as a consequence I had to countermand the order and allow the operation to continue. Which was fine had it stopped there. The next thing I knew it was in the House of Parliament. One of the MP's had picked up the story from discontented folks in Yellowknife and I suppose maybe this young conservation technician felt he had somehow been offended, I don't know. But anyway, it got political and got in

#347 to the House, challenging my Minister as to why this thing occurred. I was quite lucky they stood behind me. Of course, the bottom line was, as a consequence, the drill stem testing went on, was completed uneventfully. So I was saved by that, at the same time I had to worry just in case what I had approved proved to be disastrous, it could have been.

DF: Did you lose sleep over things like that?

HW: Often but I used to find, as I probably explained, ??? half the responsibilities I had there but in the end I think probably I spent, on the average of 20 years, 60 hour weeks, sometimes 120 hours. Work till 4:00 in the morning, go to bed for 2 hours and go back to work the next day. But it was stressful. I found a scheme whereby, particularly in the memoranda to the Cabinet stages, writing these things up to go to Cabinet, as I say I had to go to Cabinet every year with regards to Pan Arctic, Canmar, and numerous other things coming up. But anyway in those stages, compressed time and so on, I'd just find I'd end up with a night table and a notepad so when these things would begin to bother me in my sleep and I was staying awake or I thought of something magically, which often happens, amazingly when you're sleeping, you wake up and christ, you've got it you know. I'd write it right away, because otherwise I couldn't sleep again, for fear of forgetting it before morning. So anyway I tried all those tricks. But when I retired, I must admit I went on vacation immediately and after two weeks came back and I never looked back, never looked back. Until today in preparation for this interview.

#377 DF: You were here in Ottawa during the implementation of the National Energy Program, can you talk to us about that?

HW: Yes. That was essentially about 1980. Of course, largely with the Minister of EM&R, Marc Lalonde and he being a close colleague of Trudeau, it was a policy matter really with those two principals I'm sure. Other Cabinet Ministers were involved but those are

the ones that were determined to move ahead in this area. Ed Clark, who was then ADM of EM&R was charged with the responsibility of moving forward with it. The Deputy Minister I guess was Mickey Cohen, ??? and then he went with one of the big brewer companies you know.

DF: So to what extent were you involved with the creation of the NEP?

HW: The policy was set by EM&R and Ed Clark was the one who really had to put it forth and did a fantastic job on all its components. There were more components than just imposed upon industry there, conservation of oil and gas, your insulation program for putting extra insulation in your attic, all that. He had a marvellous program, at the same time, amazing, unlike me, faced with that pressure in coordinating all these groups, at the same time he seemed unburdened, very sharp, marvellous fellow in the right place at the right time. He was awarded probably the highest merit of the government for that engagement. Since then of course, he's moved into President of Canada Trust, with whom I've always invested and so on, so I've followed his progress very closely. And now Toronto Dominion bought them out and he's now President of Toronto Dominion. Fantastic man. He'd done his Doctor thesis on the oil and gas resource administration in, maybe Nigeria, it was one of the African nations. And had been very effective in having his dissertation accepted by the government there and established in the construction of their regime and so on. In fact, he was called the Red Baron by the oil industry because of the aspects which they didn't like. The only aspect I was concerned with and I was brought in to our committee work representing our department's interest in the north, in our regime, in oil and gas, and sat in on many of the programs. Their PIPS program was essentially our Northern Minerals Exploration and Assistance Program of 1965, just redesigned. There was a lot of experience there too, which tumbled to them in determining Canadian participation of those companies by searching shareholders lists, residency. It's easier to write the regulations, to implement them really creates a lot of problems. But anyway I sat in on that and have memoir pictures here of the joint committees sitting together, all the players in it. But the piece that always annoyed me most was, two I guess. One was the termination essentially of all the previous rights, oil and gas rights, which were then just done by filing or acquisition through public sale, and with work requirements you know. Work requirement deposits had to be placed with us so that we could monitor and enforce the performance on them. But they elected to go with the new regime, typical of North Sea operators, as big concessions. With previous multi-million dollar program commitments to fill their requirements. So in order to convert from our previous federal scheme to this new one, all these permits essentially were terminated but the rights given to the owners to convert to the new system by negotiation and commitment to particular contracts to do so and so, specific contracts. When are you going to drill that well, you know. And as a consequence, it was essentially a confiscation of the original right without any compensation being offered. Of course, this was a major concern to industry. The other aspect to it which I'll just touch on was the forced commitment essentially, on the Minister of our Department and myself, I guess, that the proposal of the policy through Marchand and by oral agreement I suppose with Trudeau etc., was that they set out a joint administration, so called Canada Oil and Gas Land Administration with

