

## INTERVIEW I

DATE: December 4, 1968

INTERVIEWEE: FRANK W. LEHAN

INTERVIEWER: David G. McComb

PLACE: His office, Department of Transportation, Washington, D.C.

Tape 1 of 2, Side 1

M: Well, to identify the tape first of all, this is [an] interview with Frank W. Lehan. He is the assistant secretary for research and technology in the Department of Transportation. The date is December 4th, 1968, and the time is 2:12 in the afternoon. I am in his office in the Department of Transportation, and my name is David McComb.

First of all, Mr. Lehan, I'd like to know something about your background.

Where were you born and when?

L: Okay. [I was] born in Los Angeles, California, January 26, 1923.

M: And where did you get your college--?

L: My college education was at the California Institute of Technology in Pasadena, California.

M: And you got a--?

L: B.S. in Electrical Engineering. [I] got out during the war years, World War II; [I] got out in February 1944, which is--normally I would have gotten out in June 1944, but with the speeded-up program during the war years we ran through the summers and got out February 1944.

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M: Did you then go to work for the army, or somebody?

L: I was a member of what at that time was called the Enlisted Reserve Corps Electronics Training Group. The Enlisted Reserve Corps was a mechanism for enlisting in the armed services but having some chance at continuing your college education to completion, and then you went into the service right away; this was during World War II. Many of the members in the Enlisted Reserve Corps during the--as I recall it was around the time of the Battle of the Bulge, or slightly before the Battle of the Bulge--were pulled out of college. The need for infantrymen became so extreme that they were pulled out of college. The Electronics Training Group was, I suppose, fortunate in being allowed to finish. It was primarily oriented towards furnishing the Signal Corps, the army radar officers. At the time it was formed, the Battle of Britain was going on and radar, of course, was an extremely important ingredient there in the Battle of Britain; and there was a great shortage of qualified radar officers.

M: Then after that, what did you do?

L: Well then, in the Signal Corps, [I] went through enlisted men's school, basic training; I went to officers' candidate school. During officers' candidate school, which was at Fort Monmouth, I developed what is called bronchiectasis, which is a somewhat serious chest condition, and was discharged, honorably discharged, medically discharged from the army. I went in in February 1944 and was discharged in, as I recall, October or November of 1944. So I was in the army a fairly short period of time.

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At that point I went back to California to try and recoup my health and find gainful employment. (Laughter) I was married right out of college. I graduated one day; my wife graduated the next day; we were married the next day; I went in the army the next day. It was one of those--

M: That's what you call "commencement."

L: That's what you call "commencement"--you're right. (Laughter) That was typical in the wartime years.

So I was faced with the problem of having to earn a living. I naturally returned to my old haunts at Caltech [California Institute of Technology]. My hero there at Caltech was one Dr. William H. Pickering; he had been one of my professors and I thought very highly of him. I looked around Caltech for some employment, and there were two that were possibilities. One was in the--doing some instrumentation work on cavitation in the hydraulics laboratory, which looked very attractive. And the other was working with these wild-eyed cats that were working with rockets, and doing instrumentation in that area. Well, I opted for the rocket one, primarily because Dr. Pickering had that under his wing. So I went to work in November 1944 for the Jet Propulsion Laboratory of Caltech.

M: Would you say that this is a period of pioneering work in--?

L: Oh, very much so, yes. It was the early phases of--there had been several years of pioneering. Jet Propulsion was--JPL [Jet Propulsion Lab] was--Theodore Von Karman was involved, as you probably know, and so on, and it was [the] very early days of rockets. I'll tell you the--just thinking, oh, it still sticks in my mind. The first thing I did

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upon arriving there--without getting too technical, Dr. Pickering had in his mind the concept of a radio telemetry system, a so-called FM-FM telemetry system. You may be familiar with that; I don't know whether you are or not. It was just in his mind; it was a good concept. There was another engineer and a graduate student who was working half time and myself and two technicians. And from the first of November 1944 when I arrived, we designed this Bill system, Dr. Pickering system, constructed it ourselves with our own hands. We built fifteen rockets with pressury taps and so on--fifteen rocket heads. We managed to purloin fifteen five-inch high-velocity aircraft rockets. We were trying to gather trans-sonic data and also get some experience with telemetry. I managed to liberate a truck. Designed and built the ground equipment. Took it up to Goldstone, which is one of the dry lakes in California, hitched up the fifteen rockets, and it worked. And that was in about seven weeks' time; and we were impatient at how slow it went. (Laughter)

That's some of the history. But that was very, very surprising--that gives you a flavor of the pioneering era. Besides Von Karman there, quite a few of the people who were involved in the laboratory at that time who have subsequently gone on to do various things in aeronautics, rocketry and elsewhere.

