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WITH H. L. "JIM" HOLLAND," MARCH 5, 12, 20, 1992

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POWER SYSTEM ORAL HISTORY PROJECT

**HUMAN RELATIONS IN POWER ENGINEERING:
AN INTERVIEW WITH H. L. "JIM" HOLLAND**

Interviewed by Thomas Connors
The Bancroft Group

Dates: March 5, 12, 26, 1992

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BIOGRAPHICAL SUMMARY

PERSONAL HISTORY:

Born: June 19, 1923, Little Rock, Arkansas

Education: Little Rock public schools
Ouachita Baptist College, 1940-1943 Music
Eastern Kentucky State College 1943 Engineering
University of So. California, 1946-1948
BS, Electrical Engineering
University of So. California, 1949
MS, Electrical Engineering
University of California, Los Angeles, 1958
Business Management

Married: June 21, 1942 to Jacqueline B. Sloan
Son, Stephen G., artist and sculptor, Moraga, CA
Son, Mark S., Elec. Engr., DWP, Granada Hills, CA

CAREER:

1943-1945 U.S. Army, France, Germany, WWII

1948 Joins DWP, Electrical Engineering Draftsman, Station
Electrical Design, Power Design & Construction
Division

1953 Electrical Engineering Assistant, Station Electrical
Design, Power Design & Construction Division

1961 Electrical Engineer, Station Electrical Design, Power
Design & Construction Division

1967 Senior Electrical Engineer, Station Electrical Design,
Power Design & Construction Division

1971 Assistant Section Head, Station Electrical Design,
Power Design & Construction Division

1973 Engineer of Construction and Navajo Project Manager,
Power Design & Construction Division

1974 Engineer of Construction and Navajo Project Manager,
Power Design & Construction Division

1976 Assistant Engineer of Design & Construction, Power
Design & Construction Division

1977 Engineer of Design & Construction, Power Design &
Construction Division

1980 Assistant Chief Electrical Engineer, Power System

1982 Retires

MEMBERSHIPS:

Institute of Electrical and Electronics Engineers,
Senior Member
Water & Power Speakers Club
Los Angeles Electric Club

TAPE NUMBER: 1, Side A

March 5, 1992

TC: Well, let's start this whole process, if you don't mind, with some personal background, starting with when and where you were born.

JH: Little Rock, Arkansas, in 1923, in June.

TC: Were your people from Arkansas to begin with?

JH: The migration came from North Carolina to Arkansas. The parents were both employed by the railroad company and were both telegraph operators.

TC: Both your parents were telegraph operators? No kidding?

JH: My brother was also a telegraph operator. Some of the parents one generation back were also in that business, so that's kind of where we came from.

TC: Were your parents born in Little Rock?

JH: I believe they were, Little Rock or nearby. My dad was, I guess, quite a creative person. Telegraph operating didn't occupy him very much, so he built an airplane not long after the Wright brothers did, and a lot of other innovative things in those days, so he was quite an inventor. But he died when I was a year old, so I didn't get to know him.

TC: That's interesting. So he was a mechanic and an engineer in his own right.

JH: Pretty much, yes. In those days he was. My mother then had to work full-time as a telegraph operator, raised my brother and sister and me.

TC: Now, did you go to basic schooling, grade school in the Little Rock area?

JH: Well, near Little Rock, to the usual 1 through 12, then off to a local college, four-year college, where ministers were trained primarily, although the student body basically wasn't ministerial. I was there for two and a half years, majoring in music.

TC: In music, interesting.

JH: Playing the trumpet.

TC: What was the name of that college?

JH: That was Ouachita Baptist College. (chuckling) You've never heard of it. Not many people have.

TC: No, I never heard of it. I've never been to Arkansas. I have friends who are from there but I never have been there.

JH: Yes, it's a beautiful place, a lovely place, if you don't have to make a living. (chuckling)

TC: Yes, that's the truth of it.

JH: But even during World War II it got many new jobs, because the only place in the U. S. that has aluminum ore is right outside of Little Rock. I was on a surveying crew laying out one of the largest--well, at that time the largest--aluminum ore processing plants in the world. And the wife worked there for a little while when we were first married, and when I was going to school I worked [there] summers.

TC: Now, did you have thoughts of entering the ministry? Or was it just a college education you wanted?

JH: No, I really didn't have the ministry in mind. This was just one of the better colleges. At the time, with not a great deal of money in the family, with a father long gone, I could join Reserve Officers' Training Corps there, ROTC it was known as, and that would help support the cost of my education. Then I also got a scholarship for janitorial work, and, in addition, a music scholarship for playing the horn.

TC: Was your music training classical music or was it popular?

JH: Oh, regular college music training, which is very basic, as anything in college, of course, is quite basic. But on the side, of course, we did whatever we pleased, and I did a lot of dance band work.

TC: That wasn't frowned upon by the Baptist college?

JH: Not really. We did not have enough talent on a small campus to fill our organization, but there was a teachers' college just across the ravine from this college, a state college, and between the two colleges we could usually put enough of us together to make a full dance band. There was nothing considered irregular about that or objectional. (chuckling) It was just the kind of life you led, and you could make of that what you want to, of course.

TC: So you went there for two and a half years and then switched?

JH: Yes, World War II got a little too hot and in the Reserve Officers' Training Corps, the old colonel said, "Hey, join our reserve and we'll let you stay in school." All of us rushed to join the reserve, and sure enough, it wasn't long until the

reserve was called up and here we go. (chuckling) But again, it was going to be a good deal because then we were to be sent to college to be trained to be engineers for the military. We went into ASTP, the Army Specialized Training Program. They packed us off to a college in Kentucky, Eastern Kentucky State Teachers' College, where we started an intense course oriented to basic engineering--that is, the mathematics and physics leading up to engineering. I liked that, although we only had about six months of it before the President's message came, "It's time to hit the enemy with the full weight of our young manpower." So ASTP was abolished and we all rushed for the Air Force to try to get in the army air corps. But they shut that immediately because there wasn't room for anywhere near all of us. We were shipped out to various combat units, and I stayed in training in the States for quite a few more months before going overseas.

TC: Where did you go?

JH: We trained in Camp Campbell, Kentucky, called Fort Campbell, Kentucky, now. With my musical background, I ended up in a military band, which also had two dance bands and another two or three small organizations. So it was pretty familiar musically, but still all the military training had to go on. We did the music business in the evenings and then the basic training in the daytime. (chuckling) But then where did I go but the European Theater. We landed in Le Havre, France, and moved up through France into southern Germany.

TC: So this was after D-day [June 6, 1944]?

JH: Oh, long after. Oh, yes.

TC: Long after? So sort of the last year of the war?

JH: Yes, I was overseas only a year or less, just in time to catch the end of the war with General Patton running wild and sending out long armored columns. We were an armored division, and pretty soon we were working for Patton and we were out on these long, extended missions, long armored columns reaching into enemy territory. Well, to make a long story short, a couple of us got captured.

TC: You were captured?

JH: Yes. Of course, we had crated up all the band instruments. (chuckling) The band people were in the business of traveling with the combat troops in the armored personnel carriers and whatnot and taking charge of any enemy that were captured and immediately transporting them back from combat zones. Well, we had to do a little search and interrogation immediately upon capture and then take them back and make sure they were in the right places and interned properly. And sure enough, our division was out there in the middle of Germany with nothing around us but German army, and one of these German officers came staggering in one evening, seemingly a little tipsy, and got himself captured late in the evening. So my buddy and I who were in this business of transporting prisoners took charge, sat him on the hood of our jeep and set out on the Autobahn in the middle of the night. (chuckling)

And his troops were out there waiting for us, of course. He knew exactly what he was doing. (laughter)

TC: It was a trap.

JH: It was a trap!

TC: Oh, my lord!

JH: That was a little scary. (chuckling) Not too many shots fired, thank goodness, and we both escaped unscathed, but we were their prisoners for a little while.

TC: Yes, well, how long and where?

JH: Oh, it was something like a couple of weeks, because things were so confused and the enemy was on the retreat badly and Patton had them running pretty fast. By that time, the German army was pretty well out of gas and anything to drive. We had seen in our marches through France and into Germany roadsides littered with German military debris for hundreds of miles. Then some of it got to be horse-drawn, and when that was strafed, I'll tell you, the carnage was something terrible. So we could only travel at night. There were several other prisoners with us, and, of course, we were in the midst of German columns and we could only get on the roads and march at night and then we'd hole up in the daytime and try to stay hidden, and come the next night we'd march some more.

TC: It was on foot you were moving?

JH: Yes, on foot because they didn't have any way to travel either. They were very happy to get our jeep. (chuckling) Anyway, we finally ended up just keeping ahead of our own

troops barely, because we had to walk at night, and, of course, U. S. forces had good transportation, motorized, and in the daytime with all kinds of air cover. We were on the road in the daylight a time or two, and here comes one of those little P-51s that were so fast. And he saw us, thank goodness, recognized us, and just wagged his wings and went on and didn't strafe us. (chuckling) Of course, we jumped into the ditch, but too late to do any good.

TC: The other prisoners that you met up with, were they Americans also?

JH: Oh, yes. That was all that was there.

TC: Were you mistreated at all?

JH: No, not physically. Verbally, of course, but not physically. They were fairly civilized.

TC: Were you able to eat anything?