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Maurice Tascereau from General Dynamics office as senior manager. And they would administer these things. So as a consequence, without any formal direction, but just by word of mouth and phone call, I start getting instructions. One is that I was expected to come over there and join them, become a director general of a part, Don Crosbie would be the other one. We were the two principals of EM&R and so on, in regards to our offshore provinces and northern responsibilities go. All my staff. . . I guess probably 6 senior staff engineers and then all the conservation staff, probably another 6 or 10, all my geological staff, I had a geological group of 6 or 7 I guess, first under Dr. Jim Brindle and then Dr. Hay. And that ties back in, after we get talking, back to the ASPG because we provided them with a major paper in '78, published the facts and figures of the ASPG's international world oil, facts and figures of the world oil deposits which brought together all our information, essentially industry information that was worthwhile to figure out the basins, development and genesis etc. of oil prospects for the Arctic Islands and Beaufort Sea. So in the end my landman, Park Sullivan who had been with me for. . .well, essentially almost 20 years, I guess I employed him in 1970, he was from industry and originally a U.S. citizen with a whole lot of experience in land management and the legal matters involved in lease rights and so on. But he refused to go, he didn't want to go. And of course, from up high in the ADM, he was of course, ??? retained positions, you know, #534 the department, you get so many man years. So anyway I was caught in between two poles here, one of Tascereau and company to get me over there quickly and my general reticence to wanting to go and disappointment at losing all my staff and really losing my authorities and so on. So anyway, I ultimately decided to stay irrespective of the pressures that were being put on me to move out. So I got to stay and it was a bloody good chance, what happened there was, retirement packages came out for senior officials the following year and very generous termination packages allowed and so on. I guess by special permission of the Deputy Minister you could stay on until the end of '85. . .

End of tape.

Tape 2 Side 2

HW: You could stay on till the end of 1985 and in this case I decided to do so to see the Canada Oil and Gas Act, which then pertained to COGLA's jurisdiction was through. And I was involved in that, to make sure it was practical and well done and so on. But anyway when it went to Cabinet at the end of 1985 and almost the next day, December 31st, I left the department. But those were the two aspects, one was the confiscation of the compensation and the rather brutal methods of renegotiating those rights. And the other one was the joint administration and movement of staff and so on, the disruption. And as I say, none of that done very formally, it was all masterminded by EM&R and their appointments you know, Tascereau and Laframboise I guess, did all the personal description and organization and so on. But all that was going on without consultation or indeed any realization that this was sort of government's policy. Ministerial policy ??? of the Prime Minister and we even had, you know, we fell back to even Pearson's resolution

of the same case when they first split the old Department of the Interiors mandate into Resources managed by EM&R and resources managed by Northern Affairs. And that was in Arthur Laing's day and he had gone through the Prime Minister I guess, to indicate that without management of the resources, mining, oil and gas, waters, lands and forests, in his jurisdiction, how could he manage his quasi-provincial responsibility as Premier essentially, of the northern territories. Just by good chance I'd come across the letter and the response by Pearson and had put it on file when I first came to the department. So when this came up we then began to direct memorandum to our Deputy Minister, who was Arthur Cougar at the time.

DF: Could we step back then and talk about the ASPG for a few minutes?

HW: Okay.

DF: How did you first come to be associated with the Alberta Society of Petroleum Geologists, do you remember?