M: Well, you were at the lab then, what, ten years?

L: Ten years. Right.

M: And you finished there in 1954.

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L: 1954. At which time Dr. Dunn, Louis Dunn, who at that time was director of the lab, left the laboratory and went over to the just-formed, or fairly-newly-formed, Ramel-Wooldridge Corporation. The ICBM programming was in the offing at that time, and I was about number seventy employee of Ramel-Wooldridge Corporation. So, I followed Dr. Dunn over there, just essentially as he went over. There--hopping back to the lab, at the lab [I] went through a various series of things, but essentially ended up head of electronics research at the lab.

M: And then you stayed there until 1958.

L: Until 1954. Excuse me; I'm sorry. I hopped back--I mean at JPL. Stayed at JPL until 1954, where I ended up head of electronics research, and had done various other things in the intervening period. I stayed at Ramel-Wooldridge until 1958, ending up there as associate director of electronics laboratories, basically associate director of electronics research at Ramel-Wooldridge.

M: One side question here. Were you surprised with Sputnik?

L: No, not really.

M: You were aware of the Russian capabilities?

L: Yes. As a matter of fact, there are some interesting letters. This is not my secret, but it might be--and I wasn't advi--through my association with the lab, primarily. There are some letters which are probably presumably in the State department archives by now, or somewhere, which went from some of the young Turks at the lab to the State Department--and I saw copies of the letters before they went--pointing out the imminence

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of Sputnik, the likelihood of its occurring, in their opinion the impact on world opinion when it did occur, and the importance--

M: It went that far.

L: --and the importance of us doing it. And then they went so far as to build one--now, build the rocket. The reaction to that was tied in with our Vanguard program and the navy and, of course, bureaucratic infighting and so on, and probably a lack of appreciation of the potential impact of Sputnik on world opinion. And when Sputnik went off, then the laboratory was cut loose, along with [Werner] Von Braun's group, and they did the job in ninety days, although that really wasn't true, because they had the thing in the warehouse. The guy who, for the laboratory, headed that program, Jack Froehlich, was a classmate of mine, very close personal friend, and later on a business associate; and just before I came back to Washington last year [he] was killed in a boating, hunting-boating accident. But, no, I was quite close to this whole Sputnik episode.

M: Froehlich spelled F-R-O-L-I-C-H?

L: F-R-O-E--let's see, F-R-O-E-H-L-I-C-H. Froehlich.

M: Well then, the fact that the government could respond in ninety days' time was due to the effort of these people.

L: The effort of the people in, really, bootlegging and having the thing ready there at the lab. That is not commonly known.

M: And they were actually on the outside of government.

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L: That's right.

M: That's a rather amazing story. Well then, when Sputnik went off, did the State Department immediately react [inaudible]?

L: I can't--I wasn't involved. See, I was not at JPL at this time, and so all I can--see, at the time Sputnik went off we were very heavily involved in the air force ICBM program. And there was some consideration on the part of at least some of the people in the air force, as to "should the air force do anything." And the decision was no, we were committed to the ICBM program; it had to take a higher priority. This would really be a diversion from that program. We really weren't equipped to react rapidly. And in parallel, because of my association with the lab, [I] became aware that they were pursuing it. I really don't know, I can't give you the sequence of events that occurred at the lab at that time, when it all--

M: But the JPL lab was the background in all this.

L: Yes. JPL lab was the background. Plus the Von Braun group, army group at Huntsville.

M: All right. Then you're at Ramel-Wooldridge Corporation. You're there until 1958. Then in 1958 you leave to found your own company?

L: Okay. In 1958 the Atlas program and Titan and Thor programs, as far as research and development were concerned, were over. They were successful programs and they were now going to the implementation phase. The Minuteman program had just started. I might remark in passing that I was the early project engineer on Minuteman at Ramel-

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Wooldridge, and if I'd remained there, I would have been Ramel-Wooldridge's program head in that area.

M: Now, you're working here with military people.

L: Air force, primarily, right. Air force. And at JPL, when I was there, primarily with the army, with army orders. However, for a wide variety of reasons, I suppose, that normal desire to found and have your own company, another chap who was my boss there at Ramel-Wooldridge, the name of Jim Fletcher, James C. Fletcher, and I decided to strike out on our own and form our own company. We had been considering this for about a year prior to doing it. We had talked with Dr. Wooldridge, Dr. Ramel, Louis--Louie Dunn, about it, and I'd say we left with the best of feelings, that no--I think they tried to stop us from leaving, but they understood the disease--(Laughter)--and so. They were really very helpful before we left and after we left and advising us and sort of steering us in appropriate directions.