JH: We ate probably as well as could be expected. They had a lot of horse meat, canned, and it was palatable. Oh, it was very palatable at the time. (laughter) But it sustained us all right and they did as well as they could. Eventually, down in a little town called Amberg in southern Germany, they put us in a monstrous old jail and locked us in. It had a double-locking situation, but the cell doors were only made of wood, thick wood, and they had sliding bolts on the outside. And for some strange reason, they didn't follow the practice we did. When we captured German prisoners, we searched them and took away anything that could cut or shoot, of course. They

didn't ever do that. They took our guns, wristwatches, and things of any value, like cameras. But I had a big old country boy's pocketknife in my pocket, and when they locked us up in this jail and our own troops were coming in with the artillery blasting ahead and the shells were coming in on the jail, it was getting a little scary. I pulled out my big pocketknife and started whacking on that door. I didn't know who was out there, but I wasn't going to stay there and get killed by my own troops if I didn't have to. My buddy was crying and screaming, "Don't do that, they'll shoot us!" Well, I'd just as soon they did as my own army. (chuckling) So I finally got through there and got that bolt slid back and we sneaked out and bolted the outer enclosure from the inside. When the Germans came back to get us, I guess they couldn't get in very readily because we had it bolted from the inside. Also, in the confusion, they didn't know who might be on the other side of that door, so they left and that was it. The next thing we saw was one of our jeeps running by the window down below, and we yelled at him and went out. Then we went down to the police station and armed ourselves to the teeth, where they had left all the police armory. (chuckling)

Then we had a dickens of a time getting back to our own division, because our rescuers didn't know us and were very busy. We had our uniform and our shoulder patches, but this outfit didn't know who we were. Even if they had known where our division was, they wouldn't have told us, you know. So

here we were, just on the loose in the middle of nowhere. (chuckling) I think it took us about a week to find our way back. We were wandering around in the middle of town trying to decide what to do. We finally figured, hey, there are vehicles going through here, U. S. Army vehicles. We watched and finally spotted one from our own outfit. Oh, boy! So we hailed him, and since we had the same shoulder patch he did, we told him what division unit we were from and what had happened to us. He said, "Okay, hop on." So we hopped on, and sure enough, it was a truckload of rations. Oh! Talk about army rations being good. They never tasted so good! (laughter)

Anyway, he took us back to our own outfit and eventually we were sent home. Anybody that's been captured is not supposed to remain in combat after that because, oh, it was expected that several bad things could happen to you, but I think it was more of a psychological thing than anything else. If you had been a prisoner and escaped or whatever, they sent you home immediately. So that's what happened to us.

TC: I see, so you were sent home.

JH: Yes.

TC: Did you receive any sort of citation or medal or anything for escape?

JH: Oh, we got two or three of the minor things, because we didn't really have any injuries to deserve a Purple Heart or anything

like that. That's pretty much the end of that. I probably wasted a lot of your tape on that story.

TC: No, that's a good story.

JH: Even today I get butterflies reliving that story. I don't like to tell it too often. It's almost funny at times to see what you go through.

TC: Well, of course, you don't know from one minute to the next whether you're going to be alive or not. It is a psychological torture in some way.

JH: Oh, you betcha.

TC: But, anyway, you survived.

JH: Survived, yes.

TC: And you came back to Arkansas? Is that where you returned to?

JH: Yes, our rest and recreation center was in Hot Springs, Arkansas, where, of course, they had a band which played all kinds of activities there for ex-POWs like myself. I met some nice guys there, musicians that became lifetime friends, and we were there a few months. Strange, what was used there by the military for service work, kitchen work and that sort of thing, were German POWs. (laughter)

TC: Oh, really?

JH: We had German prisoners of war working for us in that base. Anyway, that was an easy time. We played a lot of music there.

TC: Was it the usual Big Band stuff, Benny Goodman, Glenn Miller?

JH: Oh, yes, that was the rage in those days, of course, the Big Band stuff, and it was a lot of fun to play.

TC: So then you must have picked up your engineering training somewhere along the line.

JH: Well, yes, the little taste back in Kentucky kind of decided me, and I also talked to my stepfather, who, incidentally, was an Austrian emigre, came from Austria in his younger days. When I got back, I talked to him about engineering and he said, "Oh, yes, that's the way to go," and concluded that electrical would probably be the best since that was the toughest and fewer people got through it. (chuckling) If you could make it, great, so . . .

TC: You had done some engineering training at Eastern Kentucky [State College], as you said.

JH: Yes.

TC: And then you went off to combat. At the Baptist college, had there been any sort of math or the kinds of . . .

JH: Definitely not, because it was all music orientation. In fact, the head of the department of music at the college was drafted sometime before I was and I ended up teaching a couple of the courses that I was also taking. (laughter) Manpower was pretty short.

TC: That's a nice conflict of interest there.

JH: Oh, boy!

TC: So where did you move to then, as far as taking up the continuation of your engineering?

JH: We knew that we wanted to go to engineering school somewhere, and the University of Arkansas had a fair reputation, but the wife in her younger days--of course, she was pretty young even then--had been to California, been to Los Angeles, on visits to some of her relatives, and had told me a lot about it. I knew that USC [University of Southern California] had a good engineering school, and there were probably others around, so I said, "Why not?" (chuckling) We were young and fancy-free and we just migrated to California and put up with her uncle for a few weeks.

I had a dickens of a time getting into USC because a lot of other ex-GIs under the GI Bill, where Uncle Sam paid for your schooling, had the same idea, and, boy, that place was mobbed. Fortunately, I had had a lot of the humanities courses, even for music, and, in addition, this taste of engineering at Eastern Kentucky, and I finally wised up that I should tell them about this. When I finally did and they got my transcripts, they let me in. Not too much credit for previous work, but enough to get me in and get started. And then it got rough. Oh! All those ex-GIs, they meant business, I'll tell you. (chuckling) We meant business.

TC: As far as being competitive?

JH: Yes, oh, extremely competitive. Not many of us made it.

TC: What courses did you take? It was electrical engineering?

JH: Well, it was just straight electrical engineering, yes.

TC: Electrical engineering, undergraduate.

JH: Leading to a bachelor's degree in engineering.

TC: Well, when you left Arkansas, did you drive out to California?

JH: No, we came on a train. We finally got here to find out the hard way, like everyone else who comes here, that you have to have a car. So one of the uncle's buddies had an old beat-up clunker that we bought. We had saved up a little money over the years, very little, but a good thing we had, and so that got us a car.

TC: Was your wife able to work during the war?

JH: Yes, she worked during the war, that's true.

TC: Where did you live when you first came to California?

JH: Well, the uncle lived in Alhambra, and as I say, we stayed with them for a few months. Then we needed to really get closer to USC, so we moved down to what's now the ghetto, but in those days it was pretty nice country, just south of USC a mile or two, and shared a house with another couple, GI couple. The two couples rented the house, and that was pretty nice, and we stayed there for quite a while.

TC: So you got your degree then sometime around, say, 1947?

JH: Nineteen forty-eight.

TC: Okay, 1948. And did you come immediately to work for the Department of Water and Power then?

JH: No, at the time . . . Let's see, somewhere along toward graduation I learned about Dewap [Department of Water and Power], because quite a few of the top students had been quite knowledgeable about it, knew a lot more about it than I did,

and several of the top electrical men in my class were going there. They'd already taken exams, were on a list and ready to go as soon as they graduated. I took an exam, Electrical Drafting exam. That's where you started. You didn't start as an Assistant in those days, you started in drafting, drafting or tester. I took the drafting exam, and, oh, I placed way down on the list somewhere but I was on it. (chuckling) And that list moved pretty fast, but in the meantime I went to work for North American Aviation out near the airport. But I was not there very long until my name came up on this drafting list. At that point, I moved to the Department.

TC: What did you do at North American?

JH: Pretty much drafting.

TC: Drafting?

JH: Yes, we were all in a drafting area. We called it design but it was pretty much drafting board.

TC: Plans for airplanes?

JH: Yes, right. As I recall, we did some electrical parts, wiring and connections and so forth.

TC: So you were somehow contacted by the Power System and told to . . .

JH: Well, when your name comes up on the Civil Service list, you know, you get notified in the mail that it's your time to report and see if they will hire you. So I went down and got hired. I told the Chief of Drafting that interviewed me, "You know, I really didn't place very high on this list and I'm not

too confident of my capabilities in this kind of drafting." He said, "Oh, don't worry about it. You'll be all right, and you have six months probation, you know." (laughter)

TC: Who was that, do you remember?

JH: Kierulff was his name. Another name I'm sure you've never heard of either.

TC: No.

JH: He was gone not long after I arrived, Walter Kierulff. Anyway, he was in charge at that time. As I found, of course, there was nothing to the drafting. I had no problems at all with it.

TC: What were the actual duties?

JH: In the Drafting Room, the Power Drafting Room?

TC: Yes.

JH: Oh, we were doing all the electrical drawings for the electrical facilities, just like the Drafting Room does today. Everything that the Department does, it at least has record drawings. In those days, of course, we built everything ourselves. In order to do that, we had to have construction drawings, and those were made in the Power Drafting Room. The engineers down in the engineering offices had us as draftsmen make those drawings. Of course, that was the entree into the engineering ladder, and that's the reason that's where I started. Because you couldn't start as an engineer of any title in those days.

TC: What building was that in?

JH: That was in Wright & Callendar.

TC: Wright & Callendar downtown.

JH: Of course, most of these folks that you've talked to started there, I'm sure.

TC: So you're were just doing anything, I suppose, that people would . . . What I want to do is just get a description of the kinds of work you were doing. So would it be like machinery or . . .

JH: What was being built in those days after World War II were the last units at Harbor Steam Plant, our first steam electric generating plant, and then a little later the Owens Gorge Hydro Power Plants. And, of course, there were always transmission lines and always substations, so any of those items. You know, a drafting person does any kind of a substation or power plant or transmission line or whatever, he's there to do drafting on anything.

TC: Yes, it doesn't matter whether it's generation . . .

JH: The instructions come from the engineer, and enough details so that you can make a drawing that's legible for construction people to use to construct. So, since it was electrical drafting instead of mechanical or civil or something, why, the drawings were electrical drawings. In other words, in a substation would be all the electrical power and the control conductors and the locations. You know, you have to show those electrical facilities on the drawings that have been previously laid out by civil, structural, and mechanical

people, and then you show your electrical equipment and wiring on those drawings, or the wiring sometimes goes on separate drawings.

TC: When you get the instructions, are they handwritten or are they rough drawings, that this is what we want?

JH: Many sketches. The written part is mostly just sort of broad directives, but usually from sketches if it's that much detail, and it usually is. Often there are precedents, and you get most of it from something that's been done before.

TC: Oh, so you had reference material you could look up, and then just . . .

JH: Yes, a great deal of reference material.

TC: . . . essentially copy with a fine-tuning that you'd be required to do.

JH: Yes, and add your changes to it or make it this much different or do this for this unit that was done for that unit.

TAPE NUMBER: 1, Side B

March 5, 1992

TC: So you started work on Harbor and then the Owens Gorge Plants. Did you ever have to go there to those sites?

