C: Why don't we start out with an introduction, your name is…

HA: I'm Harold Agnew.

C: Ok, let's see maybe we can start out with the memories that you have of William Penny.

HA: Oh Bill Penny was a very, very intelligent, very nice person, very easy to talk to. For some reason he is among all the British, except for Jim Tuck, is the only one I really pretty much interacted with and that was because he was overseas with us when we were getting ready to deliver the devices in Japan, Penny came along and there was a lot of time when we would wait for things to happen and I got to talking with him quite a bit and then after the war we interacted somewhat one thing was especially nice to us, we were going to visit England and I wanted to see the play "My Fair Lady" and wrote and asked him if he could get us tickets and not only did he get us tickets but he got us the queens box which as head of the Atomic Energy Establishment I guess he could use sometimes so that was really fancy cause we the kids were with us and we had our own bathroom, we had a footman who came and asked us if we wanted any tea or whatever we wanted and it was really quite an experience.

C: Ok that's great, let's see you went, Bradbury (sp) took you on the first trip…

HA: On the first time we interacted in England with the Brits, Bradbury (sp) took me with him and I, I don't think I'd ever been to England before, anyway, it was quite interesting going to Aldermaston. I'd never seen fog and one night when we had to go to a dinner we were all on a bus in this, this dense fog to me it was the most amazing, also being on the wrong side of the road shook me up in the fog was interesting but the thing I still remember from Aldermaston in addition to all the very bright people and the very friendly people was their radiation monitoring system throughout the facility which I thought people were playing ping-pong cause the noise that it makes is very much the noise that you hear when people hit the ball back and forth and it goes puck, puck, puck its all day long and I kept wanting to see where the ping-pong players were and it was explained to me that it was the radiation monitoring system.

C: I had that same experience (laughs)

HA: But we, you know, we were limited in what we could discuss with the Brits as far as actual design was concerned we had good cooperation on experimental techniques especially with John Corner, and I think it was Bob Martin I think his name was Bob or was it Bill or Jim…

C: The UK, there's a Tom Martin…

HA: No

C: and, Charlie Martin?

HA: Charlie Martin, It was Charlie Martin who was the one who was very, very interesting person, very dynamic full of lots of ideas, but it was mostly in experimental techniques we were very much involved worrying about how when you have an implosion how the surface of the metals coming in have instabilities and can have little fragmentation or we call it mix sometimes and this was something that Martin was working on using, we couldn't use plutonium but using either types of materials especially some of his work with lead was most interesting to us, but we were pretty much restricted in what we couldn't discuss with the British especially in the beginning then gradually the rules were eased and I never understood the why of it but we could only go up to certain years development and then gradually this would ease forward but I never understood the rationale it seemed to me if you were in bed with somebody you were in bed with them and but whoever made the rules those were the rules.

C: You think some of that might have to do with the experience with (undecipherable)

HA: It could well have been but really it didn't make any difference because once you exchanged some of the basic things in the earlier designs once we got into what we call boosting that was that and then it was just a concept of better computers being able to make things smaller being more lavish in the use of phisol (sp) materials more, more materials you are allowed to use the higher yields you could get in smaller devices… now does the air, does the heating system bother you

C: It actually does, is there a way to…

HA: There's a thermostat on the wall right opposite the bathroom…

C: So what would you say were the main contributions, most valuable contributions from the…

HA: I think, to me the most important contribution that the Brits made to our program in the beginning, in addition to just having some great minds and enthusiasm, was that they brought with them a paper which showed how you could shape a wave front and that led to the design of the lens which was crucial in the implosion device because originally we were gonna use a gun to assemble uranium or plutonium and it was Pherami (sp) who pointed out the plutonium from a reactor could indeed be different than the plutonium from an accelerator because the time it dwelled in the reactor it could pick up another neutron and that in turn it might be a spontaneous fission emitter in which case it would emit neutrons and all the work we had done in purifying plutonium to get rid of alpha (?) end reactions from light elements wasn't necessary and we couldn't use plutonium in a gun but the paper the Brits brought with this led to the development of the lens which

enabled us to do the implosion but the implosion was very low priority the only person who was interested in it was Seth Nettemayer(sp) and he was using primacord which the results were pretty bad and the gun people just poo-pooed his endeavor because they were convinced they were gonna have a gun for plutonium as well as uranium and that paper was crucial and the paper I think is still in the library at Los Alamos.

