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QCSID: **Text Review:**

INAME: HALL, Blair P.; **Text w/Tape:**
PHILLIPS, Cecil J.

IPLACE: NSA, FANX3, Ft. Meade, MD; CCH Conference Room

IVIEWER: JOHNSON, Thomas R.; BAKER, Charles W.

[Tape 1, Side 1]

TRNOTE: There is much static and breakup on the tape during the first important minutes on the tape that I cannot hear the people as they are introduced and begin to speak, therefore I cannot recognize who is speaking at which interval once the tape becomes hearable again. Also, the interviewees continuously interrupt and speak over each other and at the same time.

Baker: This will be NSA Oral history 14-93. This is (XG). You'll be the first (B% in doing so). Everybody knows you as "Cece"... and Mr. Blair. We're primarily concentrating (2-3G) on the AG-22 and development (XG). We'll be at the Top Secret Codeword level unless otherwise indicated at the end of the tape. The day is 5 May '93 and the questioners are Tom Johnson and Charles Baker.

Phillips: That last time I came to NSA on the 22nd or to the predecessor of NSA was to Arlington Hall Station on the 22nd of June in 1943. I had just finished (1-2G) with ASA. I was in fact, in the signal security agency (2G) what it's called. I had just finished my second year at the University of North Carolina, wasn't doing very well and I got called for the draft. Fortunately, as far as I was concerned, I got turned down for the draft. I went back home and My mother said, "You either go back to school or you go back to work." So I decided I'd go to work and the peculiar thing was that I went to the United States Employment office thinking that since I had two years of college chemistry that somebody would want me to work somewhere munitions or chemistry. But no, there was nothing there. But the lady said, "There's an Army Lieutenant over in the corner, recruiting people to go to Washington, why don't you go talk to him." So I walked over and it was a Lieutenant (C% Espadol) who was recruiting from Arlington Hall and he said, "How would you like to go to Washington and be a cryptographer?" I said, "Sounds great." He said, "You mean you know what a cryptographer is?" I said, "Yes, I've always been interested in it as kind of a hobby." He gave me some sort of a test which was kind of like an IQ test or something and proceeded to say, "This was the highest scoring that anyone had ever gotten on it." I think that was partly "BS" but at any rate, he actually employed me on the spot. (B% He said he believes in) full employment, it wasn't a matter of going to Washington for tests. So two or

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three days later I was on the train reporting to Arlington Hall.

Johnson: Did you sign on as a civilian?

Phillips: Sign on as civilian? Yeah.

Baker: And this was early in '43?

Phillips: Yeah. June of '43. June 22nd of '43.

Johnson: $2500 a year.

Phillips: I know. That was $1440 a year plus a 15% bonus for working Saturdays. That's all you got was a 15% bonus. I think it came out to $1700 a year. Well I came, and I was assigned to the weather section. I worked there for about 10 months learning cryptography and cryptanalysis. Then the next seven years, I worked on the [redacted] In that period of time, I got involved in automation and learning about computers. Mostly, it was punch cards in those days. Then from there on... that was a fair part of my career. I actually went back to being a cryptanalyst for three years and then I went... (1-2G) I went to the machines, actually worked directly with the machine people for three years. Went back to cryptanalysis for the next seven years. It was about that time that I met Blair Hall, and that's when we started a group called the "Joint Mechanization Group".

Baker: So this was primarily (1-2G) work in the early 60's?

Phillips: In '59, I believe, was when we started. In 1959. Most of this (B% time) is what we know as A group now. All of that was A group. I never worked on anything except the Russian problem. (2-3G) my whole career on the problem. Do you want me to talk about we got into... how we got started on the AG-22? Or do you want to have Blair talk about...

Baker: Let's get some of his background. One question wanted a (2-3G), just of general interest, then we'll get on with that You weren't working the Russian problem in '43 were you?

Phillips: Yes. Sorry, I started on May day, 1944. The problem started on the first day of February 1943.

Baker: Oh, so you didn't actually spend any time working on it during the Japanese...

Phillips: I worked on Japanese weather for the ten months before I started on the Russian problem.

Baker: Oh, OK.

Phillips: But the Russian problem had about 40 people about the time I went to work on it on May 1st 1944.

Baker: Very interesting (XG).

Hall: That great University of Maryland. I was in the ROTC program.

Baker: So you grew up around here.

Hall: That's right. When I graduated, I went off into the Air Force for a couple of years. Came back and decided to law school. At the same time, got offered a job. "Why don't you come to work for the National Security Agency." Tom O'Brien is the one who suggested that to me. (2-3G) at that time in personnel.

Johnson: What year was this?

Hall: This was 1954.

Baker: 1954. So you were in the Air Force what, 50-54?

Hall: '52-'54.

Baker: '52-'54. So it was right around (2G).

Hall: Yeah. Graduated in '52. Came to work... This may be a little unstructured because I really haven't thought about this for about thirty or forty years I guess. So I started on the 17th of June 1954. I showed up for my polygraph and all of that at the "U" street school.

Baker: "U" street U.

Hall: "U" Street U. That's right.

Johnson: You know, that building still exists.

Hall: Do you know what the address is?

Johnson: Yep. I've got it written down. I can't give you it off the top of my head.

Hall: The reason I ask is that father was born at 1514 "U" street. (TR Note: "U" street could also be "Ewe" street). I know it has to be somewhere around there.

Johnson: It's just two blocks down. It's 17 (XB).

Hall: 17th and "U"?

Johnson: It started out as a VA warehouse. We occupied... It was owned by the Veterans... what was at the time, the Veterans Administration. It just continued as part of the government ever since. I think they are using it as a warehouse.

Hall: Still there then? I'll have to go by and look at it. I probably wouldn't recognize it. But in any case, that's where I first came in, took the polygraph there. Then we went down on 3rd and Independence, I think, is where they had the... where we did our... we worked on the (B% Zendian) problem and TA. You remember the old Zendian problem.

Phillips: Uh-huh. I've got some of the old Zendian maps, as a matter of fact, which I should leave...

Johnson: 3rd and Independence? What was that?

Hall: That was just some temporary buildings down there where we had the training school.

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Johnson: Is that north or south of the mall?

Hall: It's very close to where HEW was. Right across the street from HEW.

Johnson: I'm sorry east or west of... OK. I wasn't aware we had a facility there.

Hall: We were there I guess, until about the fall of '54. September sometime... when I went over to Arlington Hall, and started in what was then NSA 74 I guess. Which was the Russian main line problem. I was broke in as a traffic analyst working on the main line Russian problem. Stayed there about... in that business until about... doing various things, even sweeping the floors occasionally. In those days, you couldn't get good help. They even got people to come in on the weekends that cleaned up the place. Everybody did a little bit of that. In 1957, having worked various parts of the TA problem, the Soviet problem, I went off to work on the REGAL problem. That may be. That probably isn't more than CAT III is it?

Baker: No. Not any more. It actually covers the history of the problem.

Hall: Yeah. We went in when it was all very hush, hush. Went over and worked it. [redacted] Jim Nielsen and other. We were doing TA on a lot of the tapes from the REGAL problem which was considerable (3G). After that, I guess we stayed on that for a while. Then I went into mechanization project with [redacted] on the [redacted] We wrote a program, went off to IBM school and learned the IBM 704, and came back and put together a plain text scanning... the first of the plain text scanning programs [redacted] Which took what used to be done by about a hundred ladies sitting in a room, sorting traffic...