JH: As a draftsman, a draftsman, almost never. Occasionally an engineer would take one of us along for something so special that we really needed to see what to make it look like, but that was almost never necessary, particularly for electrical. That could be true for mechanical or civil or structural things, but electrical not usually. You buy the equipment from manufacturers and you get all those drawings for the equipment, so it's really not a difficult task.

TC: Well, how long did you stay in that drafting . . .

JH: Oh, gosh, it seemed like I stayed forever. I think it was about three or four years in the Drafting Room. It might have been longer but it was something of that nature.

TC: Then where did you move to?

JH: Then I moved just downstairs in the same building to the sixth floor and to an engineering group, electrical engineering group, as an Electrical Engineering Assistant. That was the usual route in those days, everyone went that way.

TC: Was that a promotion?

JH: Oh, yes, from Electrical Engineering Draftsman, they called it, to Electrical Engineering Assistant is one step, one

level, and you're in the bottom rung of the Engineering series instead of the Drafting series.

TC: Okay, so that's the beginning of the Engineering series.

JH: That's the bottom rung, yes. Today, that's the recruiting level. You come out of school directly into that, and it has been that way for many years, but it wasn't so in 1948.

TC: So then what was that particular section that you went into?

JH: That was the Station Electrical Design Section, and the Power Plants and Receiving Stations Subsection, and in this subsection I guess there must have been about four groups with an average of ten to twelve engineers, and no Engineering Assistants. Ordinarily, for that whole subsection the ratio would be one Engineering Assistant for that whole forty or fifty engineers at various levels all the way to Senior. There were Engineering Associates, full Engineers, and one Senior in charge of the subsection, but only one Engineering Assistant, and he was in charge of the file room. That's where all this reference data we were talking about was kept. One of his major functions was to keep the files. When I moved in, I was the second Assistant in that subsection. It was sort of an unprecedented situation. We actually had two Electrical Engineering Assistants in a subsection and I was the number two. (chuckling) I was starting at the bottom there.

TC: So that would be all in Design and Construction then?

JH: That was all in Design and Construction, which was a division comprised of many subsections, in about three or four sections.

TC: Okay, and who was your supervisor there? Who did you report to?

JH: At the beginning it was Charles M. Short, and he's long dead. Quite a character.

TC: In what way?

JH: The way that strikes me was that he came from a family with money and he didn't seem to be . . . He wasn't actually too ambitious, and yet he lived well and lived a different lifestyle entirely from my own, and most people I knew. He was a delightful fellow and we all enjoyed him.

TC: So, in other words, he didn't have to work?

JH: I don't think he really had to, but he did and apparently did a good job, but he only rose . . . I guess he eventually made Senior Engineer, one step above. He was Engineer level by the time I arrived.

TC: Well, here you are, you've maybe been there for three, four, five years, possibly, getting to know who was who. Obviously, as a young engineer you didn't have any contact with people like [William S.] Peterson or [Ivan L.] Bateman or anybody up there.

JH: No, only through the Engineers and Architects Association [EAA], which was the engineers' union, as we called it. In my early days on the lower rungs of engineering I was quite

active in that organization, and the only time we would see those fellows is when we were in what would today be called salary negotiation. We'd occasionally get to be in a meeting where they were present, and that was quite a thrill.
(chuckling)

TC: I can imagine. This is interesting because in this series of interviews we really haven't talked to anybody who was active in a significant way with the Engineers and Architects. Some people have talked about different relations with the IBEW [International Brotherhood of Electrical Workers].

JH: Yes, that was after they were higher levels, I imagine.

TC: Yes. So was it a matter of choice that a person could join the Engineers and Architects?

JH: Oh, yes.

TC: It wasn't a closed shop situation?

JH: Oh, no. No, that little "union" was and is still, I think, just more of a pressure group. It's not patterned too closely after the regular union organizations, and there's no such thing as a closed shop or anything like it.

TC: So, in the Engineers and Architects, what did you do? What were the basic activities of the group?

JH: Well, we were mostly busy in trying to get ourselves more money, as aren't most unions? (chuckling) I think that's about all. That's all I know. Money and working conditions, and, of course, working conditions didn't concern us that I recall, but it was money, always money, and relationships with

other groups and other departments of the city and so forth, how we stood, and, in addition, the outside engineering pay as compared to inside in the Department.

TC: How did it compare, generally, at that time? Can you recall?

JH: Our impression was that ours was lower, and we could always find places like Lockheed [Aircraft] where we could make surveys. I never was personally involved in any of the survey work, but they had a similar organization at Lockheed for their engineering people, so we were very close, and their surveys showed always that they were a bit higher than we. So we based our demands on the outside pay. Our salaries were supposed to have been equivalent to pay outside the Department for comparable work, and we considered ours at least comparable.

TC: You couldn't go to Edison to see what those engineers were making?

JH: Yes, we could, but we didn't have the relationships there to get the data quite as readily and nicely as we could from the organization at Lockheed. Also, the great bulk of DWP engineering was done in house for all the facilities, whereas Edison usually hired Bechtel to engineer and construct all major facilities. So the data was kind of hard to come by. It was a little easier to survey the other city departments, and there the pay was fairly comparable most of the time. Since we all came off the same Civil Service lists, and had the same titles, so the pay had to be fairly comparable, but

the work wasn't really comparable in the other parts of the city for the electrical engineering series. There wasn't very much in the other departments of the city, and there still isn't.

TC: The Architects and Engineers had an office outside of the building, I would imagine?

JH: Yes.

TC: And they had a staff that was strictly paid by the union?

JH: A very small staff, a couple of fellows. And in recent years, as you know, they've been recruited from the Department itself. They were lower level Engineering people that were given leave from the Department to become business representatives of the EAA, and I think those two fellows may still be there, as far as I know.

TC: Well, when you'd present your demands or complaints or whatever to management, what would be the response generally? Would it be a friendly response?

JH: Oh, I don't think we ever got in any knock-down drag-out battles. I never saw any. There was always a group we called Salary Standards in the Department, which has a different title today, but it still has to do with pay and positions and relative pay and so forth. I don't know what the group would be called today. You may be very closely associated with it today, I don't know.

TC: It's probably something in Human Resources.

JH: Oh, yes, that would be the title, something in Human Resources today. Anyway, it was called Salary Standards in those days, and the head man of that handled most of the back and forth with EAA, and only very rarely would management be in on any of this. This was once or twice a year at the most. So it was amicable for the most part. The worst we ever got was we'd get pretty hot-headed at times and we'd make up a bunch of signs and put sticks on them and a bunch of us would get together . . . well, dozens and dozens, it was sometimes maybe hundreds.

TC: Really?

JH: And this happened three or four times, as I recall, and we'd go picket the main building, which was over on . . .

TC: Broadway and Second.

JH: Broadway, yes, and we'd walk up and down on the sidewalk there. Take an hour off of work or something like that.

TC: Right, or at lunchtime.

JH: To show our force, show our flag, you know. (chuckling) That was as militant as we ever got.

TC: How long then would you have been in the Engineers and Architects?

JH: Oh, gosh, I think I finally left it when I got to be Engineer level, which was, you know, what . . . ? Assistant, Associate, plus some drafting time, you're probably talking ten years or more.

TC: Did you join when you were a draftsman?

JH: I think I probably did, yes. I think most of the drafting people were union.

TC: So management never would . . . In some places, management would perhaps penalize people who were active.

JH: I never saw any real evidence of that.

TC: I mean, obviously you made your way up to the highest positions, so that wouldn't have been a problem.

JH: Well, I think this was considered a learning process by management, and as I look back on it I consider it that. I wouldn't frown on any entering engineer or drafting person that took part in this sort of thing, as long as it remained as amicable as it was in those days. Now, when you get extremely large organizations and they begin to get very impersonal, like most unions have come to be, and the leadership is there just to promote the leadership and . . .

TC: Sure. Well, you have the situation at North American Aviation, where you had been for a short time, where in 1953 there was a very difficult strike. They were out for . . . I don't know, months and months, anyway. It was very bitter and they lost terribly.

JH: Yes, after I left, thank goodness. (chuckling)

TC: You wouldn't have been in the UAW [United Auto Workers] then as a draftsman?

JH: Oh, no, no, I didn't join. I wasn't there long enough to belong to anything, really.

TC: And, of course, even at the Department there was a strike during the war, where the army had to be at least summoned.

JH: Oh, you're talking about the . . . not by EAA.

TC: No, no, IBEW.

JH: EAA was never big enough to do any striking.

TC: No, not the Engineers and Architects.

JH: No, IBEW, of course. Oh, yes, I was involved in a strike. I was in charge of Design and Construction when we had the most recent strike, whenever it was.

TC: The strike of 1974? We can talk about that later. I have some data on that. That's good, I'd like to ask you about that.

JH: What a traumatic time that was. (chuckling)

TC: I can imagine. You have something like a power system and a very large, far-flung, delicate operation, and you've got people saying, "We're going to shut it down."

JH: Yes, and for that you should talk with Carl Osborn. Maybe you could make a little trip over to Sedona, Arizona, and talk to Carl. That wouldn't be too bad, huh?

TC: That would be good.

JH: Oh, yes. He was in charge of the Operating Division at the time of that strike, and that was the real hot seat.

TC: But getting back to this period of the early fifties . . .

JH: On up to the sixties, yes.

TC: Well, in Station Design, what kinds of things were you doing? What were the basic tasks, responsibilities?

JH: Oh, I was doing the usual electrical engineering work for power plants and receiving stations. Transmission substation is a more appropriate name than receiving station, I think, now. But the design of those involved not only deciding what's to go in it, but their capacity and so forth. But buying all of that very costly equipment and having the drawings made for the construction of the place--and a power plant is even more so, of course--it's a monstrous chore to not only decide what has to go in it but make sure it all works together electrically. We're concerned with electrically, which is very closely associated with mechanically, and inseparable, and so we were working with mechanical engineers. So I was in Short's group, where I was for quite awhile. That was a specifications group, so we wrote the specifications for this heavy equipment, and saw that it got purchased and we administered the contracts for it during the manufacture of those things.

TC: So you would write the specs, the specs would go out, and then bids would be made and bids would come back in. You'd evaluate the bids.