M: And the name of your new company is--?

L: The new company we formed was Space Electronics Corporation. We built that company up; it was a successful company, as companies go. We built it up from 1958, and I think I'm--let's see. The first year's sales I recall were about 850,000; the second year's sales were about double that, around, let's say, one-and-a-half, 1.6 million; the third year's sales were about three million or thereabouts. It was profitable from the start.



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And at that point in time, the third year, the company that was financing us--there was another corporation that was furnishing the line of credit, if you will--got into financial trouble of its own, so that it was no longer able to honor its--to guarantee our loans; the bank wouldn't accept their guarantees, basically. And we fortunately had an escape clause; our lawyers were smart enough--incidentally, Frank Wheat, who is one of the Security Exchange Commissioners back here now, was our corporate attorney. And he was smart enough, let's say, to ensure that there were escape clauses in the relationship with the two companies so that we were able to essentially substitute some other form of financing and recover with the--of course, the company that had backed us won a quite sizable capital gain for their interest and their backing of us.

After considerable waltzing around and negotiation with various possible new routes to go, we finally sold a portion of the company to Aerojet General Corporation. And that, by the way, going back in history, that was founded by--before my time at JPL--but that was founded by Von Karman and some of the very early people at JPL. So there's a connection here.

M: But your company was highly successful.

L: Was highly successful. And after we sold it to Aerojet General, the sales built up. By the time the sale actually was consummated our sales were around five million a year. And after it was sold to Aerojet it built up to around thirty-million-a-year sales, and the rest of it was sold during this process, at which point in time--well, I won't get into the Aerojet history, which is complex in its own right--but I'd say that, just simply, founding

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a company is sort of like having a child and selling it is a little like selling a child. As you get involved with a larger company you discover you no longer have the flexibility and it's not quite as much fun anymore.

And so I think we stayed there about five years, both Jim Fletcher and I. Jim then left first; he was president of Space General--the company was renamed Space General, from Space Electronics, as part of Aerojet General. And Jim Fletcher left first; he'd been president. He left about a year or two ahead of myself. I took over as president when he left. He left--I've forgotten what the transition period was, but he became the president of the University of Utah, finally, which is what position he holds now.

And I left a couple of years later, and I left to, let's say, semi-retire. My scheme was to consult about half time and go sailing about half time. You see the boat over there on the wall. That scheme was successful for a year or two, except that I found in my consulting activities that I became more and more involved with doing consulting for the government. I was reasonably independent financially; I was interested in government programs and so on, so I found myself consulting for Johnny Foster's [?] people over at DDR and E [?], sitting in on committees. I found myself involved with a couple of the PSAC [President's Science Advisory Committee?] committees, the military aircraft panel and the naval warfare panel, and doing lots of traveling to Washington. And I had never heard--well, "never heard" is too strong a word--I knew nothing about transportation, and had no previous contact with Alan Boyd or anyone in the Department of Transportation.

M: By this point in time, we're about 1966, 1967?

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L: This would have been 1967, mid-1967, or thereabouts. I think that I might interject something, however. And this is--you want to flip it off here for a second? I'm worried about classification. It's my--

(Interruption)

M: Okay, you can put any kind of lid on this.

L: The pause here was for some security concerns, although not very tight ones, but I'm not going to--I'm not here intending to reveal anything that is considered classified, although it might be slightly sensitive.

M: Right.

L: I had been probably getting the Washington bug for some time prior. I had a chap who worked for Jim and myself over at Ramel-Wooldridge [by the] name of Dr. Albert Wheelon, Bud Wheelon. W-H-E-E-L-O-N. He was the deputy director of the CIA for science and technology. He became that under McCone, I believe, although I won't swear exactly, or maybe under Dulles--I don't--maybe he served under both. Admiral Raborn, who had headed the Polaris program, and then subsequently had joined Aerojet General as a vice president, came back to the CIA at President Johnson's request to become director of the CIA organization, and Dr. Wheelon had decided that he had seen enough of Washington. So I was leaned upon somewhat by both Admiral Raborn and Bud Wheelon to take over Wheelon's job there as deputy director of CIA for science and technology. I have one child, a daughter; she was in high school in Santa Barbara, and she was going to finish up in June of 1967 and enter college at that time. I chose not to,

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at the senior year in high school, disrupt her schooling, but I committed to Raborn to take Bud's job as of June 1967; it was a firm deal.