Baker: Was [redacted] there?

Hall: No. [redacted] wasn't in there. This was all 2's and 3's and 4's.

Phillips: [redacted] had moved on to something like head of the satellite problem. He started... Went out of Russian plain text. (XG).

Hall: This was a program on the 704 which went through the traffic and did the... you know, recognized key words and associations. Did the formatting of the messages. Broke the messages based on the characteristics of the data flow, and produced according to what analysts required. What ever went into the dictionary.

Baker: I expect the [redacted] owed much to you that they could even do it.

Hall: That's right. That was a...

Phillips: This was a spectacular piece of work. I really believe that. Because it was the beginning of what's been done... repeated over and over again and so forth. The first piece of work was (2-3G). It ran fast, and it ran faster than anything they've produced since, practically.

Hall: Within the space of about a year and a half or two years, there were a hundred ladies looking for work.

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Johnson: Could I just back track just a little bit?

Hall: Sure.

Johnson: You say you went to IBM, you went to an IBM school. Was that in New Jersey?

Hall: No. It was in down town Washington. It was down, right around the corner... it was about 17th... no, 21st and M. Somewhere in there. It was right around the corner from Gusty's, used to be a restaurant where we'd go to lunch.

Baker: You sure (1-2G) the locals.

Hall: But anyway, I think it was a five week course.

Phillips: I think it was about 17th and L, wasn't it?

Hall: Could have been. I can't remember.

Baker: Because Gusty's was about there. And Luigi's.

Hall: I took an aptitude test. They said you have a very high aptitude for programming. So...

Johnson: This must have been one of the earliest collaborative efforts between NSA and IBM in terms of (2-3G) 701 was their first electronic computer.

Phillips: Well, except they ran courses all the time. Even the people who ran tabulators...

Hall: Yeah. There were a lot of non NSA people there.

Phillips: I think [redacted] was in that (1G), I think he was. But then we came back. About that time, after we had worked on that problem for about two years, and it was really off the ground, then some of the people moved on to other things. I ended up working for Cecil in the Joint Mechanization Group along with Carrie Barry, and Oliver Algren, I'm trying to think of who else was in there.

Phillips: I think that may have been all in the beginning. Let me interrupt. At that point, started back... I told Tom the other day how this started. Juanita Moody carpooled with Frank Raven. They both lived in North Arlington. She was always telling him... I was Juanita's deputy, she was always telling him what wonderful things we were doing in mechanization. He kept saying "Well, we need help in GENS"... he was in GENS, and she and I were in ADVA. Finally, I think she knew I was bored with the (B% [redacted] She finally proposed that we have a joint mechanization party (XG) organization. And they agreed, then it got passed to Ann Caracristi who was chief of GENS-6.

Baker: GENS being the predecessor, roughly, to the old Q group.

Phillips: No. Roughly the predecessor to... it was the traffic analysis was Soviet, and they had all cryptanalysis.

Johnson: A24.

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Baker: I guess ALLO was...

Hall: ADVA. I guess Juanita was ADVA right?

Phillips: Yeah. She was ADVA-2 and I was deputy ADVA-2.

Johnson: And Frank Raven was?

Phillips: He was chief of GENS. Levenson was chief of ADVA. Anyhow, they agreed to this. Ann Caracristi and Juanita Moody, who were pretty good friends, became the, if you will, the executive committee for this I guess.

Johnson: This was in what year?

Phillips: This was '59 I guess wasn't it Blair?

Hall: '59 or early '60.

Phillips: Because I can tell you a story about '60. But at any rate, we got started. Carry Barry worked in ADVA. She was a traffic analyst, not associated with mechanization at all. We needed somebody who had the skill. Oliver Algren was what was called “improse” contribution. Turns out, he was of zero contribution but couldn't be (2-3G). He ended up working for me later. When we started the project, we didn't have any particular goal. It was just to see what we could do to help. In fact, we started off by doing some mechanization, getting a programmer... a 705 programmer, who belonged I guess to the (B% year end pro)... to write some what you would now call almost spread sheets, but they were 31 day worksheet, where you put the day across the top and the callsign down the side, and check them off. A fellow name [redacted] had proposed that these ought to be done by machine. So basically, what we did was sort of take his ideas, and get them to do it. In the mean time, we also discovered that there was a (B% OPSAV) D-311, the Alred... what we called the Alred typewriter was down in what was then called “COLL”, I guess.

Johnson: What was the origin of this central... ?

Phillips: Well, there had been a special group in the mid '50's that I was a member of, from GENS. A fellow named Ed Murray from “COLL”...

Baker: COLL being for collection?

Phillips: Collection yeah. A couple of other people. We kept talking about this idea of being able to copy stuff on line. Apparently COLL went off and let a contract for these... I think there were two of the machines, weren't there Blair?

Hall: I think there were.

Johnson: Was this SPIT?

Hall: No.

Johnson: It was not SPIT?

Phillips: Well, I thought it was.

Hall: Well, maybe it was.

Phillips: I think it was SPIT, yeah.

Hall: (B% Yes, at) COSA, COSA-223.

Phillips: It was COSA, not COLL.

Hall: Yeah. And that was the SPIT.

Baker: Which stood for Collection And Signal Analysis.

Hall: Then the test was run in August of '59.

Johnson: Was that typewriter just an in-house modification? Or did you come up...

Phillips: No. It was a contract with UNIVAC to convert the typewriter so that it produced... that you had upper and lower case without having to have a case shift character, or else it generated the case shift, I've forgotten which. But at any rate, the operator operated it exactly as if he were using a typewriter, as opposed to the way he would use a teletype. Because it had been tried (1G) before a little bit.

Hall: Up on the cover, it had a series of keys across the top that were used to tag certain elements of the traffic. You know, the callsign, the case notation and what have you.

Baker: Essentially the function keys.

Johnson: (TR NOTE: Johnson speaking in the background during previous exchange. Inaudible due to several speakers speaking at once.)

Baker: OK, this is still in English language.

Phillips: Still in English language.

Hall: It's just replaced the Manual Morse typewriter.

Phillips: And the idea was to replace the typewriter. Well, it turned out that somewhere or another, I discovered these were down there. What they were planning to do was to run the tapes backward through a teletype and use stunt groups in the teletype machine to catch the callsigns.

Johnson: Was this the typewriter produced at (B% Cape)?

Phillips: Yeah. I said “You know, we've got computers that will do that kind of thing. Why would you want to run... ” They said, “well, be our guest.” Here it is, just sitting here, we've got the two machines, so we started working on it. Blair and I and I guess Carrie. We started thinking about what we would do with it.

Johnson: At this point, was this typewriter electronic yet, or was it still completely manual?

Hall: It was electronic. Yeah.

Phillips: It was electric, but I don't think it was electronic. I don't even know what the mechanism was.

Johnson: Electro-mechanical.