JH: Right, we'd evaluate the bids, recommend awards and so forth.

TC: That's something I've been curious about, the bidding process. Did you have to take the lowest bid?

JH: Yes, I think the term we often used was "in place and use." When you're talking about a piece of electrical equipment, there are usually efficiencies involved. It gets to be a

little bit complex to figure that over a thirty-year life of that piece of equipment, is it going to be less costly than this piece of equipment. And would efficiencies of various parts, various losses, contribute to lack of efficiency and how much this and this and this is, and whether it's going to be harmful and shorten the life of the equipment. It gets to be pretty involved. So, when you say lowest bidder, the lowest price is not always the lowest bidder by any means. The same way with a generator and many other items.

TC: I see. But you're talking about what, three at the most? Who would be bidding? You'd have General Electric, you'd have Westinghouse, and . . .

JH: Oh, yes, Allis Chalmers and . . .

TC: Allis Chalmers.

JH: Yes, and those were the main three in those early days, and there later came to be more, and pretty soon the Japanese were into it with both feet--I mean, really going hog-wild. Then, with the smaller equipment, of course, there were a lot more than that. But then eventually, even in the larger equipment, overseas manufacturers of the turbine generators themselves got to be competitive when we started building major power plants.

TC: Like Valley [Generating Station].

JH: Like Valley was the first one after Harbor. In that we began to get foreign bids from Europe, and they weren't too seriously considered for awhile, but then they got to be

pretty serious. Then we got down to Scattergood [Generating Station] and it got real serious. We were beginning to see that these folks were coming right along, you know. They were making equipment that was rivaling what we could do in this country. So I think it was probably Haynes [Generating Station] . . . It's slipped my memory. I don't remember whether it was Scattergood or Haynes. Anyway, Brown Boveri bid on turbine generators and they bid efficiencies for their standard machines such that we could have bought three, had a whole spare unit, for what the cost would have been for two from GE or Westinghouse in this country. The efficiencies were so great that it was unbelievable, the mechanical efficiencies in the turbine, primarily. So we had the unenviable task of making the first recommendation for an offshore supplier. We recommended Brown Boveri, and that really created quite a stir. In fact, it was the first one in this country.

TC: Yes, I can imagine. I can imagine that the representatives from the American companies must have hit the roof.

JH: Oh, yes. (chuckling) They couldn't believe what was happening to them, just like General Motors can't today. (chuckling) But it happened, and pretty soon we were getting as many or more from there as anywhere else.

TC: Had other utilities, that you know of . . .

JH: We awarded the first overseas turbine generator in this country.

TC: Really? In this country?

JH: In this country.

TC: And then in this specification work, again you wouldn't necessarily have to go off to the site to see what was going on there?

JH: We also administered the contracts during the manufacture of that equipment. And in those days, we had an Inspection Section, it was called, that was in charge of that kind of work, and we had a resident inspector in the East and then, for many years, overseas. We had them in Europe and in Japan. We had so much business in those places that it was prudent to have an inspector residing in those areas to take care of the back and forth. So we seldom . . . should I say, had to go, or we seldom got to go. (laughter) We were always miffed because we couldn't, you know. That inspector was always there and we didn't get to do that. But once in awhile when things got up pretty high and we needed to, even then the lowly Electrical Associate who was doing the work didn't get to go. It was usually the Senior Engineer in charge of the subsection that went overseas to iron out the problems. (chuckling) It was never us, you know. That was Howard [R.] King.

TC: That was Howard, oh. Well, let me just . . . I don't know, I want to back up a little bit and talk about some things about the Department as a whole and what your thoughts of working at this place were. Some people came in with . . .

I think Howard King, for instance, came in with the thought, "I want to work for my home utility." You know, "I'm a municipal utility man." Other people just came in because it was a job and they didn't have any preconceived ideas of privately-owned versus publicly-owned. I would gather that that would have been your . . .

JH: I didn't know there were two different things. (chuckling)

TC: Yes, but once you got into it, did you notice just as part of the process you go through as a young engineer that you are working for a municipally-owned company?

JH: Oh, that becomes very apparent early on and a big part of the life that you live. You know you are working as a city department for the people of the City of Los Angeles. You're not out there as a corporate entity separate from any governmental association. Oh, yes, that becomes readily apparent.

TC: Certainly, [E. F.] Scattergood was long-gone by the time you came along. He had just died the year before, I guess, 1947. But his reputation, his presence, was perhaps felt.

JH: Not at my level, no. I never heard the man's name for a long time. I saw his name on a few drawings but . . .

TC: I think that some men that were close to him, like, I think, Peterson was a young guy he brought along.

JH: Yes.

TC: Of course, he stayed on and sort of carried on that tradition.

JH: Oh, yes, I knew Peterson pretty well by the time he was gone, and [Edgar L.] Kanouse followed him.

TC: Ed Kanouse, yes.

JH: And [T. M.] Blakeslee. All these folks, of course, were more historically oriented in those sorts of things than us young whipper-snappers coming in at the bottom at those times. But we came, as we rose in the organization, to recognize what had gone before very clearly and became thoroughly indoctrinated and oriented toward what we were doing. This same loyalty that I'm sure they felt carried right through, so there was no loss of it, really, it just took a little longer.

TC: So we're talking here about late fifties. Maybe we can just finish up this particular tape with just some more thoughts about, for instance, the Valley Steam Plant. It had some different features than the normal steam plant that was being produced around. For instance, it was outdoors for the most part. Was that considered an innovation or just a practicality?

JH: Yes, a totally outdoor plant was quite an innovation, as you've gathered from Howard King, probably.

TC: From Howard King, and I talked to Gene [Eugen] Koffmann, too.

JH: Oh, yes. And it went very well. When we later started dealing with Brown Boveri, their chief engineer was over, a delightful old boy, and we took him out to Valley to show him this outdoor plant. He hadn't experienced much of that. Yes,

that was an innovation. I can't say much about those features since I was then buried in electrical detail.

TC: Well, other than that the idea for steam generation was . . .

JH: Fairly young.

TC: Yes, it was young. The Power System had relied on hydro for so long.

JH: Yes, and along came this massive load build-up, a crescendo of load build-up, and we had to do something.

TC: Of course, you wouldn't have been in the levels where they were talking about this, but maybe in later years you heard or had come to understand. Was there any, say, discussion of what kind . . . You know, we've got to do something, we don't have enough coming from Boulder, or we don't have enough coming from the Owens Valley. We have to do something. There must have been choices to be made, coal plants or . . .

JH: Yes, and when those choices were being made for those early plants, I was at too low a level to have any part of that--not only too low a level so much as in the wrong place. You see, I was now writing specifications for the equipment after that decision had long since been made.

TC: After the decision was made, yes.

JH: So I had really no part in the planning of those things.

TC: No, but I was thinking of years, as you went along . . .

JH: Oh, later.

TC: You may have some thoughts on the . . . I guess that really was the only way they could go at that point.

JH: Yes, there wasn't any other way. There wasn't any other way to generate that much electricity. Of course, today you can, but . . .

TC: And coal would have, I suppose, been . . .

JH: Coal, of course, was always a possibility, but in this area, not just because of air pollution but just . . . the source isn't here. And gas was plentiful, and that's all that the units were built for early on, with an alternative to use oil when you needed to. We built them so we could switch back and forth, and economics then dictating whether you use gas or oil. Because air pollution was just beginning to rear its ugly head about Scattergood time.

TC: So that didn't come up as an issue with the Valley Steam Plant?

JH: No.

TC: Is Valley oil? Or can it be both?

JH: Both.

TC: And at the time it was built, it was built for the possibility of both?

JH: Yes, right, for economic reasons at the time. But not long after, the smog problem was recognized and Valley burned little oil from then on.

TAPE NUMBER: 2, Side A

March 12, 1992

TC: This is just a follow-up question on one of the topics we discussed last time. We talked a bit about the Engineers and Architects [Association], and I just wanted to see if we could name some of the other people that you worked with within Engineers and Architects. Does anybody stand out, first of all, someone whom you would have been going to meetings with or who conducted any of the activities?

JH: Oh, that does go way back. (chuckling)

TC: Maybe that's a tough one.

JH: Oh, my, that's probably thirty years ago, and at that level I didn't have any close contact with anyone of consequence that you might be interested in. But in the meetings I mentioned, of course, occasionally when we got into a top-level meeting, why, some of the brass were there, and people like Peterson I remember, but I had no contact with them.

TC: Well, no, but within the Engineers and Architects . . .

JH: Working in the organization, no, I really can't remember the people that I worked with at that level.

TC: Okay, well, how about other chapters? I mean, obviously it was a DWP-oriented chapter of . . . I don't think they call them locals, I think that they're chapters of Engineers and Architects. Did you ever have any contact with any of the

other area chapters? Did you have conventions and those kinds of things?

JH: I don't recall that EAA was ever anything but a Dewap organization.

TC: Okay, that's a good point. All right, the next area that I wanted to cover was last week we were finishing up more or less in the late fifties, and this coincides with that but it's sort of extracurricular. It's your continuing education. You got your bachelors in . . . I think you said 1948?

JH: Yes.

TC: At USC, and then you went back after that to get a master's. Now, was that a night school kind of situation?

JH: Yes, I took advantage of the Department's more than generous tuition reimbursement plan. Boy, that was like gold.

TC: Oh, yes.

JH: In fact, I had attended USC in the first place under the GI Bill, the Veterans' [Administration] system for tuition payment. Of course, I worked about half-time while I was doing my undergraduate work, because I had a wife, and a baby came along about that time. Then, after going to work for Dewap, the tuition reimbursement plan was, as I say, like finding a pot of gold at the end of the rainbow. So I went right back and continued with one or two courses a semester clear through to a master's degree.

TC: So that was actually right after you got into the Department?

JH: Yes, I was doing that while I was still in the Power Drafting Room.

TC: Did you have to initiate this whole thing, or was there some sort of promotional activity within the Department that said, "Hey, why don't you go get your master's?"

JH: I don't recall anyone ever urging me to do it, but if you're alert and you look around you and you see who does it and who doesn't and what happens to them, you don't have to be too smart to see that it's the thing to do if you can. It doesn't cost you anything, it's a little time-consuming, and, of course, there's always some pressure, but I don't think the pressure was like the undergraduate pressure, actually. I recall as soon as I got my degree I picked up a few pounds in the waist, like that. (laughter)

TC: And then you got a business management certificate later on.