C: Ok great

HA: They also helped a lot, they were experts Penny in particular was an expert in instabilities and the theoretical people worked a lot with him it was called Taylor Instabilities, and Taylor of course was Brit and this work the theory of it and so on the experiments the British played a roll in that but otherwise I know Frish (sp) worked down in the canyon where we had a water boiler, he once wrecked a car down there he couldn't really drive very well, he ran off the road and hit a tree, I don't recall really any other real event which was crucial to our development other than that paper but that sort of was enough because it we maybe would have figured it out later on but it saved an enormous amount of time having that concept and the drawings for how to shape, from a diverging front to a converging front.

C: Ok, then after the war and after another decade past we went into the mutual defense agreement and at that point in time we formed Joined Working Groups which were to be sort of informal…

HA: Right

C: Could you just a say a few words about that?

HA: Well the first time we were going to meet with the Brits after the war Bradbury (sp) took me with him and we went to Aldermaston and it was sort of an interesting sashaying back and forth because it wasn't clear what we were allowed to discuss and they of course were very eager to cooperate with us and we had certain rules imposed upon us and I think Bradbury and whoever I guess it was Bill Penny sort of formulated what the ground rules were gonna be and then the program took off but there was always the congress, the joint committee in particular who were concerned about British security maybe it was because of fooks (?) maybe it was because of Anna Coro (?) from Canada who had defected so there was always a, the congress in particular really wasn't comfortable with the arrangement no matter what and so they always inhibited as to how far and advanced technology we could cooperate or share with the Brits.

C: Ok great, that's some good stuff in there. Do you think in retrospect that we should have shared more with the Brits, would it have made a difference?

HA: Well I don't know if whether we should have shared more or not I don't think it would have made any difference we had our own program, our military requirements were given to Los Alamos and later on to Livermore and we were fulfilling them and we at least in the beginning had much better computer capabilities than the Brits had so I'm not sure what we would have gained by contributing or having more cooperation there, we had our own job to do and we thought we were capable of doing it and we fulfilled our requirements on time and I don't know if it would have been a distraction it was nice to have somebody with different ideas to talk to but our people had pretty much made up their mind how we were gonna do what we were gonna do.

C: Oh ok. How about world security as far as encouraging the Brits to have their own nuclear program?

HA: I think it was probably a good thing for the Brits to have their own capability not living under our so called nuclear umbrella and they, well their forces were quite different Ricover (sp) submarine operations was quite different from the British submarine operation, I don't know how it is now but, in the early days our ships were, our submarines were really spic and span and the Brits, well they smelled like cabbage it was, it was so different to visit a British submarine and just the way they were much more relaxed, I guess Ricover was a real tyrant and the difference in the décor was quite different on the two ships. That really impressed me, I wouldn't say I was appalled the first time I visited a British submarine cause they were very capable and would do their job but it was so different from Ricover's operation that I was just astounded.

C: (laughs) That's great. It's gonna be so tempting to put in that bit about cabbage .

HA: It's ok, you can do whatever you want I just I still remember that, I just thought my God this is something.

C: That is something. Ok we're stretching things a little bit but we did a lot of we have so much land here and so we let the Brits use NTS…

HA: We did but of course they let us use Christmas Island, so it I think we both gained you know after all it was Rutherford that discovered the neutron that started all of this so you know the Cabbanish (sp) was always one of the leading laboratories in nuclear matters so there's a long history of expertise on the part of the Brits its just that we had more people, more resources, more land, could afford to make more mistakes and it was a good relationship there always has been a close relationship except when they burned down our capitol in 1815 some of us are still resentful of this fact but you know bygones let bygones be bygones you can't hold a grudge forever

C: Well we were traitors in the Revolutionary…

HA: Well we were not traitors we were just seeking liberty from the oppressive Brits at the time (laughs).