HW: Oh yes. Once I became employed by Gulf in 1953 I immediately joined the ASPG. I had previously joined the AAPG when I was working with Imperial Oil during the summertime under Jack Webb, who was then sort of an AAPG liaison I suppose. So I joined the ASPG and of course became very much interested in their programs of monthly luncheons or bi-weekly luncheons and so on, and ??? technical papers. But it was in I guess, the summer of '54 when I was up in Red Deer that Cam Sproule who was General Chairman of that year's annual technical committee and field trip phoned me to see whether I would act as tour guide essentially, for the 2 day field trip, which was really through the two transects of the Rocky Mountains, Calgary-Banff field, Golden, then Golden-Radium and back to Banff. It was Gerry Henderson of California Standard and Ken North of California Standard were the Chairmen of that field trip and they put together a tremendous analysis of the structures of the Rocky Mountains and the classification for it, into foothills, front ranges, main ranges and the Rocky Mountains trench etc. And of course, it involved all the geology along the way. So anyway, I used to come down Saturday, at least 4 times during that summer, get up at 5:00, be down at 16th Avenue, beside the Southern Alberta Technological establishment, join their field tour, go out, do the trip, I guess we did it 4 times and got to know quite expertly the geology of the structure and so on. And as a consequence participated in that September field trip meeting. That was the first occasion of my introduction to it. And then in 1955 was the ASPG joint AAPG Canadian Regional meeting, was held in Jasper. Bill Farmello was the general Chairman and Bill I'd known in my previous summer's work with California Standard.

#055 DF: What kind of a fellow was he?

HW: Oh, a marvellous fellow. He passed away here about 3 or 4 years ago. He, I think, had established in one of the Gulf Islands, Straits of Georgia and he passed away but Bill was a marvellous man. I recognized that even when I . . . that was in 1950 and '51 I worked with California Standard, the last year as party Chief doing Paleozoic studies in the southern Rocky Mountains. The first year with a fellow name of Sam Roach doing Paleozoic studies, essentially, up in northeastern B.C. and southern Territories, up the

Liard, up the Alaska Highway. So I got to know Bill and Al Kievil and Don Wier.

DF: Al's last name.

HW: Kievil. K-I-E-V-I-L. I think his brother is President of Tech Corporation, you know, the mining group. But anyway I got to know those fellows quite well. And then I guess also at some time or other, Bill told me he had a friend Ron Langston who was the vertebrate palaeontologist for the Geological Survey of Canada who was working down in the Medicine Hat area and had come across a monstrous corpse essentially of. . . not a Tyrannosaurus Rex but. . . the name slips me now. Anyway, he was engrossed in excavating this thing and had spent 2 or 3 weeks getting ready to put the plaster cast on it divide it up and so on and Bill phoned me up, whether I'd like to go down with him. So we had a full day together. This was after my association with him in the conference. But anyway, Bill phoned me up to see whether I would be general chairman of the field trip. And just coincidentally, that year I was also in charge of doing all the arrangements, essentially for an exploration conference, the conference of Exploration Managers for Gulf, from around the world. Mostly North America, South America but also London as I recall and other offshore operations. So I was in charge of doing that, mainly because of the field trips, to be associated with tours after the conference matters. And as a consequence I had access to a geologic assistant and a panel truck and I was already making tours up and down the highway, to do road logs essentially of the area. So when Bill asked me to be chairman, it's a fairly easy matter to incorporate the requirements for this May meeting with the one in September. Anyway we laid out a fairly nice program there, it was mainly the Carboniferous and Jurassic were the themes there but the field trip of course, covered everything from the Protozoic right on through to the Cretaceous that's involved in that transect from the Yellowhead Pass route right on through into Miette Hot Springs on the eastern side of Jasper Park.

#094 DF: So how did you come to be on the executive, how did you come to be President?