JH: Yes.

TC: That was through UCLA [University of California, Los Angeles].

JH: Yes, that was through the Department's participation--not sponsored but participation in that program--and I thought that was great because I got into things there that you don't get in a strictly engineering-oriented course.

TC: So was it sorts of things like . . . well, management, budgeting, and accounting kinds of things?

JH: No, not so much accounting and budgeting, because I think that is primarily the function of other disciplines. You get enough to understand what's going on, of course, but primarily

it was delving lightly into the law governing . . . law for engineers and a lot to do with people and personnel and the kinds of things you need to know to survive in a business world. I thought it was quite a good course and we had a good set of instructors.

TC: How long did it take? Was it a matter of months?

JH: Oh, no, it wasn't something you'd go at full-time. It was more like going for your master's. You know, one night a week or two nights a week or something like that over a period of two or three years. So it was quite a comprehensive thing.

TC: Yes, I'd say. Okay, moving along. As I said, we ended up in that period of the late fifties, and I happened to come across a paper you produced at that point, or co-wrote. I just wanted to ask about this because it struck me as kind of an interesting concept here, and I'll just cite the paper. Do you recall this?

JH: Yes, I recall it very well.

TC: It's a conference paper. It's IEEE now [Institute of Electrical and Electronics Engineers], then it was AIEE, [American Institute of Electrical Engineers]. Anyway, this was a conference paper that was produced in 1959, actually presented in 1960, and you wrote it with Charles Short, whom you talked about last week. What were the circumstances, first of all? Oh, let me cite it. It's called "400 MVA Bulk Power Substation in Metropolitan Area." What were the

circumstances of getting together with Mr. Short to produce this?

JH: Well, Mr. Short was my first supervisor when I came from the Power Drafting Room into the Station Electrical Design Section as an Assistant Electrical Engineer. Electrical Engineering Assistant, I guess, is the proper terminology. Charlie Short was always heavily involved in what was then the AIEE, and this we could all see was a good thing to do, keep yourself abreast and informed. We were all electrical engineers, we were all members of this organization and participated to various degrees, some of us more than others. Of course, one of the ways of participating strongly is to write papers such as this and help present this technology to the rest of the "industry." And Charlie was doing this fairly frequently. We thought he was doing it, but as it turns out, he may have done it in his early years, but in his later years he was doing what you see here. He was putting his name on other people's papers. (laughter) And he was helpful, I can't deny that, of course, but this is one way he kept his oar in, and us kids wrote the papers. It was an interesting concept here that we were very close in contact within the work we were doing.

TC: Yes, just to maybe summarize it, it has to do with Hollywood Receiving Station and the problems you faced with building that and getting it up and running because of the noise that it would make, and it happened to be closely associated or

adjacent to a movie studio, and you were fearful that the noise of the equipment would cut into their sound stage needs.

JH: Yes. I think the people who were fearful more than we were the people who lived there, and the people who ran the studio would be the ones primarily to have the great concern. We knew pretty well what could be done and were pretty certain that we could do it without giving any problems. This paper was to kind of present to the industry that even if you're in a situation like this you can build these heavy bulk substations. If you sound insulate them properly and use the right equipment and so forth, you can succeed. We had been doing it repeatedly for a number of years and we could see the rest of the country, and maybe the world even, was heading the same way. As population density increases, you get more and more of this kind of problem.

We had this rather unique, at that time, process of building tilt-up concrete walls. They're poured flat on the ground and then with cranes they're lifted up into place. It's a very common process, maybe one of the most common for commercial buildings these days, but in those days it was just beginning and the Department had pioneered in making those walls decorative. It was sort of a homegrown situation where our construction people in conjunction with our architects would purchase some rather decorative rock that you could lay into the forms and then pour the concrete wall on it. The reinforcing is all in, and when it's all set you lift it and

take the forms off and you have a beautiful surface there with the rock in it, and this was kind of an innovation.

TC: But it also seemed to have something to do with the public relations attitude, too, that the Department was facing.

JH: Oh, of course. Oh, yes, this was just becoming important, the public relations bit. Well, perhaps it was important before I got into it, but this was the first time I really realized that these kinds of things had to be taken care of. A little later on I was in charge of building the distribution substations, the smaller ones, and we got into this really with both feet. We had just endless meetings with property owners to try to locate those substations in their neighborhoods--right next to their homes, in fact--and this was a most interesting chapter, too. That was a little later on but this was the introduction to that.

TC: Yes, this was the introduction to it. Well, it took then, what, negotiating with . . . I mean, in the case of the distributing stations as well as this Hollywood Receiving Station, did you have to go to the neighborhood, explain to the local whatever, the chamber of commerce people, for instance, or the merchants' association, neighborhood association?

JH: Primarily homeowners and their associations for distribution substations. The bulk power substations were in industrial-commercial areas anyway and there wasn't too much of that. We hadn't quite gotten to the point where there was a lot of

hullabaloo about them at the time this paper was written, but later it got to be just like with the distribution substations.

TC: Where is the Hollywood Receiving Station? Do you recall what street it's on? Because it doesn't say and I'll have to check that out.

JH: I don't. It's probably not addressed in there. It was next to a studio which, I think, is probably no longer in existence.

TC: There was another thing here--some of the equipment was installed and then replaced. Do you recall anything about that? It says it appeared that complaints could be eliminated only by replacement of the transformers, and new ones were ordered with the sound level guaranteed not higher than 68 decibels. So there was some change there.

JH: Yes, I think that happened. We had assumed a little too much. We thought we could use our standard purchase transformers, standard sound level, and with proper sound insulation in the tilt-up walls we wouldn't have a problem. But it turned out that it was a problem. What we could do there was replace the standard transformers with some of lower sound level, which just cost a little more, that's all. And then we could take the standard ones out of there and put them in some other bulk substation where they would not be a problem.

TC: So it wasn't a loss of equipment particularly? It was simply replacing what would be . . .

JH: That's right, just shuffling.

TC: Yes, shuffling, right. I should know this, I know some of the terminology--I'm not an engineer, of course--but what is MVA?

JH: Megavolt amperes. You hear of volt amps, VA, which is volts times amps, and this is millions.

TC: This is millions. Okay, megavolt amperes, all right.

JH: Million volt amperes.

TC: Did you have to present this paper, or was it sent?

JH: Yes, I was privileged to attend the meeting back somewhere in . . .

TC: It says, "The winter meeting in New York, 1960."

JH: New York. Yes, I went there and presented this paper.

TC: Did you tend to go to these meetings every year?

JH: No. Of course, if I could have had a paper to present every year I might have. Some people managed to get there, like Charlie, almost every year, and Ernie [E. W.] Werk, of course, a little later on, also. I believe Ernie went along with me this time. They were higher-ups in the AIEE and they were always serving on one committee or another. The committee meetings were always held at the time of the general meetings where the papers were presented and we got everything done at one time. So committee members and committee heads always attended the meetings. I never went as far as to get super active in the committee work. I worked on committees, but I was never a committee head, so I didn't attend these kinds of

meetings very regularly. It was a good thing to do and I would have enjoyed it.

TC: Well, what kinds of committees would you have been active in at the committee level?

JH: Well, the ones relating to substations. I was on a committee. I don't know if it quotes it there, but either at that time or later I was on a committee that had to do with substations.

TC: Yes, this is Substations Committee.

JH: Okay, yes. So I was a member of that committee and did attend quite a few meetings of the committee. And I did eventually become a, "senior member of the institute," which meant just a little bit higher dues and a little more prestige and a very good experience. Of course, the publications were the things. When we attended the meetings we brought back the publications which were pertinent to our work. We could see what the papers contained there and buy a few copies and bring them back. This was a good education.

TC: When you went to the meetings, this was an organization that would include engineers representing both privately-owned and publicly-owned companies?

JH: Of course, but primarily privately-owned since there are so few large publicly-owned.

TC: Was there ever any kind of separation, distance, or tension between the two groups, that you noticed?

JH: I never sensed much if any tension from that source. In fact, thinking back now to . . . Yes, it was meetings of this

organization that I attended in the West; often we would be the only, "municipally-owned or publicly-owned" organization represented. It always seemed to us that we were extremely welcome. Maybe it was because we were more in the technical end of the business than in the business end of the business. But even when I got up into the business end of the business I still never detected any problems in that respect. It seems that the Department in particular was less troubled by what you might expect to be friction between the corporations and the municipal organizations. There just didn't seem to be any. In fact, even between us and our neighbor [Southern California] Edison, you know, we'd make snide remarks in joking, but cooperation has always been remarkably good throughout. And this had to be, we have to live together. I'm jumping ahead here.

TC: That's fine, good.

JH: When I got into the operation of the system and I was in charge of that for awhile, it was amazing the degree of cooperation and good will that existed between the Department and its surrounding utilities, which are all private, except the little ones, you know. We did collaborate very closely with the small municipal organizations that are close to us.

TC: Glendale, Burbank.

JH: Yes. As I could see, we had just as good relationships with Southern California Edison and PG&E. It was live and let live, and there was seemingly little or no friction. We

didn't get into that until we got to Intermountain Power Plant, and that's an interesting story we'll come to later.

(chuckling)

TC: We'll come to that, yes. Good. I guess with Edison, probably when the Department was condemning the Edison system within the city limits, that there were probably bad feelings.

JH: Yes, there was probably some ill feeling in that.

TC: But again, as you say, at the engineering level you're dealing with problems, you're dealing with the same problems. You're the same guys dealing with those problems.

JH: Yes, and you can easily see from an engineering standpoint that if you don't collaborate and cooperate you're going to be in a much worse situation on both sides of the table. So it just makes sense to live together peaceably and do the best you can.

TC: Okay, here we are, we're in about 1960, 1961, and I have what your job title was, or at least what section you were in, and I wanted to get some sense of what you did, what the duties and responsibilities there were. This was called Steam Plants, Controls, Instrumentation and Wiring, and it was under Generating Plants and Receiving Stations, which was under Station Design.

JH: Correct, still in Station Design.