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Phillips: I think it was electro-mechanical. It almost certainly had solenoids under the keys that generated the codes I think. As opposed to the IBM electric typewriters which were purely mechanical. You know, they'd grab a cam that hit a key. Because we were able to change the coating I believe, weren't we? I'm not sure whether we changed the coating or whether we just used the (1-2G).

Hall: The thing of it is... somewhere in this paper, I can't remember if it was a seven level paper or a five level. At one time, it was a five level paper which meant you had up shifts every time... and then they went to a seven level tape which then meant with every character...

Phillips: But, at any rate, they said "you're more than welcome to do this. Take it and do anything you want with it." So I asked Ann Caracristi for a programmer, and she produced this lad we were talking about, his name... did you ever think of his name Blair?

Hall: No. I can't think of his name.

Phillips: ... Was a "Bogart" programmer, and I think we went to A1, or what was GENS-1. I'm not sure how we got there. But we borrowed an Army Sergeant who had been in the [redacted]

Hall: [redacted]

Phillips: [redacted] We started him using the typewriter in a shack... there was a shack over there beyond the S building. A Quonset hut where they had a small HF antenna. He could copy some of the main line stuff. We started...

Baker: Over where SAB-4 is?

Hall: Yeah. Over in that area.

Phillips: Yeah. Over in that area. We started copying some of the material, and began to develop the ideas of what we wanted to do with tagging. Somewhere fairly early on, [redacted] because Frank Lewis was the guru of mechanization for all of the agency. He took me and Ray Bowman [redacted] to talk mechanization. Bowman was working on TEBO, which before that was called something else.

Johnson: (B% MOST) was an earlier name for that. There were three or four projects...

Phillips: Anyhow, we went over there. [redacted] had done the work on CHARON which [redacted] paper talks more about. It tells more about CHARON. They came up with some very good ideas. In fact, [redacted] who was the ULTRA cryppie was working on CHARON over there. They came up with some very good ideas which lead to the copying procedures...

Baker: How is that spelled?

Phillips: CHARON.

Hall: Like the river Styx. CHARON was the (1-2G).

Phillips: At any rate, we were on our way and we began to develop it. The funny part of it is how I can place the time that Blair made the test. There was all of this yakking about politics because Blair was just... why he was eluding to the Kennedy era supported Kennedy. I was supporting Nixon.

Hall: No... I guess it was Nixon running then wasn't it.

Phillips: And I said "I'm going to make sure that you go overseas during the election so you can't... " And it turned out that way, it was pure chance. He went over about the middle of October or the end of October.

Hall: We went over about the first part of November, right before the election, we were there six weeks at (B% Rock Weston)...

Phillips: Maybe we all ought to slide down into West Virginian. But I think that Blair should tell you about the test. What we had were rudimentary USSID 101, is that what it was?

Hall: Yeah. Manual Morse copying procedures.

Phillips: Yeah. And what he did was to go over there and supervise Turk and the whole procedure, and send the tapes back. This programmer was here and ran them through...

Hall: The idea was to show that you could, in fact, produce the kind of information that was manually extracted from the traffic. The (B% MATSUM). That you could automatically produce the same thing. Essentially that was what we were to do, was to use the program, take the same... have the same material copied that a normal position, and compare the outputs of the two to see how well we did in recognizing parts...

Johnson: It was checking it again wasn't it?

Phillips: Yeah.

Johnson: It was 10001, or something like that?

Phillips: No. It was MATSUM.

Johnson: (XB) it was documented. You were checking something or another with it.

Phillips: Yeah. Something like that. I can't remember what it was.

Hall: It probably says in here somewhere. I should have read this.

Baker: But you spent about a month out there didn't you?

Hall: Just about a month.

Johnson: And that was in the fall of?

Phillips: In November of 1960.

Johnson: Did you rig up one position?

Hall: Initially we did. Just one position up there.

Phillips: In theory we were going to... what we were going to do was to optimize that position by having everybody tip him off when they had things. So that he'd just copy anything that was on the air. Because what we wanted was as big a sample as we could get. And as much variety as we could get. It turned out that I don't think that worked all that well, did it Blair?

Hall: No. There was a controversy in that some people felt you couldn't expect an intercept operator to do the extra functions. That you couldn't expect him to add a tag for the case notation or for the callsigns or to sort of start a message or end a message or what have you. It was too much. He was too busy, couldn't do it. There was another school of thought that "yeah, he can do that without any trouble." Turned out that he could. (1-2G) could have done more except the idea... once you have it in machinable form, I mean it's very simple to... just a brief logical program to recognize what a callsign is. You can do as well as most analysts. You can recognize 98% of them just by their form and function. Whether there is a "DE" in front of it and what have you.

Baker: You mean the machine could do that.

Hall: The program.

Baker: Now, this was very rudimentary?

Hall: You see, you don't need to tag callsigns because you can recognize them. You don't need to tag callsigns because they have a format that you... that's readily... .

Johnson: How were you going to compare the two pieces of traffic? Regular intercept operator... ?

Hall: Look at the MATSUM produced at the same time on the same material and see what ours looked like.

Phillips: And Blair did make some very extensive comparisons... I noticed there was a report, apparently was... well there was a GENS-4 special report number 70 in January of '61, so that must have been it.

Baker: And you don't have that?

Phillips: No. I just have reference to it.

Baker: But that had an extensive comparison of the results. The thing I remember most clearly from your results, was that the machine was more consistent than the human being was, but the human, when he was working his best, was better than the machine.

Hall: Yeah. A really good intercept operator was better.

Phillips: But sometimes these people who were preparing the MATSUMs would just flip over a whole stack of traffic... it use to bother them when they got into a hurry or... whereas the machine was consistent, it didn't do the most fantastic job all the time but it did a steady job and didn't get tired. I think their results were quite good and I think the report which Blair wrote was a

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massive success, we must have distributed, it must have been over 100 copies I think because people would keep coming.

Hall: Yeah, I had a good note from Dr. Tordella at that time, so I believe this was great interest. (B% (sounds like a quote poss from the note) "We tried to do this once before in 1943") or something like that.

Phillips: We sent him a copy and we sent copies and it was quite successful but in spite of that; in a sense it was languishing I guess and I think that [redacted] as I told Tom the other day, somehow or other I don't know how the Air Force...

Hall: You got them off and running on it.

Phillips: I don't know how, I can't remember the details of why we didn't get into the Air Force to start with, because [redacted] was the obvious place to start, but I think it was just the way that the dice fell that we could get this guy, this Army guy and we got more cooperation out of A1 than we did out of A3 and so forth.

Johnson: Well, what did the operators (1-2G) out a (B% Rock Weston) think about it? The ones that you were using on the (B% machine).

Hall: I think it went pretty favorable. They didn't have any trouble with it. I think the typewriter was not the most comfortable, you know just sitting there and banging away on a manual and suddenly there's this machine that's a little more sensitive and didn't have a real good feel to it anyway, it wasn't a typists dream. But, it was an interesting piece of equipment and I think they enjoyed working with it. I don't think it was... there was no drawback. Clearly, you could see that if you had a good typewriter with the proper tags... I mean with what we have today, we would have been overwhelmed with joy if we'd have had anything like that.

Baker: You said that [redacted] was the natural place for (B% [redacted] the reports?