HW: I was just touching on that experience. And then in 1959 I was asked by the President of the association at the time, I guess, Bob Erickson, to head up, be the general chairman of the annual technical conference and field trip then. I took on that responsibility, we did the field trips to Moose Mountain and Drumheller. But the technical meeting I deigned on the idea of doing a geologic history of western Canada, from the Franerozoic??? up to the surface tertiary beds. That as a consequence was the initiation essentially, or the theme that when Bill Gussow phoned me when the nomination committee was present, I think based on the fact I had been quite active in the Society and been, particularly there, the contact with most of them, on these field trips and most of the field trips came off very well and were very interesting to them. So as a consequence I think I was fairly well known by many people in the Society. I think the other candidate was Carl Olson who was then retiring editor essentially, of the old initial newsletter we used to have in the Society. Carl was from Phillips Petroleum, I think he was senior staff geologist over there. Anyway the election came about and lo and behold I was President. But it was from the exposure I think, of these other things. So that year as President the major things I think we did, one is pick up on this theme of the '59 conference and proceed with a

compilation, an atlas essentially of the history of western Canada, geologic history of western Canada. I got Bob McCrossan to head that group up. We'd already, in regards to the technical meeting of the year before, had formed little committees of each thing, you know, Ralph Edie and John Andrechuk, all that group who were very active in their researches and knowledge of the systems, to form groups to begin to compile the information presented, regional maps and facies maps etc. And I got Bob McCrossan to head up that committee and over the next 4 years, involving probably 100 or more contributors and so on and thousands of hours of work. It was fortunate that Bob was a research geologist in Imperial Oil's lab and as a consequence Imperial Oil was always very gracious. The other companies were too, in supporting their personnel giving their time.

DF: He sends his greetings by the way, I saw him this week, earlier in the week.

HW: Is that right eh. Wonderful. I haven't seen Bob. . . well, maybe I have, once or twice on Norman Wells conserves back and forth with Imperial Oil and Calgary, ran into him once or twice but I haven't seen him for many years. Anyway he did a marvellous job, he and Perry Glaister I guess, are the editors of that report. But between the two of them they put in, as I say, 4 years of labour and a lot of commitment. I understand really that publication was unique, we went to cartographers in the Netherlands to do a lot of the plate printing and so on, and that's a marvellous format. You've probably seen it. And it went into a 3rd printing I think in about 1972 and somewhere upwards of about 4,000 copies have been sold, it was very popular. And then again, of course, in about 1985, just about the time of my retirement, they started a little revision and Grant Mossop of GSC took over the general role there of chief honcho and pusher. But they took 10 years. But it's a beautiful second edition, it's really a beautiful document and selling for almost \$200 as I recall.

#148 DF: What were some of the other highlights of your year as President?

HW: There had been our first international symposium on the Arctic geology. It took place in January, just a few weeks before I became President in the annual meeting. That too of course, has been really conceived on the basis of the very marvellous paper the GSC had put out on the Arctic geology. As a consequence it was very nice to cook??? it, with the knowledge of the U.S. and the Alaska and so on into a composite thing. I don't know what year that came about but of course, it was well engaged during Bill Gussow's year and actually, the symposium was held in January of 1960. Gil Raasch was editor and of course . . . Gil just by chance is a doctor graduate of Wisconsin, a previous Cambrian expert of the U.S., principally a palaeontologist and came out as a consultant with Lou Workman, also from Illinois, he used to be state geologist I think of Illinois. Lou also participated in the ASPG activities a lot. Been involved in the lexicon of geologic names and oil fields, fact finding things and so on. So anyway, Gil was editor and of course, the financing of this thing was somewhat of a problem because of the high cost of publishing it and the doubt of how many sales would survive. So I spent a fair amount of time myself poor-boying the thing and phoning the AGI and writing the AGI and other institutes, to get free advertising. It was an international conference and needed world wide and certainly North American wide anyway, advertising to the geologic community.

DF: AGI stands for?

HW: American Geological Institute. It was a joint operation to provide for education and so on and stimulation of geologic research. And most of them had policies, pricing policies and so on, but I wore them down. In most cases they finally either gave us a deal or published them free because of our bleeding hearts. And then of course, the preparation for the annual field trip that year, I think it was up in Nordegg. That was accomplished.