C: Yeah (laughs), oh let's see. I have Stockpile Stewardship written down here.

HA: Ok well it was, it was a cooperative arrangement and we both gained from people just asking questions, having ideas and how to maintain a stockpile. British of course instead of developing new systems there was no requirement for, they simply practiced, at least when I was involved just rebuilt existing things that kept their ability to maintain a credible deterrent and maintained people who had an expertise in building and thinking about such things. We recently had this crazy idea of RRW I guess it was called it was just, I never understood why we would put something in the stockpile that hadn't been tested and hadn't been built rather than doing what the British were doing which was just rebuild something that had been built and we knew the materials and we knew how to do it and it had been tested. I never understood I'm relieved that, I gather the congress has said the heck with this, this is nonsense, at least for now.

C: At least for now. This is nothing we put in the film, but I am kind of curious, is it possible to build a warhead that's not tested that the margins are so large that you just know…

HA: Well I don't know if they see they talk about margins how do they know, we don't know what the margins are in what we have. We know that if the gas is maintained between certain limits most things have been tested at two gas fills a new gas fill and an old gas fill after 3 years decay or so, that was the original criteria it works but we never tested you know, older and older gas to see where it doesn't work, we never done it and now you can say with computers we can do that, well fine if you can do that with computers then take your old weapon and run it through and tell me what the margin is. They don't do that, everybody talks about margin and nobody knows what the heck they're talking about, I'm convinced of it, but it's a buzz word and you hear Cidrell(sp) talking about margin and he doesn't know up from down, but he speaks with authority and a deep voice, it's maddening (laughs) you can quote me. I call him Perea (sp). He calls me Vademare (sp). He just came out with an article with a bunch of other well, heckers involved saying we have to get rid of all of our nuclear weapons so we can have just good ole Iraqi type wars (laughs). Oh dear, ok carry on.

C: Ok. I guess we can talk about more you know larger picture, the nuclear weapons program in general has served as a deterrent…

HA: Right

C: throughout the Cold War. What significance now does it have?

HA: Well I think the main time that the nuclear deterrent really worked was to stop the Russians from taking any more of eastern/western Europe, you know they were gobbling up like it was in'48 that we put a stop to it by deploying B47's to England and at Los Alamos we made 50 weapons specially for that operation and as soon as they were deployed that was the end of the aggressive and so it really served as a stop but since then it's been sort of a, what is called a Mexican standoff, I don't know you read know that the Russians are developing new missiles and if they go back to testing it would be too bad I guess we would have to follow suit they certainly I wouldn't say snookered us but when we had the moratorium and then all of a sudden they had a break-out and they did a tremendous number of tests while we were arguing who got to test first, Livermore or Los Alamos it was sort of ridiculous but that's the way the politics played. Well, they seem to serve a purpose, I worry that the issue today really should be command and control and the prevention of any authorized use especially in take Pakistan, India countries where the government maybe, I think India's pretty stable government, Pakistan to date clearly is questionable how stable it is and the head of the government in Pakistan clearly doesn't own the weapon it's some sergeant or lieutenant a long ways away. I've always advocated our pal systems should be shared it's not classified it's more of a concept but our, its interesting recently when we raised this with regards to Pakistan the Department of Energy says well you can't do that because the non-proliferation treaty precludes you from sharing this technology it's just nonsense, I've never liked the non-proliferation treaty, I thought it was a license to steal. In Iran is clearly an example of it, everything they're doing is legitimate under the non-proliferation treaty which they've signed but once they sign then they have access to all technical information all they have to say is we won't use it to build a bomb ok but then with 6 months notice they can change their mind having got all the goodies and all the information they need and non-proliferation treaty is a license to steal and all those people that are so happy that they did it don't realize how dumb it was.

C: So ineffective.

HA: It just, I wrote an article about you know, you give a person a fish he gets a meal, you teach him to fish he can go on forever. It's the same with the non-proliferation treaty we've taught them to fish.