Hall: Or just for preparing the TECHSUM. In those days there wasn't [redacted] so much, well there was some I guess. But, in those days it was mostly just preparing the TECSUM and forwarding it in. The people here mulled it over, did saturation plotting and things of that sort. I don't think the (B% bull moose) and the [redacted] and... White Wolf and that kind of thing hadn't started at that point, I don't believe.

Johnson: No, BULLMOOSE was just starting.

Phillips: Just starting, ok.

Baker: [redacted]

Phillips: [redacted]

Hall: [redacted]

Baker: [redacted]

Phillips: But somehow or another, and I don't know whether Blair knows (1-2G),

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but the Air Force got interested and I attribute this mostly to [redacted] who seemed to have...

Hall: He certainly was the catalyst.

Phillips: He had the line to the chief of AFSS, who was then...

Hall: Was it (B% [redacted] (XG)?

Phillips: No, the general that was in charge, he had some kind of direct line to him I guess. He was part of the liaison staff here. So he got us orientated toward the air problem and we started working on that. They produced a programmer or a systems engineer I guess you'd call him now, named [redacted] who was very helpful...

Hall: In 466L.

Phillips: From 466L. Then they ultimately produced a programmer named Phil Hill who programmed for this, and this was about '62.

Hall: I'm trying to remember when the second test was it was...

Phillips: This [redacted] kept doing this and even when the current (B% IOPS) was done, [redacted] was still working for us, just a super programmer.

Hall: Yeah, they were very good.

Phillips: But we put this stuff together for the air problem, we tried two air...

Hall: September of '61 at USA-67 was the second test, the first at (B% Rock Weston) in November of '60 then...

Phillips: Now was that just [redacted] because we did some work on the problem?

Hall: [redacted]

Phillips: [redacted] OK, we did both? The primarily the results from Darmstadt to Zweibruecken.

Johnson: How were the results (1G) physically (XG)?

Phillips: Electrically via OPSCOM circuit. (B% 751).

Johnson: So you'd simply take the 5 level tape off the position and run over and put it on TB and fire it up?

Hall: Yes. I think that's the way it went. It went on down and was processed on the 1401 down at Zweibruecken.

Phillips: Out of that, it looked like that the Air Force was gonna take off because they programmed to put 1401s in all their stations and so forth, but there were some forces at work I think against this. I think it may have been some people down at the Department of Defense and the (B% CQ DI staff) or whatever the predecessor was.

Baker: For the benefit of the... that initiated the 1401.

Phillips: An early IBM computer which combined punch card capabilities with real

computing capabilities. It had paper tape, you could feed paper tape, it had a printer with it, it was a great machine for simple data processing (XG).

Hall: In this one, the second test was with two machines. The first one it was just one, the second was with two machines.

Baker: And what are you calling the machine?

Hall: This is called the (B% Alred). I think it actually (1G) D311. AFSAV.

Baker: V?

Phillips: V. Victor.

Baker: OK.

Phillips: That was the program project name that when they contracted with UNIVAC to build this.

Baker: I'm familiar with AFSAM (XG).

Phillips: I don't know... It turned out that it wasn't a very good machine. It broke down a lot. As Blair said... (B% such was as we were given). It was the only thing that was available.

Johnson: This was a kind of technological advance over what you had used in previous times?

Phillips: I think so. We had not used anything before. But of course, Allied had tried at Skaggs Island in the '40's. Some other people had tried it with teletypes which were longer.

Baker: I'm a little curious that they used AFSAV as the designation. That generally indicates that it started under AFSA.

Hall: It was armed forces.

Baker: No. It was Armed Forces Security Agency. At least it was a concept (1G) AFSAM they used a lot. (TRNOTE: All interview participants talking simultaneously).

Hall: Well, it could well have been. I don't know how old this piece of equipment was.

Johnson: Well, there were AFSAMs all over. Most of the equipment... we had Air Force (B% flights) when I came in, in '54 were AFSAV something or another. All your demodulators and multiplexers.

Phillips: I think they must have just carried on a series or something Charlie. This machine was only a year or so old when we got our hands on it.

Hall: Remington Rand synchro tape (XB).

Baker: Yes, that's right but (XB) through TAL and KW and all of that.

Hall: That was what was called the SPIT was the Remington Rand synchro tape type (1G).

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Johnson: What you used in the second test was something like an updated file.

Phillips: (XB) (TR NOTE: speakers continue to speaker over the top of each other).

Johnson: The same thing but you had two of them.

Phillips: But as I said, I think that the Air Force plans to put 1401s out and begin using them. It got scuttled by somebody on the staff down in DOD. Levenson and Kirby both seemed to be opposed to it. I think they... I guess its my impression that the Air Force is just expanding too rapidly, and they weren't very happy with it.

Baker: Arthur Levenson and Oliver Kirby?

Phillips: Yeah.

Baker: OK. They were here. They're not down at DOD.

Phillips: But I think they were in...

Baker: You think you got a in-house... a little in-house dissent going here.

Phillips: In-house dissent here but also somebody down... saying we've got to curtail these expenditures. The 466L program had been expensive and hadn't produced very much. This is just my guessing but... Levenson... you were quoting Levenson the other day...

Hall: I remember in the staff meeting, he used to say constantly "Don't want any of these damn stinking little tot computers in all these intercept sites."

Phillips: I was very disappointed because I thought we had shown that it we worked quite well. I thought that what the Air Force was doing was right on target myself. Nobody asked me. So the thing languished for quite a long time.

Hall: Of course, after that first test, then the Air Force had plans to go ahead with another test using ten machines instead of two. They were going to then, I think, use the model 35 or something or another.

Baker: How many were actually in existence?

Hall: Of these Alreds? Only two.

Baker: OK. So they would have to manufacture them.

Hall: So they were looking for something better, more rugged, that could be used.

Phillips: Well you and I spent a lot of time talking to people in the old COSA. Remember with the Chief Petty Officer that we used to talk to... [redacted] somebody or other. And we talked, I think, to [redacted]

Hall: [redacted]

Phillips: [redacted]

Hall: He went on the first test with us at (B% Rock Weston).

Baker: Are we still talking 1961?

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Phillips: Yeah. '60 - '61. We were still looking for a better machine. In fact, I talked to a guy who developed the IBM typewriter with a ball that rotates. What do you call it... IBM Selectric. He was from Lexington Kentucky and he was the inventor of the Selectric. I say to him something about making a tape from it or something and he said "I hadn't thought of that." I said "Well, didn't you ever think about using this as a console typewriter on a computer?" It never occurred to him. He was in the typewriter business, and that's what he was doing. So it wasn't possible to get a Selectric with a tape or even with any kind of signal output because it was still an electro mechanical device, which rotated the ball. So we just couldn't find anything that was any better than this Remington Rand Synchro Tape. There just wasn't anything around any better. But eventually they... the AG-22 became a modification of a teletype mod 35. I don't know when those were first produced because... I guess they must have come off of the assembly line in '57 or '58 or somewhere around there.

Johnson: I don't know.

Hall: But there was talk early on, at this stage, about... that the ultimate way to go would be using an optical scanner and read the traffic. Take the traffic itself, just to use hard copy and run it through a scanner.

