#47

A meeting and taped interview with Mr. Desmond Earl - who was deeply involved in AVRO Flying Saucer put together with John Frost. This meeting and interview was held at Earl's summer residence at Niagara On The Lake, Ontario, Canada. August 2, 1983 by Les Wilkinson, Toronto.

What we want is History of the Avro Car Projects. The flying saucer, but I'd like your history, you know. Where you were born, when you were born, if you like, what your association was prior to coming...

A. Oh, well, I knew John Frost when we were both boys. We grew up in the same village in England.

Q. Where would that be?

A. Seim.

Q. Seim? Whereabouts

A. It's about, between Devises and Trowbridge in Wilshire. _____ and that was my home village. But we didn't really meet again till DeHavillands during the war. I was working DeHavillands and John Frost came down to DeHavillands after he had done the _____ And he got on pretty well at DeHavillands and he was a project engineer on the 108 _____ swallow. Then he got married shortly after the war. He got himself a job in Canada doing the CF100. So, he took off and I stayed on at DeHavillands _____ I'm working for Harold Himson. Anyway AVROs came over to England hiring again so I got a job in the _____ department at AVROs and I came out to Canada and initially stayed with John and his wife.

Q. When would that be?

A. 51 I guess.

Q. Early or late?

A. March of 51, March. And I worked for Jim Chamberlain on the CF100 for quite a while. Then the CF100 came to an end from the design point of view and it was a question of what next? And the Arrow was _____. And it was a choice between Jim Floyd and John Frost for the design. Tossed and Jim Floyd caught it, probably because Jim Chamberlains dealings _____ and John Frost's lively imagination got going and he decided to propose an unique circular landfall airplane. I wrote him a brochure which went out to the DLV and Doctor Savant came up with a little bit of money to study this thing. And then AVROs assigned us this penthouse room, John proselytized Vasilov Sovinsky to come and lead the design group and we produced, Vasilov came up with this notion of a spade shaped airplane. The whole thing was based, yes, the sketches are quite right. The whole thing was based on this big disc engine - making the engine as a flat disc so that you get into a thin low thickness _____. And in those early days it was a question of trying to figure out how you could make a bearing _____ this great big flat wheel and there was a lot of head scratching about that one. It eventually developed into an air bearing. We got rid of it because the mechanical small range bearings were so difficult that it developed into an air bearing.

Q. Is it very difficult to describe an air bearing?

A. Well, it's a little bit in my, I wouldn't recommend it for reading but there is a picture of the air bearing device which John came

up with in that. _____ Graph number 23. And that's about the ground effect machines. I got commissioned by NATO to do that. It wasn't very good. The air bearing came in and stayed there on the project Y2 but project Y1's history went as follows. _____ _____ and we made a wind tunnel test model based on blowing compressed air through the center which was mounting the model at the same time and exhausting it at the wing tips and through the trailing inch and we all dressed up, you know, to go with that model and at about the same time John Frost discovered this hand _____ jet effect from this little two ender model he made. Very interested in the _____ effect, I can't quite remember what. There is a little picture of that also in my ecartograph and this is just a little balance tube with a little circular aluminum disc about six inches in diameter with a jet exhausting horizontally at the top tangent of the outer radius of this disc-which the outer radius is about 1/2 an inch, no, less than that - 1/4 inch. The jet would go round the whole quarter of an inch and pump this into the middle _____ and form a column on which the thing would stand and then when you brought a _____ and had this enormous ground effect. _____ pretty impressed with this ground effect and went back to a circular plan form device in order to exploit this ground effect - Project Y2 - circular plan form.