Well, then several things occurred. One, Raborn, as you recall, left; Dick Helms became head of CIA. I recall when that happened I was vacationing in Hawaii with my wife. I got a call from Dick Helms to come on back and see if the deal still stood; and it was left that the deal still stood. And everybody was happy. Except then Bud Wheelon was--and I can't blame Bud--he was offered the position of vice president of Hughes, and he was under pressure to take it right now, which he did. And then I was pressured to come on back right now, and I said, "Nope, not going to do it." But let's say I was in the psychological frame of mind to come to Washington when my daughter finished her high school and entered college.

M: Just a matter of timing then.

L: A matter of timing. Actually, I had been approached by the army people to take over the job that Russ O'Neill took as assistant secretary of army for research and development. I turned that down, one, because of timing, and secondly, because of my commitment to Raborn at that time.

I'm not quite sure how my name got into the hopper in Department of Transportation. I have subsequently learned that the department--his job was unfilled for an uncomfortable period of time, in the Department of Transportation, probably for a variety of reasons. I believe, although I'm not completely sure, that Alan Boyd talked to Johnny Foster at one time and said, "Can you please help?" and that Johnny dumped my

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name in the hopper, and said, "Why don't you"--because he knew of the CIA association; he knew I was sort of in the right frame of mind.

So Alan visited out there in California, and I got a call from his office, if I wouldn't mind, come down and talk to him. This would have been late summer of last year. I went down and talked, and my main--the main question I had, which I vacillated on for a month or so was [that] simply, I didn't know anything about transportation. I more naturally fitted into the military, NASA or intelligence area, and knew nothing about transportation. On the other hand, I had some pretty strong feelings about the need to try and pull together, let's say the socially concerned, the technically trained, and the politically oriented individuals into some real dialogue. I don't want to get into that. So, at any rate, I finally decided to come on back to the Department of Transportation, as assistant secretary here.

I had had no previous connection with President Johnson. I am a Republican, but not an active--I mean, I register Republican; I'm not active politically. However, I had, in connection with Aerojet and Dan Kimball, and Governor Brown out in California, at least bounced around a little bit in the political arena. So I think when the White House staff checked me out in California, which I'm sure they did, they found that at least the Democratic people out there didn't give me a black mark; they figured I was a reasonable Republican.

M: Well, did Alan Boyd take you over to meet President Johnson, then?

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L: No. I have only met President Johnson one time and that's in a long reception line. No, it was done--I'd say two comments here. I'm really not one of the Johnson inner-circle team. I arrived late; I'm a Republican. Secondly, I think you ought to make the same comment in the Department of Transportation. I'm really kind of a late arrival, new boy in school, insofar as the office of secretary is concerned.

M: Did your position require Senate confirmation?

L: Yes. Yes.

M: Was there any--?

L: There was no problem. No. I just went right through, with no questions being raised, really. I think the only comment, the only anecdote I can throw in here is *Science* magazine sent a young lady out to interview me--this is the American Association for the Advancement of Science--you're probably familiar with it.

M: Yes.

L: They interviewed me, and they wrote it up in the--she started out by, something like: "This position is notable for being open so long, and whether it was open so long because they were searching for an unusually qualified person, or because of lack of interest in having the position filled on the part of the administration, or because they couldn't find anyone foolish enough to take the job is a matter for conjecture." I'm exaggerating a little bit, but.... (Laughter)

I'd say that this particular job, let me--I'd say I certainly encountered the thing I really, in a sense that pulled me back to this area. This particular job is

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obviously--transportation of its nature--not in party-politics sense, but in the real political dilemma sense, resolving real conflicts--is heavily politically oriented, local politics, and everywhere you want. Much more so than NASA or defense or intelligence in terms of internal, local, county, state, federal political considerations. It is obviously--I'd say all you have to do is look at our transportation problems to realize that a strong social conscience is required. And then I think you look at some of the problems we're having implementing some of the things we'd like to do and you realize, I'd say, that there's a high amount--in various areas a high amount of technical expertise is required.

M: How long was it after the department was formed [that] this position was filled?

L: Okay. The department was officially formed April of last year.

M: That's when it became effective.

L: It became effective. In actuality, it had been going on for a year or so earlier, kind of in the formative stages. I, I believe, was sworn in December 18th or 20th or thereabouts of last year. So the--

M: The position had been open all this time?

L: All this time. I'd say, that has been probably one of--of course, I'm biased now--it's been certainly one of my major problems, and probably, in my opinion, one of the major problems of the department, that they--now, I'm sure you get different viewpoints, as is proper, from other people in the department, but....

M: The Department of Transportation would have a major problem in just getting going.

L: Yes.

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M: Finding personnel, finding offices, working out programs, becoming established, and so forth. So, your hiring may fit well into this [inaudible].