Phillips: Well, there was a counter effort, if you remember, a guy named Larry Fadner who was in R&D who wanted to use a bar coding typewriter, which would strike the letter and would put a bar code like you find on modern day scanners underneath the letter. He kept telling us that what we were doing was wrong because the bar code worked much better. Every once in a while, somebody would say "why are you doing that? Why aren't you doing the bar code?" We just kept on going. The R&D people had... they had a slightly different view. They were going to have this stuff copied with a bar code. Then they were going to have an editor's position where a human would, off-line or non-real time, would be able to edit the bar coded stuff to produce a second version. Then you'd forward that back home. None of that ever got off of the ground. As I say, I think the Air Force really kept it alive, even though they'd been through (2-3G) the AG-22 that we gave them. 1401s to the side.

Baker: This ten machine operation never evolved?

Phillips: (2G). I think it did didn't it?

Hall: Which one?

Phillips: The Remington (B% 10) machines.

Hall: Yeah. They did do that. That was in '62. As I look at this... I should have read this thing before I came over. There was another test in '62 also at Darmstadt, I think. They called it the phase two test.

Baker: Darmstadt was US-667?

Phillips: There were also some competing efforts in the middle '60's. [redacted] who's still working in here, and who is now on the B staff, B2 staff. They

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had a project called RAPIER which was a more sophisticated project. They were going to try to do more than we were doing with the (B% SFD-311). They never really made it. I don't know whether it was lack of support... I don't think that their ideas were all that bad. I just think they... somehow or another, the right forces didn't coalesce to make it happen.

Hall: I guess the Air Force called their system the SATO system. We had a... there was a recommendation that we would take SATO and RAPIER and combine them together into one operation. That's when they set up a thing called the MMCSSG. Manual Morse Collection Systems Steering Group. That was supposed to coordinate all of these efforts among the SCAs and NSA.

Baker: When was that actually (1G)?

Hall: That was in... somewhere in late '62 or early '63 I think.

Phillips: Somewhere or another, I got out of this picture. I'm not quite sure how or where.

Hall: I think you'll find in here a pretty good chronology of...

Baker: What's the date of that document?

Hall: '65. 21 May '65. So it summarizes. Then there's a listing of documents, most of which are probably not in existence any more.

Baker: Well, they may be. If they were retired in good order, they may be... (TR NOTE: All speakers talking simultaneously).

Hall: Well, I think what this does is just sort of lays out the chronology of how all these things occurred and what order.

Phillips: Now if I can jump forward, and this may be covered in Blair's paper, and we may have even talked about it before... Along about 1969, I guess, the first I'd heard... I think it was [redacted] talking about the idea of buying small computers to put at the sites that would act as a concentrator for AG-22s. In the mean time, the... and you probably know more about this than I do, the old TCOM had put in STRAWHAT circuits that were supposed to forward these tapes very fast. In fact, we had some processing going on, a little bit of processing going on in the basement. I was (2-3G) computer applications at that point, but we weren't really in the swing of things. This [redacted] idea, I don't know whether it was his idea, or whether he was just briefing the money side of it... was to put a Honeywell 316 in the station as a concentrator, couple these devices into it, get rid of the paper tape, and forward the traffic back to a processing system in the basement.

Baker: Thus ending one human intervention.

Phillips: Right. A lot of (B% messy) human intervention tape (XG/weak). The thing that happened there was that, as I remember it, was that I guess they finally got approval for the money to buy these Honeywell 316s and so the question came... Now how will you get the programming... all the

software and so forth. My deputy, I was C5, my deputy was a fellow named [redacted] says "I think we ought to put together a team to do this work. I think [redacted] is the guy who ought to run it. I think I can borrow people from C9 and some other people to do it." I said "Fine, see what you can do." He did. He put together a team of about five people which Saadi headed. We got this guy [redacted] back. I've forgotten how. I guess we finally some money and hired him back. A group put up somebody, and B group put up somebody, and I don't know whether G did or not. But anyhow, he put together a team.

Baker: OK so we had A B and G by now?

Phillips: Yeah. We had A B and G by then.

Baker: And C was for computer services?

Phillips: Yeah. C was computers. T was telecommunications. This team wrote the software for the Honeywell 316. They wrote the processing software for the IBM main frame down in the basement which is still running. Virtually unchanged. A system called GAPS, which is for Generalized AG-22 Processing System. It's running virtually as it was in 1970 or '71 whenever it finally got (B% running). The Honeywell 316's were only replaced by STATUETTE about three or four years ago. Again, I'm going to show my biases, it looked to me like an AT with three megs of memory and a local area network, they were able to do almost as much as they did with a mod 35 and a Honeywell 316. They didn't really advance the state of processing, or the state of analysis at all.

Baker: Right. I need to flip over the tape here. (TRNOTE: Pause while changing tapes).

[End of Tape 1, Side 1]

[Tape 1, Side 2]

Baker: Did you have any involvement with it in those days?

Hall: No.

Baker: You had completely gotten out of it.

Hall: No. But I went off to the Air War College. Then when I came back from that, I spent a year working in on the Soviet TAF problem. Then I went off to Japan for three years. I was out of the AG-22 business at that time.

Phillips: But it took us some time to... from this work that [redacted] did to fully get rolling. I guess that it was running pretty well by sometime in '73, I think. I know I brought... I took the [redacted] took the [redacted] to Augsburg there a couple of times to show them what was happening. They always criticized it because they were always going to do something better.

Baker: But, it languished, in fact, almost through the '60's.

Phillips: As far as I was concerned, I thought it was languishing in the end. Nothing

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really...

Hall: It seemed like there was a lot of activity going on. The Air Force seemed to be charging off. Everybody sort of charging off in their own direction.

Phillips: Yeah, but nothing coherent. It was like random motion.

Hall: But they had plan all along to start moving it. They did move a lot of AG-22s into Darmstadt and places like that.

Phillips: There was also talk, during the event (2-3G) war, INSCOM was going to put out a bunch of AG-22s down there. I'm not sure whether they ever did or not. I don't think they did. Probably got there. I'm not sure they would have helped.

Baker: Well during the Vietnam war they would have been ASA, not NSA right?

Hall: One of the problems was that with all of these individual efforts... RAPIER, the AG-22, and the others, is that there was no common copying instructions.

[redacted]

Phillips: Now you went on that.

Hall: Yeah, I was on that.

Phillips: And who was in charge from the U.S. side?

Hall:

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[redacted]

Baker: And across the board, we're talking Manual Morse right?

Hall: That's right.

Johnson: What about... (B% to go way, way back)... when you formed the joint mechanization group, by joint, does that mean joint ADVA, GENS, (B% New pro). Was ALLO involved in this?

Phillips: No. It was joint ADVA GENS really. ALLO had nothing to do with it.

Johnson: ALLO and ACOM were out.

Phillips: They were out. We asked the machine people to contribute somebody.

That's when Oliver Algren, I guess, came on (B% on the problem).

Hall: He wasn't really a hands on kind of guy.

Phillips: He wasn't a hands... he had been to... he was a very early punch card expert going back to maybe '39.

Baker: Is this spelled A H L G R E N?

Hall: No. A L G R E N.

Phillips: He didn't know anything about traffic analysis. He had never worked with traffic. He was a punchcard man. We were really beyond that. We were trying to break into the computer world. In fact, he had a heart attack while we were working. He never really came back. He came back to the agency, but he never really came back.