TC: Still in Station Design. Okay, first of all, in Steam Plants, Controls, Instrumentation and Wiring, there were different designations, A, B, C.

JH: I believe at one time we had at least two groups. There might have been a short period when we needed three. I can't recall very well, it could be that we needed three of those at one time, because we had so many steam electric generating plants already in existence, which required continuous monitoring, maintenance, update, upgrading, as well as new ones going on, coming on line.

TC: Okay, so that would be separated? Okay, you guys are working the new plant and you guys are working on the upgrade and the constant . . .

JH: Yes, only I don't think we'd be separated according to groups, but individuals primarily would work on some of the existing ones and some others would be on new ones exclusively, because that's all the time they had.

TC: Yes, right, it was full-time.

JH: You might as well stay familiar with it, yes. Follow through.

TC: Okay, so in this period you're starting to think about Scattergood and Haynes.

JH: Yes, you betcha. Just a unit a year for a long time there going on line.

TC: Well, you spoke last time about being involved in specifications, writing, and then reviewing the bids and recommending based on your review. Did you stick with that in this particular . . .

JH: No, not in these groups.

TC: What was involved in it?

JH: Well, we'd get more into the nitty-gritty of applying the purchased equipment, getting it installed in those plants and wired and working, and that covers a lot of territory.
(chuckling)

TC: That covers a lot of territory, yes.

JH: Making all the drawings for construction.

TC: Ed Kanouse was head of Design then, I think.

JH: That could well be, yes.

TC: He was a very interesting man, too.

JH: Yes.

TC: He left the Department to get a doctorate. Is that the case?

JH: That's what I'm told. That was before I got there.

TC: And he came back with his doctorate from Stanford. A very interesting man. He would have been someone to interview in a series like this.

JH: Oh, boy, and Ted Blakeslee was somewhat the same category, as I recall. They were a little before my time.

TC: Moving along then, I have in 1963 you were in Electrical Design. Again, this is an A, B, C kind of designation.

JH: Well, at the time, of course, I was still Engineer level and had a small group of ten to a dozen Electrical Engineering Assistants and Associates working for me, and I probably made two or three moves within that same level and doing much the same thing.

TC: That's what I'm getting at, yes. Okay, so it was more of a rotational kind of thing.

JH: Yes. In that category, anything that had to do with generation I worked on and had people working for me working on it.

TC: Okay.

JH: For quite a few years, that was a really wide and varied experience.

TC: Mainly because of the different kinds of generation?

JH: Yes, that. If it had to do with generation, yes. And even a little farther back into the substations where you were talking about this AIEE paper. I was part of a group that wrote specifications even for the substation equipment, so I got a taste of the substations and then I was totally in Generation. I never had much of anything to do with Transmission until I got higher up. Then I had a lot to do with it. (chuckling)

TC: Well, then that would say to me that in Design and Construction the Transmission Design guys were over here and the Distribution, Receiving, Generation guys were over here, and there's no overlap.

JH: Very little.

TC: Until you get to the hook-up, I suppose.

JH: A little higher up. Well, yes, you get a little higher up and you're over both of them. (chuckling)

TC: Oh, I see, okay. But it wouldn't be that on this day go over and work with the Transmission Design people.

JH: No, Transmission was a specialty that was quite separate from the rest of us. It doesn't take a lot of people to do transmission work, you know. You don't have that many big lines and they're not that complicated, until we got into direct current [DC] transmission, and then they got kind of complicated. But the ends then got turned into substations, really big substations at the ends for converting . . .

TC: Like at Sylmar.

JH: Yes, like Sylmar.

TC: Of course, you're talking about the [Pacific] Intertie, and that was coming along here in the sixties, too, along with everything else, I guess.

JH: Oh, yes.

TC: For instance, the nuclear program got started.

JH: Oh, yes, the poor old nuclear program. What a struggle. What a disaster. Oh, boy, and just as well it was. Somebody up there was watching out for us on that.

TC: Well, at the time . . . In my reading, we have a historical perspective on this whole thing now, I think, after thirty years or more. When you read the literature, it is just so positive, like we can have these reactors and we can do this and we can produce this and this is going to be great.

JH: Yes, and still it's the only way to go. Fossil fuel is not going to last forever. We had the whole picture, we thought. All we have to do is go nuclear and we've got it whipped, you know. (chuckling) Dewap being in the forefront, was in the

forefront here. And being in the generating plant business, I was in on and did a good portion of the design work for several nuclear plants that never got built.

TC: So would you have been involved with, say, Malibu, the first project?

JH: Oh, yes. Yes, I was right in the thick of it, and even attending some of the meetings on it and trying to get it going. As you probably are aware, the Department was in the forefront in this field. We were the first ones in the whole western part of the country here to try to get something going in nuclear, and, of course, we were frustrated at every turn. It seemed at that time that the real estate interests and the oil interests, which were the really monstrous money organizations in this part of the world, and still are, had sort of combined forces to prevent our succeeding in this.

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March 12, 1992

TC: Yes, I've spoken to Gene [Eugen] Koffmann and it's good to get other points of view, because I think . . .

JH: Yes, poor old Gene. (chuckling) That was his life.

TC: That was his life, yes. So it must be frustrating to look at a whole series of these massive projects and realize that none of them got off the ground.

JH: None came to fruition, yes. And thank the good Lord they didn't, you know. Because if they had, we would have been in the soup along with every other utility in this country, that built nuclear and even worse because we would have been one of the first.

TC: But somebody like Gene Koffmann, very competent, and he's still convinced that . . .

JH: We should have gone ahead with it at that time.

TC: Well, he said that you can engineer safety features so that you can . . .

JH: Oh, of course you can, but the required degree of safety is such that it finally became evident that what you have to do to achieve this degree of safety makes it almost not worthwhile to even start such a thing. And now you even have such fear of this atomic energy that you have to take extremely expensive steps to even shut down such a plant once you've built it and operated it for thirty years or whatever.

You have a tremendously expensive process of getting rid of it. So I have to agree with Gene, it's the only way to go. We'll come to it, you know, and it would have been better if the world had come to it at the time we were working on it and gone through all these problems. There would have been some disasters, yes. I think probably nothing like the Russians had, because I know we would never have built anything as sloppily as those plants in Russia are built, or were built. So I don't think we would have had anything like that, but there would have been some incidents that would have really inflamed the public. With the inherent public fear to begin with, the worst disasters in this country have been the costs to utilities of trying to site, build, and operate to the satisfaction of the public. Some utilities were bankrupted.

TC: So being involved in design for these reactors and the various accoutrements, you would have had to have taken a crash course in nuclear engineering yourself, I would suppose. I know Gene went to Oak Ridge [School of Reactor Technology].

JH: Yes, Gene specialized in that end of the thing so he could understand the intricacies and how that source of energy differed from fuel oil, gas or whatever. But once you get past that stage, the rest of it is pretty much conventional.

TC: Oh, I see, sure. Yes, it's the same, it's generation.

JH: You have everything you had before, plus the new technology, so we just had a few people like Gene that needed to get into that end of it. And the Burt brothers [Robert C. and Raymond

C.] were sort of prominent there. But again, I'm just thankful that the Department never really succeeded at the time. Because as things . . . you know, your historical perspective, we can look back now and say, "Hey, if the Department had succeeded and things had continued to go the way they have, we would have been in a very bad situation.

TC: Well, San Onofre was put up sometime in the early sixties, really.

JH: Yes, that was the one that came along right after we were working on the Malibu, and we couldn't see how they could get by with it and we couldn't? (chuckling) SCE, being a very large corporation, was able to survive the unforeseen heavy costs of San Onofre.

TC: Actually, there was even a thought of expanding that San Onofre site so that there could be a joint project involving several utilities there, which of course didn't get . . .

JH: Never accomplished.

TC: Never accomplished, but San Onofre is now some thirty years old. Will that be decommissioned? Was that the attitude when you started to plan these things, that they have a certain life, and after that we can shut them down?

JH: You only plan economically for a certain life, but you continue to run things as long as it is realistically economical. But when you're initially planning something, you say thirty-year life, thirty-five-year life, and you justify your project according to that. But you don't really know

what's going to be out there at that time, and we didn't know what was going to be, and nobody knew. And what is out there now is this enormously expensive shutdown and getting rid of the waste problem. So there's a lot more to it than anyone realized. I don't say this is justified, but I'm saying this is reality.

TC: After the Malibu Project, the Bolsa Island Project came along. When I've talked to Howard King about it and to Gene Koffmann and others who had something to say about it, whether they were closely involved or not, I mean, it's something that seemed . . . on paper it seemed so good.

JH: Oh, yes.

TC: You get desalinated water and you get power; this makes everybody happy.

JH: Oh, yes. It might have worked, I don't know. But again, you would have still had this . . . I started to say insane fear. It is insane and it's not really justified, but it exists, and I'm saying this is reality, this is what you have to deal with with the public. And a utility that tries to deal with it, as we have seen, has come to grief--all of them, practically, in one way or another--and I think we might have had the same experience.

TC: Well, with Bolsa I've gotten conflicting views as to the attitude of the Department engineers towards the project itself. Like some thought it was a reasonable thing and we ought to get into it. Others thought that it's pie in the

sky, really, it's going to be too expensive. Do you recall any . . . There must have been discussion about this thing among the engineers.

JH: Continuously for years, of course, just like Malibu and numerous others. We always considered that since the load was growing like it was we had to have about a half a dozen balls in the air at the same time in order for once in a while one of them to come home to roost, one that we could actually do and complete and put on line, and this was one of those half a dozen balls. A lot of people thought, as you say, it was pie in the sky, and a lot of other people thought, well, hey, this is the greatest thing since sliced bread. As you say, you get water, you get power from your energy, you use it all. You don't just dissipate it like in an ordinary turbine cycle where you condense the steam and run it back through and waste the energy from the condensation into the air. So it had its proponents and its opponents. I think, as far as the Department was concerned, we were raring to go. The technical people [thought], hey, this looks great.

TC: Of course, the upshot was finally when all was said and done and you were really looking at what that island had to be, that it was just too expensive to build.

JH: Yes.

TC: Would you say that was the thing that killed it, what it was going to cost?