And we still had the big rotor, with the big horizontal engine _____ grown an air bearing and then it had _____ beyond the turbine, as I recall. In other words it had reheated as well. And it had a jet deflector to go up and down at the outer ring. And I don't recall how it worked. And then it had internal

vanes to deflect the whole jet aft for forward flight. When we didn't have a model of that I don't think. We had a brochure about Project Y2 Brochure with the red collar and we went to England to see Sir Roy Dobson about it and John and I and Donald Moredell. We talked to Don Moredell, who was at that time working at McGill, he was a professor of engineering at, I was going to say Point Clair, but he lived at Point Clair, he worked in that offshoot of the university down there at the end of the island. Came up with this magnificent cold burning turbine thing which came to grief on heat exchanges and we coopted him to study the gas dynamics of this marvelous engine this flat engine. So, we, John invited him to come along on this trip to the U.K. so John and I and Donald Moredell went and went to, let me see, we went to Woodford. And we had this model of Project Y, a spade shaped airplane with us and Roy Dobson said Oh, poop, we'll put that in the wind tunnel. So he gave orders and accordingly we quickly got a rig worked up to mount this model in the wind tunnel and we measured the forces on the thing with great jet of air coming out of the wing tips. The result of that was we were able to show enormous induced lift effects, you had the lift total with the tunnel going, you had the lift with just the jets going and if you subtracted the lift with just the jets going from the tunnel going you got a net lift in the presence of the jet which was twice as big as the net lift without the presence of the jet. So, that was kind of interesting. And then we had a meeting with the ministry of supply about this which was attended by _____ Davies, and me and John and Donald Moredell and it was chaired by E.T. Jones and also attended by Sir Arnold Holmes and Roy Dobson who we discussed all this wind

tunnel test results. Sir Arnold Holmes thought that it was this jet effect at the wing tips was especially interesting that warranted pursuit of the project and somebody wrote a letter to Dr. Salant, I guess, or something I guess. And we got a little more support from the Canadian Defense_____ Board, which carried us on for a little while.

Q. Dr. Arnold Hall, is that from _____ was he, I believe...

A. At one time he was in charge of Bombury, yes. After he, he was at that time he was in charge of Bombury and after that he joined AVROs. I've forgotten what he did later on, but he didn't stay at AVROs indefinitely.

Q. There was a full size mock-up of the Y project?

A. There was a full size project mock-up of the project Y_____. And that I think occurred after we'd done the wind tunnel tests. We made that at Walton.

Q. That's the one that Monty saw?

A. That's the one that Field Marshall Montgomery saw, yes. He came over on a trip. He's a good listener. And John Frost gave him much about it. Then, what was next?

Q. Before you go off with that Des, how was Project Y to take off? Was it vertical take-off or was it just angular sort of take-off?

A. Well, it was going off at 45 to 60°, 60° I guess.

Q. Then how about landing?

A. It came down straight on it's tail, as I recall.

Q. I see, not a flat landing, but...

A. No, I don't think so. Not a flat landing. I think it was a vertical landing. There was no air cushion on Project Y. And we

incorporated air cushion from then on. That was the whole deal as far as I was concerned, trying to stay with this air cushion.

Q. The air cushion came in in Project Y2?

A. Yeah, absolutely.

Q. What, do you think of Project Y2 as a development from Project Y? Really?

A. Yeah, yeah.

Q. It was a different concept to get into the air cushion, though surely, rather from the angle and the tail...

A. Oh, you had to have the complete circle and then you had the ground _____ effect, you see. The ground effect seemed to be the most intriguing thing.

Q. And the Project Y is the one with the, you've got away from the big engine then?

A. No, it's got the big engine, Project Y, all the time. We didn't get away from the big engines when we got into Project Y2. Downstream a little bit, we started with Project Y2 with the big engines.

Q. Pardon me. Yes, yes.

A. And then we had thought, _____ John finally decided that we couldn't hack this this way, so he moved, came in one day and said well, now, I really think we'd be better off to take this little Viper engines, or Rolls Royce engines or some of the little engines and we did a bunch of projects. Some of them were based on this Rolls Royce short life, vertical lift engines. Well, we picked the Viper. And then we made a second trip to England. The first trip to England I think it was, yes it was, when Donald Mordell came along

and we went to Rolls Royce as well as, Moredell used to work for Rolls Royce. We went to Rolls Royce and we went to, we spent quite a while at Woodford, a couple, two or three months I think. My oldest son was born while I was working on this wind tunnel and Sir Rob Dobson and Sir Frank _____ came over _____ and told me of the birth of my son. Which was rather intriguing.