Johnson: Why was Sperry Rand and UNIVAC selected?

Phillips: I don't have any idea.

Hall: You mean to produce (1-2B) after D-311? I don't know, I think it's just something that they had. In fact, we had a manual on it. It was something that they had produced for some entirely different reason.

Johnson: Would you believe the manual still exists in our archives. I ran across it the other day.

Hall: Yeah. I had that one, and I turned it in when I went to (1-2B).

Phillips: The machine... the early set of machines like that, IBM machines, was called a letter writer. It was intended that you type your letter, and you could stop it and insert the person's name. Like you do a merge now on a name list. That was the kind of thing that it was intended for. So I think this device...

Baker: I had to remember that in admin all (XG/weak) is that possible?

Phillips: Well, there was a (B% mag card) version, and then there was the paper tape version. I'm trying to remember what the name of it was. I guess you're right. It was around... it was around when I came back from Germany because I used it... used it to get rid of somebody who couldn't type. I said “You've got to learn to use this machine or else.” Because she couldn't type two lines without making a mistake. “You've got to learn this machine.” She wouldn't take the course class, and she couldn't pass the (2G). So she took another job, and I was saved.

Baker: Probably an executive secretary or something.

Phillips: I'm trying to remember what the name of that machine was. But you are right. But that's what those machines were invented for, was to letter writers. The early version of word processors, you know.

Johnson: They must have had a primitive memory capability.

Phillips: No. They did not. This machine was... the thing that made the D-311 different from the standard synchro tape was this scroll function buttons.

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Hall: Sat right up on top of the cover. Up on top, up high. So you had to take your hands off of the keyboard and reach up to type. If you had one of them with a callsign tag, and there was a case notation tag and that sort of thing. You'd have to reach up and hit that one after you've typed the case notation.

Phillips: Now the [redacted] and I don't remember what kind of typewriters they used, do you?

Hall: No. I've forgotten at this time, but it was a different kind.

Phillips: But it was their project. Their approach was more sophisticated than ours, in a sense that they hooked the machines up to another machine, a concentrator, and they had some feedback. They were doing some stuff real time so that you had some feedback. I think that, again I suppose it's part of the reason that they were not as successful as we were, but I think it was more complicated. You know, more costly, I guess. I don't know why, because I think...

Hall: That may have been the problem as far as they were concerned. It turned out to be expensive.

Phillips: I think their ideas were, in some respects better than ours. One of the things, when you work with multi-service and everybody here, you have to reach a common denominator, and it's usually low.

Baker: Very low.

Johnson: What about the timing signal that went into this system? Eventually, we had one that automatically put a time at the end of every line.

Phillips: That was a part of the...

Hall: That was a feature of the ABSAP D-311. Carriage return produced time at the end of each line. Where ever you hit carriage return, the time was.

Johnson: (B% Sensor Clocker) was their clock on each position.

Phillips: I think there was something...

Hall: Something built right into the machine.

Johnson: Eventually, we unhooked them all (XB).

Phillips: When we got to IATS...

Hall: When we got to the model 35...

Phillips: ... Model 35. We had it hooked into the system.

Baker: I'm glad you mentioned that because that was a key feature.

Johnson: (XB).

Phillips: That was a kind of (B% software) for those people who said “You're putting too much of a burden on the intercept operator”. We could say “Gee, but look, he doesn't have to enter the time anymore.” That was a fair counter argument. Actually, we weren't asking him to do very much. We

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were taking, in this instance, having to look up at the clock.

Johnson: Plus the traffic analyst would just turn cartwheels if you had a time at the end of every line.

Hall: I can't remember whether it was carriage return and then time, or whether it was time at the end of... I think when you hit carriage return, it returned immediately and typed four digits of time on the left hand side, but I can't remember.

Phillips: It was at the end of the line.

Hall: At the end of the line, you think?

Phillips: Yeah.

Johnson: I know on the (B% old key) it files it.

Hall: At the end of the line?

Johnson: Pretty sure. It was over on the left hand side of the (XG/weak). Well, that's a good link up to the oral history of [redacted] who picked the story up about '70 or '71. The initiation of the (XB).

Phillips: Well, I think he did a superb job. He had all the right attributes. He knew traffic. He knew traffic analysis, and he'd become a programmer. So he was able, and he again, took a fairly simple approach to doing this. He built the front end of GAPS which is known as... [redacted] and (1G) I think were the two front end (1-2G). Then he said to the people, well your from A group “Now, I will deliver this file to you in this format with the tags picked out and placed at the front of the line in a sort of generalized format, and you can pick out the meat of what you want for your TECHSUMs.” It worked very well. I don't know how we'll ever replace it. Nobody's even talked about it.

Baker: Is there that much Manual Morse still being collected?

Phillips: Yeah. Well, there's quite a bit. There's two competing efforts in terms of keyboards. A lot of keyboards. I don't know whether you'd call that Manual Morse... at one time it was called keyboard Morse. There are two competing efforts. There is a set of people in R, they're now T something, but the old R, who want to develop a generalized approach fro a machine that will digitize and convert it to characters and do some formatting, but not a lot of formatting. They would rely on a human editing... There's a group effort in A2 called Green something or other... Green thumb I guess, which is aimed at actually doing the whole job. Again, being able to edit it, select out the callsigns, the frequency changes, all kinds of things. That... starting butting heads on, I don't where it stands in terms of... the argument over where the money should be spent.

Baker: But despite these efforts, this basic system is still in use?

Phillips: Yeah. It is indeed. In fact...

Baker: Would one of you expand IATS for me. I've forgotten it.

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Phillips: Improved AG-22 Terminal System.

Baker: Did the AG from the designator have any specific meaning?

Phillips: The AG was the term... Acquisition Group. The COSA people had two... They had RGs, AGs, and something or other. Acquisition Group, Receiver Group, and some other kind of group.

Johnson: Oh OK.

Phillips: [redacted] could almost certainly fill you in. Or [redacted] could, on what the...

Johnson: I always wondered what that meant.

Hall: Amazing how much you can forget.

Baker: Improved AG-22 Terminal System.

Phillips: I was frustrated mostly during the 60's I think. I thought it should have moved along.

Hall: I was just having fun.

Baker: You say it's still operating. Is it still operating on a Mod 35?

Phillips: No. The statuette, which was built in the old R6, replaced the IATS. But the processing...

Baker: So, that's what's still going is statuette?

Phillips: ... The processing in the building remains unchanged. In fact, the difference is they forward the material over platform instead of over point to point searching. (1-2G) several million dollars to do that.

Baker: I was under the impression that DEFSMAC (2-3G) wanted to get rid of their Mod 35s.

Phillips: They probably were.

Baker: They'd gone almost every where else by then.

Johnson: By the mid to late '80's, I guess, we had started... really converted our manual copy positions to IBM XT... ATs.

Phillips: Yeah. That conversion started... I'm not sure. In fact, I'm not sure what stages it went through. I guess there was some... in stages before statuette was actually fielded wasn't there? They just needed to use the disk (B% thing).

Johnson: I lost track of it. I know [redacted] got started on that some years ago. Early '80's. Trying to make positions into communications terminals.