JH: I don't think I was that deep into the planning. Again, I was still down in the technical detail end of it where we knew we could make our end of it go and we knew what it would cost and we plugged this in with everybody else's costs. And this business of building an island, that's not an electrical problem. (chuckling)

TC: No. Island building, I guess that's civil engineering. (chuckling)

JH: Just something like that, yes. A lot of engineering of different types, but no heavy electrical problems involved.

TC: Well, was any equipment ever bought for Bolsa?

JH: I don't recall any equipment ever having been bought for any nuclear plant except fuel. We took options on nuclear fuel, as I recall, and then later sold it off. But I don't think we ever actually bought any equipment.

TC: After Bolsa was San Joaquin [Nuclear Project], which, of course, was the same story.

JH: Yes.

TC: Well, there was something they called Tulare-Porterville, that was just a site investigation.

JH: Yes, another grand scheme down the tubes again. It looked like it had great promise. I know you've heard this. We could save the farmers the enormous expense of saving their land, which is going to rot because of the salts that are deposited, and we were willing to do this as part of this project. Thousands and thousands of acres we would put these

leach lines under and pick up that salty water and take care of their problems at the same time we generate power. It seemed to have a great future--almost did. It hinged on one election, which, as you probably know, turned it down as far as siting is concerned. We had by that time come to the point where we said, "Okay, if the people vote it down we'll get out," and we did. (chuckling) And again, fortunately, I think every one of these things was, I don't know, fate somehow, or again, somebody up there looking out for this Department. Because I think we would have been in deep trouble, just as all the other utilities who have gotten into nuclear generation have been in deep trouble and lost a lot of money. I don't think we could have done a whole lot better job than most of them.

TC: Well, you're talking about the Diablo Canyon Project that PG&E has.

JH: Yes, they all built plants. Sacramento, SMUD [Sacramento Municipal Utility District] . . .

TC: That's right, SMUD, yes.

JH: Sure.

TC: Which they shut down, yes.

JH: Lots of them all over the country, all over the world. And it's so much in the attitude of the public. Their terrible fear of anything nuclear still pervades the whole scene. Although I'm just as certain as rain that we will all come to it, it's just a matter of time.

TC: Well, what will that take?

JH: As it's taking: a lot of time for people to get themselves oriented and educated into the probabilities and possibilities. You know, it's hard to educate the public, particularly in a democracy such as ours. You know, if we had a Russia with dictatorial power, you could do it. But then, if you're not all that good at it, like they weren't, they got in big trouble, the biggest trouble.

TC: The biggest trouble.

JH: Yes.

TC: But you get someplace like France who then hasn't had that problem, plus they haven't had the public outcry in a society that is so politicized.

JH: Yes, there it is. There is your prime example. France has a lot of successful nuclear. A great percentage of their output is from nuclear and it has worked very well for them. The difference there is the public. The public are just not that fearful of the subject and the government was smart enough to promote it in such a way that they didn't incur the wrath of the people. It's pretty much a nationalized utility, the electrical business in France, so they had enough brains to not get themselves in too many bad incidents, or somehow if they had them you didn't hear about them. I think that was what we, when we were trying to build these things in the early days, assumed would be the way it would go here. You know, people would have a reasonable attitude toward this

thing. Look at the benefits versus the possible problems, and your tradeoffs are so enormously in favor of the benefits that this is obviously the way to go. But this built-in fear, I think, had a lot to do with the environmental movement at the time which was rising in the minds of the public. All these got linked up and these organizations rose up in great indignation and were able to control the media and the press, and there you have it in this country. (chuckling)

TC: Yes, I suppose like in the San Joaquin Valley, Central Valley, the thought was that, well, this would create a constant fog condition here because of the steam rising into the air. But you have land interests, oil interests, and then citizens' groups. I guess they joined together to put a halt to these things.

JH: They sure did.

TC: I know that Gene Koffmann and Howard King had to go up there periodically.

JH: Oh, yes.

TC: And other people in Public Affairs [Division]. Liz Wimmer had to go up there and talk to people and try to convince them of the worth of this.

JH: Oh, yes.

TC: I guess there were enough . . . I mean, this was some years after . . . I think something was learned after Malibu, like how to present this kind of thing. It was recognized that it wasn't just a matter of establishing it or presenting it as a

fait accompli. You know, you've got to develop public opinion. But even with that, the whole thing hinged on that vote, as you said.

JH: Yes, it came very close. We came very close to building that one. I think that was about as close as we ever got.

TC: Do you remember the day of the vote?

JH: Oh, boy, do I! (chuckling) Oh, yes, we were all biting our nails, thinking, hey, this is it. Terrible. Terrible fate there. All the money we had invested trying to get this thing going.

TC: Yes, you went through the whole process of the environmental impact report and the hearings all up and down the state, up and down the valley. It was just incredible.

JH: Yes.

TC: Well, afterwards was there a bitterness? Or did you just say, "Okay, next project." Pick up your morale and . . .

JH: Well, you start looking for alternatives. You say, "What do we do now?" You know, in the technical end of the business, you don't worry about it. You don't fret too much. You may worry a little but you don't really fret an awful lot, because you have to be looking for what are you going to do now, and your next resource is going to be where, what? So you keep more balls in the air. (chuckling)

TC: You throw up some more balls, yes. Well, you had the tried and true Basin steam plants to continue expanding on. And then, of course, you had trouble with Scattergood Unit 3, I

guess. Was that the one that the Air Pollution Control Board got into and said you can't build this third unit because of . . .

JH: In that location, yes. I don't remember that somehow. I just remember going like wildfire on Haynes.

TC: Why like wildfire?

JH: Well, it just seemed like it went so fast, just bang, bang, bang, one unit after another. (chuckling)

TC: Haynes didn't run into any problems?

JH: I don't recall any heavy problems there. Again, by the time that really got going, I think I was getting into other fields. Maybe I was in charge of the Distribution Substations by that time and that was a little corner over there, taking care of the distribution.

TC: So you got away from sort of the macro picture of generation.

JH: The big picture, yes.

TC: Well, that would have been, just generally speaking here, around 1968, 1967. Yes, I think that's what it is, 1967. That's when you became Senior Engineer.

JH: Yes, that's right.

TC: Now, again, that's strictly a promotion. Is there any sort of test that you have to take for that?

JH: Oh, yes, every level, every title is a Civil Service test and a list, and if you're high enough to be reached, why, eventually they get you. But if you don't, you take the test again and try again. So it reached me and . . .

TC: Do you have to study for that test or is it stuff you should know?

JH: No, we used to study, I'll tell you! I used to study for it, maybe some people didn't. (chuckling) Oh, yes, I used to . . .

TC: Difficult, in other words?

JH: Oh, at the lower levels particularly. They're the toughest technical exams that professors and so forth can devise for these promotions at Assistant and Associate and Engineer level. Above that they're getting more into management and personnel.

TC: But it's funny that engineers have to go through this. Although engineers in private companies don't have to take tests for their promotions, do they?

JH: Oh, no, this is strictly patterned after the Federal Civil Service System, which goes way back. The City of Los Angeles set up the same basic system and the State of California has the same, you know. Many municipalities have to do this. It's a great system. It has its problems but it sure helps prevent graft and corruption. It doesn't prevent it but it helps. I haven't seen any real problems in that light with the system that the City has run. I always felt that it was the toughest. You know, I took a state exam once to go to work for the state. Jeepers, I was up there on top. (chuckling) In the Department I was seldom on top, you know.

I know the City's Civil Service exams were tougher than federal or state.

TC: So who devises these exams? Are they professors?

JH: Well, certain departments of governmental entities. In this case, the City Civil Service Department does it for all the City departments, and the state has its own and the federal has its own. But they call on the particular technical people in the industries and universities to compile the examinations and make up the problems, and they also call on those people to grade them again. So it's a different world from the corporate world, which involves primarily who you know and not so much what you know. (chuckling)

TC: Right, and I suppose there's pressure. There's peer pressure and there's pressure coming down to keep up to a standard or reach for excellence.

JH: Well, I think it's a good pressure. It keeps you sharp. I know as long as I was going to school and learning something that it seemed to do something up here in the head that I could never define. But I seemed to be sharper and able to accomplish more in examinations of the type that I had to take as long as I was going to school and in these courses; even farther along taking the business management course was very helpful.

TC: In that position, was it Distribution and Customer Transformer Stations?

JH: Yes.

TC: So then what were the responsibilities and duties of that specifically? I guess it's obvious there were new stations to build and . . .

JH: Sure, there are always several of these distribution substations for each one of the large bulk substations that you had the AIEE paper about. The distribution substations are the neighborhood stations that take that high voltage power and convert it, transform it down to the lower voltage for distribution in neighborhoods. Then the large customer stations are just what they say, you know, a Budweiser or some plant here or there that has to have a station. Sometimes their capacity approaches that of a distribution substation in a residential neighborhood. And in all the big high-rise buildings and things like that, they're all specialized types of transformer stations. The Department has certain rules and regulations, so we like to have builders accomplish certain things so that we can put the transformers and the switchgear into their buildings that they build. It's a collaboration of engineers in the Department with the engineers who are doing the building work, architects and engineers who are doing the building work. So, as far as a distribution substation is concerned, that's all Department. Because there we just put the switchgear and the transformers and the outgoing lines out on the poles and underground in the neighborhood. That was my first bailiwick as a Senior Electrical Engineer, and I had a group probably of forty or fifty Engineering Assistants and

Engineering Associates performing all that work for the Department.

TC: So I'm picturing the system on a map and you have the distributing stations all over the place.

JH: Yes.

TC: Did you have to monitor those stations all the time? Or did you say, "Okay, Distributing Station Number 48 is fine, but over here at 167 we have to upgrade it, so we'll focus on that"? I'm just trying to see how you kept all the information in some sort of manageable form.

JH: Once the Design, Engineering, and Construction were finished, we in effect turned that station over to the Operating Engineer.

TC: Okay, so Operating takes it over at that point.

JH: Operating takes care of that. Of course, as you say, the loads are continuously monitored, and when you begin to get to where you know you're going to have to do something, then the decision as to whether you need to go to another substation or whether you can add another position in the existing one, and all kinds of planning goes on there. That planning thing was in a separate group.