Well, there was a second trip that I was on in which we went to _____ Sidely ___ and we went to Lucas, Joseph Lucas, where Dr. Clark was, you know, Dr. Clark and Joseph Lucas had kind of cornered the market on making combustion chambers. They made all the combustion chambers for Rolls Royce on the __Ghost__. And, I can't remember, not the Ghost, that's a DeHavilland engine but for Rolls Royce, _____, anyway, we went there and we were going to buy this combustion chamber for the 8Viper Y2 from Joseph Lucas and they did, indeed, make a _____, do a significant amount of testing of this projected combustion chamber and I remember seeing this thing running.

Q. Was this done at Woodford, or at?

A. No, it was done at Joseph Lucas in Coventry.

Q. _____

A. Yeah, yeah, that's right. It had I recall a combustion intensity of 9 millions CHU _____ per hour per atmosphere, the number of that was 8 as I recall. That's _____. And then we went on _____ who ordered the Viper engines and so on and so forth. And, what else did we do...

Q. Was _____ with you on any of these trips?

A. I don't think so.

Q. Did you go to Germany on some of this....

A. No, I never went to Germany. Who would go to Germany?

Q. I thought there was some, supposed to some of the developments top secret weapons, some investigation.

A. I don't think so. I don't recall anything about anybody going to Germany at any time. They may have done,I don't know. Anyway both those two trips to England, I think, in 1953 and then came back to _____ and we went into the wind tunnel test programs. We had a big model, hot plane model of system 606A. This was funded by the USAF now. I should have said that after the second bit of support we got from DRB, I was about to tell you that at a big presentation a bunch of fellows came up from USAF and John gave them a pitch about this Mark 3 airplane. They were all very impressed and so on and so forth, and they put together some funding for this thing. Air Force, United States, not Army, Air Force only. And then there was a Project office formed down at Wright Field under a section headed by Bill Lamar who later became Deputy Chief of _____ and as I said, Bill Stevens and Bill Walters and they were very supportive of System 606.

Q. But, where did this project 1794? Was 606 in right off the bat?

A. 606 was just a successive name to 1794. As I recall it, this may not be correct, but I think it is, as soon as the USAF came in they gave us a number, Project 1794 and I think that at that time we still had the big engine. And then we changed it to ....(That was that Y2 which we named) yes, exactly so. It was the USAF designation. O.K.?

Q. Yes.

And then as I recall it, they said one day, well, we don't like this Project 1794, that's not dignified. Now we're going to call it a System. So they made it System 606A. And then we were in the middle of the 6 Viper activity at that time, 8 Vipers, I don't remember 8 or 6, anyway, it finally boiled down to 6. And then that's System 606 and then we went into a big wind tunnel program with a subsonic model and a supersonic model. The subsonic model was done in the Massey Memorial Tunnel, 20 foot diameter, 200 miles an hour tunnel at Dayton under the auspices of Dr. Deutsch. And our guy at wind tunnel was a guy called Johann Wasnaw, South Africa. And these tests went on for a considerable period of time. We had probably I think somewhere around 500 hours of testing of this half plane model. Oodles and oodles of combinations of jets and these little vanes around the perimeter and ring, you know. All that stuff was quite satisfactory, reasonably successful and then we hit the supersonic model and that was done at Massachusetts Institute of Technology in the Naval Supersonic lab. That's the one where they took the picture of the teacup on the model, cute. That's where I first learned the expression, the rule, I should say. Anyone who says all you have to do is.... get's fined five dollars. But anyway, what have I got down there, that little gem. We did these tests on the half plane model _____

we did them all, got the thing going. Four or _____

on those tests, I can't remember. We came back home, _____

was the car on these tests and then we were going through this data and we discovered that we made a mistake and some person wrote that to the first thrusts or net thrusts or something or other, which