Phillips: Now the other couple of things... we mentioned a name... reminds me of [redacted] always wanted to convert it to STRUM. He wanted... He thought we ought to change the copying instructions to STRUM. But on the other hand, on the B group side, there were all these people who were doing voice transcription in AG-22 format. They persuaded their third parties to do what they called “simulated AG-22”. So the [redacted] were copying in a format that resembled AG-22, but copying on paper, I guess.

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Baker: For ease of manipulation back here?

Phillips: Yeah. They actually bought a system from GTE for the [redacted] don't know if it ever worked or not. Do you?

Johnson: No. I was never involved in that problem.

Phillips: They actually had GTE building assistance that was somewhat more sophisticated than IATS, but it was late 70's technology which they were going to put their own typewriters out there. The supposed argument for doing it this way was that they didn't want them to know what we had. Or something that they were going to give them. I don't know what ever happened.

Johnson: I know a number of our third party's who went to this simulated AG-22.

Phillips: Well [redacted] in addition to everything else he had done... you can give him blame for almost all of the processing that was done on the Chinese problem. Because, what he didn't do here, he did when he was at JSPC. He had a healthy hand in all of this over the years. He was very adept, very quick at putting together things that worked. (XG/ very weak). The ideal STRUM was invented in A group. But it was just too complicated. Seven or eight years later, they were trying to get a processing (1-2G) for STRUM.

Hall: Lane Hart. J V.

Phillips: [redacted] goes off and they do fixed field STRUM. He does it in two weeks (XG) something like that. It's running, up and running. A group's still wondering whether they'll ever get a STRUM process running or not.

Johnson: On the car pool story that you told, you were Juanita's deputy at that time?

Phillips: Right.

Johnson: ... And she was keeping you apprised of what was happening in the car pool.

Phillips: I guess, yeah. In fact, the carpool... the funniest stories that ever came out of the car pool was that Raven was very concerned about whether Frank Rowlett was going to come back (2-3G) or not. I guess he probably didn't want him to come back, I'm not sure. So Juanita concocted this story that I'd been out mowing my lawn and Frank Raven and Frank Rowlett had come along, and stopped and chatted and said “How long does it take you to get from (1-2G) to Fort Meade?” According to Juanita, she tells Raven this story in the car, and he almost runs off the road. The funniest part was in two months, Frank Rowlett was back from CIA.

Baker: And you were blamed for his return, no doubt.

Phillips: He was the special assistant to the director. He took over that position that Friedman had. I guess they had a special senior advisor to the director or something. I think after he came back, he spent all of his time, as far as I know, on third party matters and relationships with CIA.

Baker: At what point in there... he was in a school at some point in there wasn't he. Commandant of the school.

Hall: Rowlett?

Johnson: He became... When they converted into the National Cryptologic School, he became the first Commandant.

Hall: I think maybe his picture is up on the wall there. Because I...

Baker: That's where most of our pictures of him are. From school ceremonies.

Hall: (2G) he just had a cup of coffee there. I think it was like less than a year.

Phillips: I didn't know that. I must have known it, but I just didn't remember that at all.

Hall: Look back at those pictures. They have them all up there.

Phillips: When did he retire?

Johnson: By 1970-71, he was still over at CIA running the third party mission.

Phillips: (XG).

Baker: OK. I can't think of anything else.

Hall: I think you'll find that the chronology in here will sort of fill in all the...

Baker: I don't what use you plan to make of this, but I'd like to have a copy for me on the issues (1G).

Hall: It's yours. I don't know whether you want to look at it before...

Phillips: Well, I'll look at it. That's all right, Tom will have it, and I will look at it.

Johnson: In fact, I'll make you a copy. Everybody gets it.

Hall: It's no great work of art. It's just simply a chronology, more or less.

Johnson: I have in mind putting the copy in our history series as a basic reference document.

Phillips: Well, you to try to get that... what Blair wrote after the test at Rock Weston, because they say it was the best (B% teller) at the time.

Hall: Do you suppose that was the GENS-4 special report number 70? Dated 17 January '61. That would be about right.

Johnson: If GENS retired, then you might have one of the (XG/fades).

Baker: I can't even remember what it said to tell you the truth.

Johnson: We have done a search on ALRED, and came up with some documents on that. Among which was the ABSAP 311 D manual. That report was not there. There was another question I wanted to ask. Was Vint Hill ever involved in (XG/weak)?

Hall: Who is that Vince Hill?

Johnson: Vint Hill.

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Phillips: RAPIER was done at Vint Hill. As I said, [redacted] s still around. He's in the B staff, B2 staff now. So you might... because if you're going to do something, you might want to touch base with him.

Baker: That's [redacted]?

Phillips: [redacted]

Hall: (2G) sort of driving force behind AFSA's army warrant officer [redacted]

Phillips: Yeah, [redacted] was the traffic analyst and the mover behind this. [redacted] was doing the automation side of it. [redacted] was very sharp.

Hall: He was. Very sharp. A lot of good (2G).

Johnson: Well, we'll do a drag on RAPIER to see what we can do.

Phillips: RAPIER and if anybody retired records on that.

Baker: How about a gloss of what each of you did after that.

Hall: Well, let's see, gosh...

Baker: You were in C now, when all of this happened.

Phillips: Well, no I was deputy ADVA-2. But in the middle of 1961, ADVA-2 went out of existence, and I became Ann Caracristi's deputy. As A6. I was deputy A6. I stayed there for about two years, I guess. I took the job of A03, where I stayed about a year, following some of these things that we have talked about. (2G) do some other things. Then I went off to ICAF for a year.

Baker: Industrial College...

Phillips: Industrial College of the Armed Forces. When I came back from ICAF, I went into C, again. I was in there '50-'53. Or the equivalent. I went into C as a special assistant to Arthur Levenson for about three months, then I became Chief of C5 which was the application programming division. I was there for five years. Roughly five years. Went to become Chief of [redacted] for three years.

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Hall: Tough duty.

Phillips: Yeah. Came back and was assigned as chief of C03 which was the planning element for computers.

Johnson: Let me back up a second. When did you say that you were in [redacted]

Phillips: From August '70 to August '73.

Johnson: We may want to do a follow-up interview because there has certainly been a lot of focus on that.

Phillips: I came back and took over C03 which was the computer priming element. Stayed there until that sort of melded in to become T4. Actually C03 was a small staff of about 15-16 people. When T4 was formed, that was in May of 1977, it was augmented by another 125 or so people to do the planning and do all the project management for communications and computers

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both. That's the job I retired from. That was 1980.

Hall: It's been that long?

Phillips: (XG) retire again at the end of January. I don't know whether to believe it or not.

Baker: How about you?

Hall: Well let's see, where did we leave off. I was in A03 but that was after you were in there. I worked for Lane Hart and for [redacted] in A03 for about three years. I replaced [redacted] After that I went to the Air War College down in Montgomery Alabama for a year. Came back, and had...

Baker: This is when? 1970?

Hall: This was 19... the class of 69. 68 69. Came back from Montgomery and was made Chief of the Soviet TAF problem in A74.

Baker: Tactical Air Force?

Hall: Yeah. Tactical Air Force. Then in June of '70, I went to Japan for three years. I was Chief of the PO production support division at (B% Kuchinoerabu).