L: I think it does. Yes, I think it does. I think that all of us here feel that--of course, I suppose you always feel this way--just about one more year and you'd really be rolling as a department. It's still got a fair amount of the youthful spirit of a new department; on the other hand, it really hasn't been in existence long enough to gather momentum as a department.

M: Okay. When you were appointed then, were you faced with these same kind of problems, perhaps in a smaller realm? Did you have to hire personnel? Did you have to get an office going?

L: Yes. Yes. That's right. I was faced with a number of problems. One, the existence of a--that is, the organizational structure of my office had already been set when I arrived. I did not agree with that organizational structure, so I ripped it apart.

M: That's an initial problem. (Laughter)

L: Initial problem. [I] had to restructure--let's say, I had to juggle personnel around, and that took considerable time. Fortunately--and this again goes back--my deputy here, who was here ahead of me and had been acting assistant secretary for R & D, Jim Densmore, also was at Caltech and at JPL. And this was strictly a coincidence, because the contact wasn't made through Densmore, it was made via another route.

M: Well, you knew each other.



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L: But we knew each other. And so that helped a lot in the transition. Nevertheless, I did do a considerable re-juggling and re-structuring and [I'm] still involved in it. And I suppose the old story in Washington, got caught in the freeze problem and, in a sense, the self-defeating slowness of the civil service hiring procedures. That is being worked out now; I'm getting lots of cooperation from the Civil Service Commission. I'm getting things moving, but it's just a little late.

M: Now, the Department of Transportation was put together with other agencies coming in as part of it.

L: Yes.

M: Did you have any problem with those?

L: I think if I--the honest answer I give, and this is my own viewpoint, is no; that in a sense I had less problem in dealing--I had problems, of course--but less problem in dealing with the agencies that were a part of the department than dealing with other aspects of the secretariat. I think the reason probably is that many of the agencies are either operationally- or engineering- or technologically oriented, for all the good and the bad things this implies. They had been, until my arrival, primarily interacting with people who were not oriented that way. And so, let's say I felt a strong welcome from the agencies, "Gee, here's a guy who talks our language" kind of welcome. But I had the problem in the secretariat, of not talking the language of the rest of the secretariat. I mean, we have just--I still feel that there is a lot of room on my part and on--well, it's working out, actually, quite well. But there's still a lot of real interchange and dialogue

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that's required to, let's say, bring all the necessary viewpoints and skills together. This is part of forming a department, of course.

M: Now, is this a problem of definition of authority?

L: No. No, I think it's a problem of--as much as anything, it's probably a problem of viewpoint and semantics--and language. Really, a language problem, and the way people think. Let me caricature it by saying simply that I'm an engineer. I think that--I'm having trouble with putting it into words.

M: Semantics. (Laughter)

L: With semantics, yes sir. Well maybe this is part of the problem. Engineers frequently don't think verbally. They'll think in physical--the best way I can describe it is: Imagine asking a baseball pitcher to tell you in words, so that it's understandable and so you could do it, how he throws a ball. Okay. He thinks in muscle motion, and so on. Engineers and other people, other groups, tend to think--don't think verbally, whereas, the majority of the people in the department at the secretariat level are legally trained and highly verbally oriented. Kidding a bit, we used to say, "Gee, I'd consider that a"--we'd really begin to communicate when I'd first succeeded in getting, let's say, the general counsel, to introduce some equations and some curves into legislation. I'm kidding, but I think the thought comes through here. So that there is a very real communications barrier.

M: Will this ever be solved?

L: It has to be. No, it will never be completely solved. Is it solved here yet? No. Is it being solved here? Yes, I feel a good deal of progress is being made and again, I'm back

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to "Gee, just another"--the feeling [that] "another year and it will"--and it'll never go away; "another year and it'd be solved." But, I think that the--let me caricature it this way: he politician is likely to get reasonable agreement or consensus, at least, into doing something, but he's likely all by himself to do something that may be, from a standpoint of solving, let's say, a congestion problem, completely ineffectual. The engineer is likely to have the solution to the problem, but he will get everybody fighting everybody else and he'll never be able to get to do it. And without some social conscience thrown in--if you leave that out, you're liable to have the solution to the problem and be able to do it, but my God! What it does to humanity. I don't know whether I'm coming through or not.

M: Yes.

L: Okay. I guess I feel quite strongly that one of the major problems that faces the U.S. is bringing these forces together. And, it's close; I can get carried away with this one. This goes right back to educational system, to the primary schools, and so on. It's one of the major problems that faces the country if we're going to deal in a reasoned and mature way with a changing world.

[End of Tape 1 Side 1]

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FRANK LEHAN

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