really made an awful hole in our projected performance. So, we told this to USAF, they were a bit unhappy. Then we produced a little subsonic thing called the AVRO car. John dreamed this one up and that little brochure which I gave you_____ small one. We wrote that. _____ came over and said well, now you guys, you know and John sat down together _____ and he said, now you guys, which would you rather do? Would you rather continue on with this BV704 which I've been funding, you know, or the 6 Viper test rig or do you want to do this subsonic thing? Which would you rather do? And I, he said, well, we'd much rather do the AVRO car. It must be a heck of a lot easier than this supersonic thing. So, he said O.K. We'll stop BV704 and that's what happened. USAF picked up this brochure and it went skidding around the Pentagon and the Army became interested also. And then what happened was it was jointly funded by the US Army and the US Air Force. And we had officers from both services come down for project reviews and what not _____ . I remember Colonel _____ was _____ in the U.S. Army and Jack, what was his name now, in the Air Force. Anyway the AVRO took off and we made five _____ and two AVRO cars completely and an extensive simulation of the flight of this thing was done and Ron McKee was in charge of this little _____. And we invented this simulator which had the control stick instead of _____ _____ designed, the control stick with the air jets that was, that was a pneumatic move valve, you know what I mean? You probably don't but it's a question of moving a plate in between two nozzles and just, by doing so varying differential pressure so

so that you've got an output and of course the whole control thing and the whole _____ and everything was _____ on _____ rather than bearings so that it was just very stiff. There was no slop, very tight, no slop anywhere and these wires all out to this outer spoiler control and spring return and it would twang very nicely, it was a pretty system. So, whichever way you tipped this that was the way the jet would go. And you tipped your ring this way the jet would go like that _____ the other way and so on. Let me see, did we do.... what did we do in the way of tests. We made a, I was going to say the _____, that's in the movie. Orinda did that. Harry Kees was the big boss and I guess who else was involved, Collin ____, a little bit I think and that other guy, I'm trying hard to remember his name, oh well, _____ did the aerodynamic design and for the ASB10 engine too. So, where was I. Moving along the AVRO car, we did not make a mixing rig which is what Don Whitley particularly wanted, John wouldn't go for it. Which would have given us perhaps some good idea on the mixing losses from the outlet _____ to the wing tip, which was a big trip up, in fact. Because when we came to realize the 5600 lbs of thrust that we had calculated we only got 3800 or something and by this time the AVRO car was weighing about 4200 or something like that. So, you couldn't take it off vertically or whatever. And in any case you had further loss of thrust because of the necessity to bring the jet in into one column cause otherwise you get a big thrust decrement if you try and maintain it as _____ jet. So you focus it in towards the middle and _____ and _____ a sort of ball, sort of column of air. So that was one rock on which

we kind of floundered and the other rock on which we kind of floundered with the AVRO car was the control. The original spoiler control was very good, I think. And I'm convinced to this day that it got stuck due to differential expansion and heating up and the spoiler ring moving a different amount to the rest of the airplane. And it absolutely depended on it being totally free to operate, anyway, John decided to take it out and go for a different sort of control on the bottom, different control altogether. We took it out and it did have a bunch of scores, vertical scores on it where it had been rubbing. And then we went back to operating with the focusing ring, I think it was called. And you have the rest of the AVRO car, really on the movie. _____

Let me see. The final meeting which closed the AVRO car down was a joint U. S. Air Force briefing at Dayton. I've forgotten John Douglas's part in this, which was quite large. John Douglas and John Frost and I used to travel abroad quite a bit. We went on a number of briefings on this thing. We went on System 606 for example. We went to Langley, we went to Ames, earlier on that was, of course, before we went to Ames with the AVRO car model. The AVRO car test in the 40 by 80. Earlier on we went to Ames _____ on the 606. We went to Ramo Woolridge, I guess. We made numerous trips to Washington. In the very early days John made a briefing to, I don't know what they were called. I think it was the Air Defense Council _____. Anyway when the ARDC, Air Research and Development Command were in Baltimore in the Sun Life building there was a Colonel down there who was a hell of a character and he fascinated himself with this thing and he organized this briefing for John to give to this