Baker: Supporting all of the far east?

Hall: Oh definitely. That's right. That was (1-2G) winding down of the Vietnamese war. At that time we were... We did have people who were in and out of Vietnam. Came back from Japan, spent about... had a cup of coffee in B group. In an ill fated organization called B7, which was chartered by Dick Kern. Was to be sort of the B group's G8 if you will. But it never got off the ground. It was designed for a staff of about 110. Never got more than 50 people. Coleman Goldberg was the Chief and I was the deputy chief. I was so tough getting it going that Coleman had a terrible physical problem and finally ended up by retiring.

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Baker: This was in the mid '70's.

Hall: This was 73-74. February of '74, I went into NSOC, as second generation supe [supervisor?]. I replaced [redacted] on team two in NSOC and stayed there for two years. At the end of that time, I... Dick Lord had asked if I wanted to go to Melbourne to be SUSLO Melbourne. [redacted] had somebody else he wanted to go there, so he said "How about you going to be [redacted] So I said "I'll check with my wife on that one." I went back and she said "OK, sounds good to me." She enjoyed the fact that we went to... I was [redacted] from '76-'78. Came back [redacted] in '78, and ended up as Chief of B4, [redacted]

Johnson: That's where I knew you from because I was in B23 back in '80-'81.

Hall: Yes. So I spent two years as that. Then B04 for a while, operations staff in B group. Then a year writing long range focus plans for B group which was

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a fate worse than death.

Baker: Was that under Dealy?

Hall: No. No. Dealy had gone by that time. Dealy... during my tenure...

Baker: (B% that wasn't something) Dealy would have done in the first place.

Hall: My tenure in B group, we had seven Chiefs of B group. They were wheeling in and out of there so fast.

Johnson: Revolving doors, they used.

Hall: Yeah. They really did. Everybody from Harry Daniels, Frank Smeade, even [redacted] had a six month crack in between...

Phillips: Yeah, I remember that.

Hall: Then we had, of course, [redacted] They were whipping in and out of there. So after that, I went down and... I got a chance to go down and work on the hill for a year. Spent a year working on a fellowship COMSCI. Commerce, Science and Technology fellowship on the Hill. Had a very interesting 10 month stint working for a congressman. Congressman who is now a senator from New Hampshire. Judd Greg. From there, I came back and I went to England as Deputy SUSLO out at Cheltenham for three years in Cheltenham... garden spot with a view. When I came back from there, I went into the school... Whitney Reed had set up a number of what he calls chairs. He called chairs. In my case, it was the Robert Drake Chair of Cryptologic management.

Baker: They did give you a table didn't they?

Hall: A chair and a table. That's where I am right now for another few months... or less.

Baker: You'll probably retire from there huh?

Hall: Yeah... That's about it. Some good times. Some good jobs.

Phillips: I was going to say, you had an awful lot of (XB). (TRNOTE: several speakers at once).

Hall: Lot of good jobs. Lot of fun.

Phillips: The one I really resent that he got was the one on the Hill though because when I asked about that sometime earlier, they said that... you were over 40 when you went to the hill?

Hall: Oh yeah.

Phillips: They said you had to be under 40.

Baker: Well, these days, it's just that there's fairly junior people go.

Hall: Yeah, that's right. Those are congressional fellowships. This was a COM... this was Commerce Department Science and Technology fellowship.

Phillips: Oh really?

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Baker: They were looking for somebody more mature.

Hall: As it turns out, one of the things I've been doing for the last three years is chairing the nomination board for training. Which makes selections for fellowships and scholarships, and various key executive programs and things like that. Also selects for the COMSO program as well. So I help people get back into that same boondoggle.

Phillips: The other job... the other thing I resent is I never had a crack at was this graduate program at Monterey. They created (XG) I think they had to create a fellowships or people in command and control and communications, and advanced technology and so forth. By that time, I had gotten a bachelor's degree, and I would dearly have loved to have spent two years in Monterey.

Hall: Oh yeah. I guess so.

Baker: Are you talking about the Naval post graduate school?

Phillips: Naval Post Graduate school. That all came along when it was really too late for me. I was on the verge of retiring.

Baker: I think most of the Army folks always thought that was a way to improve Navy golf scores.

Phillips: It was supposedly a very tough school though, I guess. I went out there for a one week senior executive boondoggle where you can take your wife along. Had a wonderful week there.

Johnson: I was once offered a job in Monterey for Security Service Det. Detachment commander. That was the only shot I've ever gotten at a command position. It was... my name fell out of the computer because I had a Ph.D. I was qualified in German, and I was a career cryptologist. I was the only one in the entire Air Force. So they offered me the job, and I turned it down to come back here and do something or another. I can't imagine... a lousy position.

Hall: One never knows about those things.

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Johnson: Well, it got me to [redacted] so I guess...

Hall: Were you there when [redacted] was there?

Johnson: I was just starting after he retired. Well, I was and I wasn't.

Hall: He's still there I guess.

Johnson: [redacted] was there, and he would show up every month for his mail, and sitting on his (XG).

Baker: Was he living there?

Hall: Yeah. I don't know if he still is or not...

Johnson: Oh yeah. As far as I know, [redacted] is still there.

Baker: In [redacted]

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Johnson: They have jobs. They're fluent [redacted] and they've got jobs. I think the last time I talked to [redacted] he was teaching at the [redacted] I don't know what [redacted] is doing, probably active in the staff. Probably (XG/weak). John Eastman always believed that was why they [redacted] They didn't know what to do with the (1-2G).

Phillips: That could be.

Johnson: I hope you don't have this on tape.

Baker: It's running.

Hall: He's a splendid guy. He really is.

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Phillips: I liked him very much. I didn't... I met him...

Hall: He was a prince.

Johnson: One of the great gentlemen of our day.

Hall: Yes. He came up to see us in [redacted] came up frequently [redacted] indicated then that he was going to stay there. I think his [redacted] at that point, he was getting ready to (1-2B).

Johnson: That was back in 1990, stopped in (1G) and I just missed [redacted] So I never did get to speak to [redacted]

Baker: I didn't know that.

Hall: [redacted]

Phillips: What (2-3B) is he alive?

Baker: [redacted]

Hall: No. No. He's the farm service officer. (TRNOTE: There are currently two conversations being conducted. One about Hall's son and the other about an individual who lives in Springfield, VA).

Johnson: He lives in Springfield, Virginia. I see him as often as I can.

Baker: I suppose he had two last names.

Phillips: ... an obituary, and they called me and said “Is that the John Eastman”...

Johnson: When?

Phillips: Oh, this was months ago.

Johnson: He was alive in November.

Hall: Yeah. I hear he is doing well.

Phillips: Yeah. He's got a second wife right?

Hall: The one he picked up in Okinawa.

Baker: Well, before we really get into the nitty-gritty...

Johnson: Yeah. Turn it off.

Baker: With all the discussion of third parties, do we need to make it NOFORN?

Hall: I don't think we said anything that... other than the fact that they are.

Baker: OK. Let's go with TOP SECRET CODEWORD then. OK. Thank you very much gentlemen.

[End of Interview OH-1993-14-HALL.PHILLIPS]