#185 DF: We're going to run out of time here pretty soon, I was wondering if you could reflect on what role do you think the ASPG has played in the development of the oil and gas industry?

HW: Fantastic. It's rather hard to appraise. One is that I think when I first got involved with the ASPG the membership was about 400, when I was President it was 1,300 and now I guess it's somewhere upwards of 200,000. But it's a downward cycle too, particularly as the recessionary cycles occurred in there and so on. And the quality of geologic papers has improved tremendously, as you go through the old Journals and then the Bulletin and so on. The papers now are just exquisite. And of course, geology is a science, since my days as a graduate even in '53, it's changed tremendously. The acquisition of text books and reference geologic papers and new concepts. The whole international geophysical year, that type of thing, the marine thing and all the tectonic structural, even the stratigraphy has evolved a great deal. Carbonate petrography is a class all by itself. In my day there was just the ??? Petty-Johns book on sedimentary rocks and nowadays all that reef ecology and reef studies, particularly in western Canada. But as a consequence, the papers being presented and so on, this has all come available to the ordinary geologists of all these oil companies. And it's been really, the education vehicle to make sure the professional capabilities of these people keep pace with the knowledge and the other information that's available. So it's largely in that area I would think that. . . and that's the reason why industry has supported it so well. Many industries actually pay the cost of their employees to go to the luncheons and so on and of course, there's all the corporate memberships and financing there. But it's all dollar for good economic value. Even the things, the compilations that have been available, the atlas particularly, I suspect in dollars, if you got down and figured out the contribution of time by geologists, it's a million dollar project. Probably more than that if you actually started putting the figures down, if you could. So that aspect, plus indeed, with the Geologic Institute, at least the Sedimentary Institute of the GSC moving to Calgary, that provided a source of real professional scientists contributions there. In fact, I suspect many of the things that transpired in the Society wouldn't have taken place without that support and contribution as high. It's made a very nice cohesive fraternity. And world renowned too, it's got a lot of international attention through our symposia that over time have been held and so on. The other one I was involved in later on was, just before I left, 1965, I went along as Secretary to the preparations for the international symposium on the Devonian system. Digby McLaren headed that up and that too was a very successful. . . but there have been many others you know. Publications of noteworthy, beside the monthly publications or the quarterly presentation of these papers. As a consequence that Bulletin of Petroleum

Geology put out by the CSPG now is renowned in the geologic literature, particularly in North American. And the things we've done internationally brought those matters to international attention too. And it's a nice ??? association, there's pleasure in just getting to know people. People like Bill Gussow, Peter Moore at Shell. There are numerous others. At the technical meetings and particularly the distinguished lecturers, coming down, sometimes with a little bit of pomposity. But these people and I guess together with myself, get up and ask pertinent questions and draw these people out. So they became not necessarily debating societies but a good exploration of ideas and perceptions.

#252 DF: What can you tell me about Ted Link, what kind of a fellow was he?

HW: There again, as I already mentioned I first got acquainted with him in 1948 when I was hired on by his firm and I worked with Imperial Oil for 2 years. One we had a canoe exploration of the Athabasca tar sands. We did the waterways of Fort McMurray and then up the Athabasca to the Delta. So I've seen every foot of exposure of those rocks. I handled the plane table, we did elevation control on the contact of the Devonian and the McMurray. I think the concept being that there may be a concentration of the quality of the bitumen in the erosional depressions of the underlying Devonian unconformity. But as with Fred Hamilton, who was then from Imperial Oil's Canol project days, so there was you know, Fred Hamilton, Lorne Faulkner, Reid, Klemis, about 4 or 5 others that came out of that project, they'd all been engaged in canoe work along every river and tributary across the Mackenzie River valley. And doing the geology with the idea of exploring for extensions of the Norman Wells type of concentration in regards to that whole Canol project of pipeline and refinery development. But anyway, Fred was a very experienced naturalist, he had previously been a teacher of history in Manitoba and then had joined Imperial as a field geologist back in the war years and so on. Well experienced, so I had a marvellous summer in canoe work that year. The second year I went out with Dr. Fox and did stratigraphic studies of the Paleozoic, Devonian essentially, in the Rocky Mountains, from the North Saskatchewan down to the Bow River. Anyway in relation to Ted Link, that was my first acquaintance with him, next in about 1964, I joined with him in really sponsoring the candidacy of Cam Sproule for President of the AAPG. I got to know him quite intimately then because we consulted on tactics. I had been past President of the association for that reason he contacted me. And we were successful in doing that. Ted himself of course, had been previously President of the association of the AAPG and knew what sort of tactics were required in order to be. . .