top brass and remember it was a pretty impressive array of people. There were 84 stars on people's shoulders in the room. General Putt was the head of Air Research and Development Command when we were doing that. So I was just saying, coming to the end of the story when the AVRO car finally closed down it was a question of, well, what's the thrust, well, with the thrust that it's got would it take off vertically? Well, what would it make, what would it take to make it take off vertically and we did not have a really adequate position. So, they cut it off. I mentioned Bill _____ Jack Sinner, Colonel Sinner _____ Well, when the AVRO car was cut off this was a little while after the ARROW _____ had occurred, you see. When the ARRCW backfired the only thing left at AVRO much was the AVRO car. So everybody that was working the AVRO car was recalled _____ and a few others besides came in and then we got this contract when the AVRO car folded, we got this contract with DLV, which we already talked about when we _____

_____

as some of that, I told you I thought we kinda missed the boat.

Q. What about elliptical wing saucer and the saucer with _____?

A. The elliptical wing....

Q. There's the elliptical wing...

A. Well, we came to grief on that. That's a how, not Stenning, was it Stenning? He's working at Canada Air now. Pointed out that it had enormous induced drag which really wouldn't allow it to do its hopping. There were a bunch of sort of wild ideas, really. But that one was taken up by Fred Mitchell of the British Army and we had to

withdraw it and _____ was pretty angry about it.

Q. I guess there's a lot of stuff in the brochures of this type of thing where you have the two cockpits in the middle, 10 engines and tail fins and.....

A. Well, this is sort of latter-day stuff, yes. Oh, this was, This was what we got canceled on. Look at this....Maximum _____ weight 9,700 pounds, so we went down there and said well, this is what we gotta do. They said that's nothing like the AVRO car we ain't gonna pay for that.

Q. I believe that was with the different engines wasn't it?

A. Yes, it was two 1085s.

Q. Two 1085s, that sort of things they looked at were the fin and and stuff on?

A. Sure.

Q. And then there was like an AVRO car with two stub swept wings I saw that in one of the brochures.

A. Hoo, hoo, _____ what that was for. I remember all this stuff. This was Ames tunnel. And there is a way through, it's not a very good _____ at all. There's the one with the wings.

Q. Um hum, that's the one I was thinking of. I saw wings on a conventional _____

A. I don't know what persuaded us to put the wings on....

Q. All sorts of strange and .....

A. Yeah. Yeah this is Ames stuff and there's Ames _____ _____a Canadian chap who was in charge of things. And the other guy that was in charge was the testing was called Kelly I think. Now, there's the picture. That's created from

the tunnel data.

Q. Well, Earl, what do you think then about the possibilities if the AVRO car had had more power, they weren't available to engines or just...

A. Well, they have, I have to say that I think it was too expensive uhh, you know, it's very interesting concept, traveling of the earth and being an airplane and all that good stuff. But you are spending too much energy for what you are getting out of this. This is what I think. In retrospect now, I think the same thing about that Valve Rocket Belt. I think it really afford that much money for personal transport. And we did this study with of the DLV in the latter days and I thought we missed the boat on that. John Frost said to me once, I said I still think that the air cushion is the right way to take off an airplane and he said I totally agree with you. I've been trying to do that ever since

Q. What are your thoughts on John, the man?

A. Well, John was, as John Donnelly once said to me, an intensely active mind. Absolutely brilliant, mind you, he's a marvelous man. He was a terrific character. He was also a very dominating, not domineering, dominating personality. Far be it from me to suggest that he was domineering. He was as delightful a man as you could hope to encounter, but he was a very strong personality.