C: There's so many people who say we should abolish all nuclear weapons, do you think that's ever…

HA: I don't think it's possible, I don't think it's possible because the, the ability to cheat, it's so easy to hide you know, 10 or 100 weapons it's just a piece of cake to hide them, squirrel them away and there's so many of them that I think countries just because of the concern the worry of upkeep will reduce their numbers down to, I don't know whether it's 100 or 500 or 1000 some of the numbers we talk about now it's like 2000 but we have a job of getting rid of the stuff. The best

way to get rid of it is not to put it in Mock's (?) fuel because that's makes as much plutonium as you put in but you just burn plutonium straight we've had reactors in this country where we burned plutonium straight off and the breeders of course that France were doing burned plutonium straight but of course that makes more material and if your objective is to get rid of material then the best way is to use it in a reactor designed to burn plutonium.

C: Can't think of anything else really, do you guys have any thoughts, we covered oh we wanted to do the tape of Auto Frish (?)

HA: Yeah and we can do that if I can make it work

C: Are there any, is there any narrative that goes along Auto Frish(?) or would there be just…

HA: No I can just say that we were having a party and at the party we had just come back from France and had this machine, it's all gutted now cause parts don't work and you can't get parts but I was able to record on that reel to reel tape thing and so I record and I don't why we had the party but he was there and we were having a good time and you can hear the people in the background and we had a piano and he sat down started to play the piano so I said well I want to record this and I recorded maybe two or three minutes it's not, it's not very long but you do hear his voice which is something I don't think you have the voice of any maybe some of the people who came back and gave talks at Los Alamos may have been recorded I don't recall Penny coming back but he must have.

C: I don't know, lot's of pictures of Penny…

HA: Oh yeah lot's of pictures

C: No audio

HA: But I don't think any audio of any of them well there's certainly audio of Tuck because he was at Los Alamos for a long time and started the fusion program really.

Male: Did the non-proliferation act and the Mutual Defense Act conflict with each other?

HA: Well at least as far as I'm concerned they didn't but I…

Male: I've read where some people felt that that was…

HA: I've never really not been very tolerant towards State Department people (laughs) their objective is to have a treaty, doesn't matter what the treaty is but they like to

when they retire you meet them they say I was involved in this treaty. We'll talk Paul Robinson, Paul was involved in the some, some treaty of…

C: Limited Test Bend (?)…

HA: Limited, I don't think it was Test Bend, I think it was regular forces, force reduction or something you know and these guys that's a big deal for them, to me it's, it's just money that you pay State Department people that's part of their job to do treaties, but treaties are you know, they are really worthless people can abrogate treaties, there is no penalty clause in treaties, that's the problem with treaties. If you had a real penalty clause, like you're gonna get 20 lashes or whatever you do in the Middle East, people might adhere to treaties but there are a lot of treaties that have been done people just abrogate them, they break them it doesn't matter.

C: So other countries get mad at them and…

HA: Sure, but it's part of our culture, I guess, to have treaties and you know the Germans clearly before World War II there were lots of treaties, naval treaties, they didn't pay any attention to any of them. Nobody did anything had they done something at the very beginning might not have had World War II because clearly they broke from treaties. Well do you want to try the…

Male: I've got one more question for you…

HA: Sure

Male: And its way off the subject too. Do you think the United States will ever test unilaterally?

HA: No. Not unless, they won't do it unilaterally politically it's, it's a no-no…

Male: Do you think we would if the Russians did?

HA: Yes. Very much, just a tit for tat thing whether we needed to or not. Now I think they would, I think, I think the Congress and all sorts of ideas would come up why we should and clearly what we would test is something that exists. We'll do it very rapidly you'd have to do it, it's one of those things.

Male: Do you think we could get a nuclear test off rapidly?

HA: Depending on the yield, yes. I think we could do a low yield quite rapidly, I don't think we would get very good diagnostics but there clearly are some things that people would like to explore, but probably what we would do is just take something out of the stockpile and test it.

Male: Get those shockwaves going to the seismographs…

HA: Absolutely that's, that's…

Male: Ok, Cindy

HA: You have to do that, it's only running on two cylinders, anyway when you're ready, you give it a try and I don't know how the volume is but we'll find out. I'm gonna push this.