#296 DF: Can you tell me any stories about Ted?

HW: Other than the one about his establishing the discovery well at Norman Wells. When I was out there in '53 he was then consulting with . . . he left Imperial and he was then consulting with Dr. Nauss and then with Link, Downing and Cook. I knew Downing and Don Cook very much from my ASPG days. So I think those are my only 2 direct relations to Ted Link. But he was a charmer, personality wise and so on, he was always light hearted, joking and. . . Oh, the other one I forgot to mention was in my ASPG

responsibilities that year, 1960, I brought together all the past Presidents and that was the first past Presidents meeting. We held that in the Palliser Hotel. I have a picture upstairs, we had a professional photographer come in, ????. I forget how many, all but 3 of the past Presidents attended so as a consequence this picture of the group I have upstairs on the wall is of historical importance. It turned out I had that picture framed and mounted so they all have a record. We had them sitting out there, in fact, Ted Link was the 2nd President. The first one, I forget what his name was. . . .

DF: ???

HS: Yes. Well he's long ago dead, so he wasn't present. But we have them all in two rows, in the order, Don Wier, Layer, the whole bunch of them, Gallup, Erickson and Bill Gussow and myself. So we have, as I recall, all but 3 of them. I was amazed because they came from as far away as California. It was essentially a complimentary type of thing and I gave a little address about their contribution in generating the Society, contributing papers, managing the thing and so on, bringing it to where it was that day anyway. Ted Link responded to it. So that was I suppose the closest we came to. . . all those past Presidents you know, they were extremely gracious in their thanks for the opportunity of meeting together with their previous colleagues, many of whom they hadn't seen for years. So 1 or 2 of them even had tears in their eyes, I recall it was a very moving meeting. Then the idea I guess, I don't know when it was picked up again, I don't know whether Bill Kirker who succeeded me in '61 started the annual thing. I expect probably he did. But I still get invitations every year from the current President to join them at that meeting. I've never had the occasion to go all the way to Calgary for that occasion. I gather the texture has changed, the first one was. . . I think the type of thing now, it's a grouping of past colleagues and getting their views on the current programs, directions the Society is taking and so on.

#353 DF: And how is that different from the first one, what was the first one like?

HW: The first one was entirely devoted to bringing them together to have this large dinner meeting, to recognize their contributions to establishing the Society and maintaining it through those years and so on. In fact Les Rowland was there and I think, as a consequence the address by myself was published in the Oil Week magazine in its entirety, plus the picture is in there too, this one I mention you know. So that would be September 1960 in Carl Nickle's or was it ???, Oil Week anyway.

DF: Okay. We're almost running out of time so would you like to make any final comments. What have you enjoyed most about your career, what are you most proud of, of the things you've done?

HW: The most gratifying one I think, is just being engaged where I was, particularly in my employment with the federal government and the responsible role I had at the right time when all these things I mentioned were initiated, many of them terminated at the end of my period. And the excitement essentially, of the type of participation I've had, not only with senior people in industry but the authority I suppose I exercised and the relationships I've had with Ministers and senior officials and departments, the opportunity to travel