Q. He certainly had some very startling ideas and it's a great pity.....

A. Oh, yes, he had tremendous design ideas, as a matter of fact, do you know that John incorporated a landing bag, a rubber landing bag underneath the Hinges Glider during the war. I don't have the

photograph anymore I don't believe but I'm not sure I didn't put that into my _____ paper, too. Maybe I did. But it's inside a net. He had this thing made by _____. Instead of using the ghastly skid which we had on _____, I worked on the _____ you know, which I think resulted in a good many crashes _____. It did away with quite a lot of people. You got this landing bag which was a damned good idea. He had the bellows flap, that's another original idea that he produced. He had the flap on the, I remember on the Hornet. Bishop was totally impressed with that. He _____ at the bottom _____, of course. Had to chuck it cause it produced _____ couldn't get the tail down during landing. Hah! It was a brilliant idea.

Q. You know, having talked to a few people like yourself about John, it almost seems that John had the misfortune to be born before his time. He had so many ideas that were into the future even now. Perhaps twenty years down the road, cause it was roughly 1961, I believe when the AVRO car, more or less came to a termination.

A. Well, _____, said to me, He's an ideas man, or something like that, which is very true. John was nothing if not an ideas man. He was very painstaking with his ideas. He didn't blurt out an idea before it was a complete idea. He used to think about it until it was solid. Then he would tell us, you know. So many people have an idea and they rush up/to somebody else and tell them about their idea. It all would be marvelous if only they could think of some way around this snag, you see. Ha, ha. John never did that.

Q. I understand John got some rather harsh treatment finally at AVRO though, which was rather unfortunate.

A. From whom?

Q. From Mr. Mitchell.

A. From Fred Mitchell, oh, I don't think so. Probably my fault more than anything, you know. I guess I probably _____ entirely convinced that it was all that bad. But I guess it probably was. So we both got let go as the phrase goes. I don't know anything to complain about. _____ to happen. But AVROs kind of fizzeled after that, it seems to me. Cause everybody went to DeHavillands _____ Don Whitley _____ Ken _____ Al Whel_____ Who didn't go to DeHavillands, I don't know. Harry Keest stayed at _____ Sidley. In on the _____

Q. Of course, Jim Chamberlain took a rather interesting gang with him.

A. Oh, he went off on the ARROW defunction. He went off on the Project Mercury _____ man in space. I met Jim out in California was it? Now, wait a minute, not California, probably Houston. It was California. We went to brief him on the air cushion _____. And he was in the loop there, _____, I can't think of the name of this guy. He designed the _____, or he was big in it. I don't suppose anyone _____.

Q. What about Jim Chamberlain himself, the man. Hard to know, I understand, quiet.

A. Jim was very impatient with John because of somewhat of a lack of formal training and not expressing things in quite the proper fashion. He, you know, Jim, Jim was all right. He was a pretty smart fellow. I didn't like him particularly, you know. John Frost

was my greatest friend and, so, naturally Jim Chamberlain's opposition didn't please me particularly. He was a good big fellow, Jim. You know, everything always hanging out, ha! ha! _____ _____ about my air cushion _____.

Q. Did you have much contact with Jim Floyd?

A. No. Not at all, hardly ever.

Q. Have you any suggestions who I might contact for possibly some additional information or

A. Bill Walters.

Q. Beg pardon?

A. Bill Walters.

Q. Bill Walters.

A. Walters. I don't know where you'd get Bill Stevens but Bill Walters would be a good source. Now you could get Bill Walters through Barney Shore, BITC _____ telephone number in a moment. I guess I've got it in the car.

Q. What was Bill Walters position or what did he do?

A. He was in the original 1794 System 606 Project Office and he and Stevens reported to Lamar.

Q. Are these gentlemen in the states or are these AVRO people. Probably in the states. I don't know where Bill Walters is now but I did mention him because paths slipped across a few months ago, so I know he's about, you see.

Q. They were ex-AVRO people?

A. No, they weren't ex-AVRO people. They were Air Force.

Q. Air Force

A. However, Stevens resigned his commission in the Air Force and

joined AVROs. Joe Morely let him write his own ticket pretty much.

Q. The second gentlemen, Stevens?

A. Bill Stevens.

Q. Bill,

A. S-T-E-P-H-E-N-S

Q. Where would I find him?

A. I have no idea. That's why I don't suggest you try. I suggest you try Bill Walters. Cause I know you can find him.

Q. And how will I find Bill Walters?

A. Call Bernie Shore at _____

Q. Who's this?

A. Bernie Shore.

Q. Bernie.

A. 613-593-4481. Bernard Shore, that's an easy name to remember.

Q. And whereabout is he?

A. He's in the Department _____ Trade and Commerce in Ottowa. And if you ask him if he recalls Bill Walters who had,

Q. _____write it down.

A. 613-598-4 , excuse me 593-4481.

Q. And he might know where Bill Walters is?

A. Yeah. I think he will.

Q. Any other thoughts of any other personnel?

A. Ah, we've got Bert Rhoden on tap, I guess. Bert was in the performance section with me in the early days. We played a lot of chess.

Q. I was looking over, while you were getting me the phone number, I was looking over the difference in some of these and that 606

photograph that you _____ to me it's striking. This is....

A. Well, that's got one sort of intake, you see.

Q. That's the monster engine, the large engine?

A. That's right. And this is the _____

Q. Well, this will be the sort of Viper type thing?

A. Um hum. Yeah. This is different.

Q. Quite a bit different, more less, the nose on there more like a conventional aircraft almost. Very different from the outfit on top like the disc I showed you and this animal here, of course, distinctly listed as 606A aren't they.

A. Um hum.

Q. And you know considerable difference between this sketch here of the 6 Viper, you know, little cockpit here, this sort of elongated cockpit in the center.

A. I can't understand what we recall what we were doing with that lot.

_____

Q. It is almost like the concept of the concord, the two large straight through jets, but above the circular platform...

A. Yeah, _____

Q. Which one do you think was the...

A. That's _____

Q. No, wait, I didn't know that. There is nothing listed. I wondered if that was 1794 or something, no, you say.

A. I really don't think, _____ distinguish between those. Like I say, _____

P.V. 704 is _____ what that was. That was _____ which was funded by AVRO.

Q. Quite a venture.

A. Yes.

Q. Did you ever see the White Evaluation from Edwards?

A. No, I don't believe I did.

Q. That's not much comment on that. I get the impression that the Canadian government were in it on funding in the early stages and then sort of sat on the back bench while the Americans put gigantic funding and then when the AVRO car came back on the scene, way down-stream, that the Canadian government sort of, at least were invited to come in on funding. Whether they did or not I don't know. I suspect that....

A. Way down stream?

Q. I suspect at least from here.

A. No. On the AVRO car?

A. Yeah, if they came, if this is Canadian, maybe there was some sort of funding that these brochures would be..... the defense department and others?

A. Yeah, they may have put in a little funding in order to keep the thing going. I don't recall very clearly, but.

Q. What was the specific, you mentioned that you presented some sort of paper or something? I didn't get the...

A. What

Q. You had a bunch of this stuff and when I asked the question about the air bearings...

A. Oh, yeah. An egardograph.

Q. Where would I find a copy of that?

A. In a technical library someplace, I don't know. I haven't got it.

Q. So what am I looking for?

A. Egardograph Number 23.

Q. _____ just initial, Egardo?

A. Well, it's Agard, advisory committee for aeronautical research and development.

Q. A -

A. A-G-A-R-D

Q. Yeah.

A. And then the papers you write the words ograph after that, no small letters. Let me write it out for you.

Q. Right there on the bottom, sir. Is this a publication by the CASI or something like that?

A. No. It's a publication of AGARD.

Q. Oh, I see. I'll get after _____ CASI, maybe they've got something like that.

A. Yeah, AGARD is a European Organization, NATO Organization. It's a NATO Advisory Committee, I think, or Aeronautical Research and Development.

Q. Well, there it is George and I'm sure you'll have quite a few questions when you play this one back. I think that perhaps I've pushed it far enough. Des seemed awfully tired towards the end there when I hear the tape again. But, I'm getting this in the mail to you as soon as I can and get your questions ready and whistle them back and and I'll try and see Des again.