widely. I presented papers on such things as the logistics of exploration in the Arctic and so on to world petroleum congresses and so on. Had the opportunity of publishing a lot of papers, more or less on that type of thing. Being guest speakers at political science down at Queens, you know, on northern policy and on ??? fantastic idea of building giant air cargos to bring out mine concentrates from the north. That was supported by Trudeau and as an honorarium, as I recall, we had a marvellous portfolio of pictures and so on, with Pierre Trudeau's signature on, so another memento I have. Just that there's so much to do and so much interesting things to do that you're constantly engaged and so the time I spent, as I say, much of it fairly stressful I expect but at the same time, every moment enjoyable. And the biggest thing about the ASPG contribution was indeed, originating and pushing the concept of the first atlas of geology. Those are the highlights I look at. Such things as being on the Manhattan twice and having memorabilia there. ??? clock here is tailings from the McMurray tar sands. The other things that struck me as I was preparing for this is I, as I say, in 1948, that summer did the McMurray tar sands by canoe and up and down the waterways of the Christina, the Firebag???, McKay, all these tributary streams so I know well the nature of the outcrop, I still have a visual memory of much of it. A marvellous experience. Then of course, it was after a visit that the research and development pilot plant was built up on that McKay River, by the Alberta Research Council. Dr. Clark I guess, refined the separation methods. Then in the 1960's, the chairman of Sun Oil almost individually sponsored the entry of Sun Oil into putting up the plant there on McKay River to provide for the first extraction plant and all the turmoil and heartbreak of getting the technology refined and getting it profitable. Then the development of Syncrude. And as I say, I had the opportunity, first in 1971 with this Russian group of going back to the plant and so on. Then in 1984 I had established a policy of national Canadian content in all these northern projects and indeed we had even gone to Cabinet when Imperial Oil sort of broke what we thought was propriety in getting Flour Corporation U.S. to do all their development planning for the expansion of Norman Wells. Not only was it offensive to us under the general principals of the Oil and Gas Act but also certainly in regards to the FIRA concerns and all that type of thing. What we did, we went back to Cabinet and got Cabinet approval to do the best we could to slap Imperial Oil's wrists. We finally put it on the line to them and the results of the negotiation we had there, I guess I had a couple of calls from Jack Armstrong, the President but we finally agreed that he go back to Flour and get them to commit to setting up offices in Calgary and employing a substantial staff of Canadian engineers and experts. And they did. But then with that success, the I. . .the Department of Industry had a similar program in respects to companies that had obtained grants and other financial assistance from the government. Different refineries for instance that had been set up say, in eastern Canada in deprived areas got substantial grants and assistance to their commitment. With that the Department of Industry then had an avenue of approaching those companies to have them treat with respect the opportunities for Canadians to participate in these things. Anyway that same committee had been involved in the automotive deal of Canada and the U.S. so they had a lot of experience. So I travelled around with that committee as a consequence, to visit the refineries and so on. And one of

the visits there in 1984 was back to Syncrude and the GCOS, Sun's thing. That was my first opportunity to really be lodged in McMurray. When I was there in '49 it was simply a hotel and bar, one restaurant, a few other buildings and a substantially Indian population. Maybe 100, 200 at most. When I went back this time of course, here's the whole town developed. The bridge where I used to sit and throw stones in the Athabasca River is founded on the outcrop, across the highway's in there, these marvellous plants and of course, even in the case of those plants, a marvellous transition between the times I knew in the mid 60's and in '71 when I visited. All the technology had changed, you know, the big crane, god knows what it was, a 2 or 3 million dollar crane with bucket wheels on the end and so on and the slurry pipeline, all that disappeared back to trucks and normal steam shovels and making money at it. There's a marvellous report by the NEB came out last year which from your point of view, it traces all the early history of Dr. Clark. In fact, it turned out even my next door neighbour of my mother-in-law's house, which I used to maintain here for 10 years, Montgomery, he was the chemist for the Department of Mines who was involved, even, well, probably not now but even after his retirement he still kept in there, doing the chemistry essentially, of the tar sands and trying to solve all those problems they had with filtrate settlements and so on and settling ponds.

DF: I hate to interrupt you sir, but we've run out of time, the tape's about to snap off. So on behalf of the Canadian Society of Petroleum Geologists and the Petroleum Industry Oral History Project, I'd like to thank you for investing this time with us and telling us your stories and we'll end the formal part of the interview at this time. Thank you very much.

HW: Thank you.