In the Station Design end of it, we never had much to do with the planning as to when we needed to add. However, we did get into that while I was in charge of it at one time, and made a rather comprehensive study about whether we needed to change our distribution voltage from 4800 volts to possibly a

higher voltage, so that we wouldn't have to have so many of these neighborhood substations. We were getting into real problems when we needed to site one of these things. It takes larger than a residential lot ordinarily to put one of these things of the size that we were building then. It was kind of a big old barn-like thing. But we could make them look really neat--in fact, looked better than most of the residences.

Bill [William A.] Sells and I had to--it was like trying to site a nuclear plant--get a distribution substation in this neighborhood, and all the people that lived in that part of the world said, "Hey, this is just going to bring a lot of noise and fumes and traffic and so forth." In reality, it was the best neighbor they could possibly get because there was almost never anybody there. (chuckling)

TC: Where was that particular one you're referring to? Or did it happen enough that it was . . .

JH: Oh, numerous, but the toughest was at Laurel Canyon and Mulholland Drive, where you had a fairly affluent neighborhood. We had to have some substations up along that drive, and, man, we spent night after night out there meeting with those residents. It was quite an experience.

TC: Their opposition eventually was overcome. How long would that take?

JH: Oh, it would take years.

TC: Really?

JH: Oh, yes.

TC: So you recognize the need for this and you have to understand that it's going to take several years in order to complete?

JH: Yes, you have to be ahead, but this is nothing like it is for a nuclear plant or even a conventional plant. That's many years and this may take one or two. We try to locate them where we don't have that kind of problem, but you can't always do that because where you have a large residential neighborhood you have to get something in the middle of it in order to efficiently serve it. You can serve it from the edges, but you waste a lot of facilities, and these facilities are extremely costly. Power business is the most capital-intensive business there is.

TC: I lived for a very short time in North Hollywood near Distributing Station . . . I think it was 53 or 57. It's on Cahuenga and Camarillo. It's a beautiful building. It's an older one. I think it was probably built in the thirties.

JH: Yes, there are some old ones.

TC: And it's a very attractive building, very nicely landscaped, and again there's never anybody around there.

JH: Yes, there's no problem for most places. There's no real noise, it's all masked.

TC: Well, would the [City] Council representative from those areas come charging in and say . . .

JH: Oh, yes, residents would try to enlist the help of their Council person to fight us. That never seemed to have been done too effectively. They usually stayed out of it. I don't

recall ever having attended a meeting where a Council member was present. I don't know, you'd think they might, if they were really looking for votes, get out there and help the neighborhood fight us. But maybe they were too smart or didn't have time for that kind of thing, I don't know.

TC: Yes, it's hard to say. Or they perhaps understood, or some of them may have understood the necessity of this thing, you know.

JH: Yes, how could they effectively say that this is not necessary, you have to do something else or something. They're just putting the burden on other citizens to pay the bill, and I think at least in those days the Council was well enough educated to realize that anything that's spent by Dewap is a bill for everybody, it shows up on everyone's bill.

TC: Right. Is that a set-up where you have a distributing station sort of as a central neighborhood kind of plant, that then everything radiates out from there?

JH: Yes.

TC: Is that a typical kind of set-up for a utility in most municipalities?

JH: Yes, basically.

TC: Because you said you could do it in a different way.

JH: Well, it isn't strictly just radiating from one station. You have interconnections to other stations as well. You usually try to connect to two other stations in addition. A lot of the feeders that come from one station could also be fed from

the other end from another station. So there is improved reliability of supply.

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March 12, 1992

TC: So you were saying reliability is strong . . .

JH: Yes, you try to interconnect as much as possible for reliability. You do this to the extent you feel it's economically feasible. This is, of course, something you have to just do the best you can with.

TC: I seem to remember, and I can go back and check this, that when I talked to Mr. Sells, we discussed a little bit about this coming up with a higher voltage for distribution.

JH: Yes.

TC: Now did that take place?

JH: No, not basically. Our basic voltage is still 4800 volts for distribution. Now, unless it's happened in the last ten years, and that's still possible. You know, I've been gone ten years. (chuckling) We did basically redesign the distribution substations so that they don't look so much like one big monolithic structure. They look more like a condominium or something like that, but they still do the same thing, the same basic transformation.

TC: And you don't need a large staff to man those places?

JH: Oh, they're unmanned.

TC: They're unmanned for the most part?

JH: They're totally remotely controlled from the bulk substations and the dispatcher.

TC: Oh, but obviously they're maintained and there's some kind of
. . .

JH: Oh, sure, you have the maintenance man come out and cut the grass and spray over the graffiti. And, of course, you check the oil and see if there's any deterioration or incipient problems in the transformers. But the switch gear is automatically operated from a distance through a system of remote control that was just really becoming prevalent when I arrived, and it wasn't long until we didn't build any manned distribution substations, but there were plenty when I arrived on the scene.

TC: Well, that meant elimination of jobs.

JH: Oh, yes.

TC: Did that raise some flak with the union?

JH: I think it was over such a long period of time that there was really no problem. You know, it takes many years to do this so all those people could just be absorbed into retirements from other substations and so forth. But it does mean that you have a more efficient system, and over the long pull you have fewer and fewer operating employees in total.

TC: What would be the principle . . . Just to get back to that higher voltage distribution, I'm curious about that. You looked into that, you're saying.

JH: Oh, extremely deeply, yes. We had one of the brightest young engineers in the business [who] took this on and really

studied it for . . . oh, it must have been a year or more. He really went into that.

TC: Who was that?

JH: Oh, gosh . . .

TC: I shouldn't have asked.

JH: He's long since dead. He developed a brain tumor. I don't know whether that powerful work he was doing had anything to do with it or not, but, man, he was a bright one, and he wasn't a high-level because he was still off on that super technical phase of his career. It would have been nice to have kept him but it wasn't to be. But with my encouragement and help, we kept this thing going for as long as we thought it was necessary to make absolutely certain because we were getting more and more problems with these little substations all over the city, hundreds of them, and every time you'd go to build one you had a big fight. So, if we could just use higher voltage, we could have fewer of them. They'd be bigger, a little bit, not much, and we'd have longer lines, and that's what it turns out to be. You don't really gain all that much, if anything, by making this change to a higher voltage at this stage of the game with a developed area. If you were starting afresh, you probably would not start with this low voltage, but that's hindsight, you know.

TC: Sure, it's historical development you're dealing with. Maybe just to take us up to your switch over to PO&M [Power

Operating & Maintenance Division], you got another promotion around 1970, and this was . . .

JH: Yes, that was no title change, no exam. R. W. Eick was the Head of Station Electrical Design, and as time wore on, it became my time to be the Assistant to the Section Head.

TC: Okay.

JH: And that was just a little pay raise, that's all, for substituting for the Section Head in his absence.

TC: Oh, okay, so it was just sort a natural flow of events having to do with . . .

JH: Yes, right, but then the next title promotion was the biggie.

TC: Okay, great.

JH: Yes, that was the really major change. From totally technical and a little bit of managerial, the design of the system and getting it built all the way from generation through distribution to customer, and then, to make a move into the Power Operating & Maintenance Division. (chuckling)

TC: Yes, how did it happen? Were you just called one day and someone said, "Hey . . ."

JH: No, you take an exam for Principal Power Engineer, it's called now. You're on the list and you hope somebody needs a Principal, and sure enough, Operating did. The Operating Division didn't, and I think still doesn't have very many high-level engineers. Mostly they're Operating people who come up through trades, but in charge they have few engineers. So they can't recruit many from their own ranks, they take

people from the design and construction end of the business, primarily. So that's where I was and I was available and high enough to be reached. They needed somebody to take charge of the operation of the Bulk Power and Distribution Substation and the Dispatchers' Headquarters--not the power plants. So that's where I went, and with great trepidation. (laughter)

TC: Yes, I was going to ask that. Was there a little bit of trepidation? Like, I've been a design man for so long and now this is different.

JH: Oh, yes, and now I've got to go see if it'll operate, you know, and make sure people are not too unhappy with me and it. But the great facilitator there was Lyall Stinson, whom you've talked to already.

TC: Well, I'm just starting to talk to him.

JH: Oh, I see.

TC: Yes, I had my first interview with him.

JH: Well, Lyall was a real smoothie and a great guy and we all loved him. He came from the same place we all did, from the design end of the business. He was just preceding us and he'd been in charge of the Operating Division for some time when I arrived. So he took me and put me in charge of this operation, and I loved it! I couldn't believe it. I just couldn't believe it. You know, I always looked kind of disparagingly on the Operating end of the system. You know, that's kind of downgrading for me, but it wasn't. It was exciting and I had more contact it seemed with the other

utilities through the dispatching end of the business, because dispatchers were making million-dollar decisions every day on how power flows and who gets what. Man, that was a revelation to me. Of course, I had several thousand people under me at the same time. But they report to their own supervision, people who have come up through the ranks in the Operating end of the business. Then reporting directly to me were a couple of the top people who had come up through that. By the time they'd made it to that grade, why, they were pretty knowledgeable and very nice people.

TC: Well, what would be the day-to-day activity? As you say, you were making these decisions as to where power was going to come from that day.

JH: That's pretty well done by the dispatcher group themselves. I was amazed that those big decisions are left there and done so well. I only got reports, just a continuous stream of reports of all that's going on. And in turn we had to condense and formalize those reports, and they're made into permanent records of what the system is operating like, and even include in it what the power plants are doing. Because my particular job included that daily report of the whole system, and that goes to the Operating Division Head and above. Then, of course, we had the labor union to deal with and the personnel involved and so forth, so even this was again something fairly new to me. But fortunately that little bit of experience I had way back with EAA stood me in good

stead. I knew a little bit of where they were coming from and what they were trying to do.

TC: This was with the . . .

JH: Operating end of the business.

TC: This was with IBEW you're talking about?

JH: Yes, of course I had no part of IBEW. They were fighting me mostly.

TC: They were the craftsmen, right.

JH: So I had to attend some of their meetings and talk to them about their pay.

TC: Well, does the IBEW have a regular contract negotiating process with the Department?

JH: Oh, yes.

TC: Is it like, "Well, we've had this for four years." Maybe a phone call or a handshake? It's a step-by-step . . .

JH: (chuckling) Oh, boy, it's quite a process. And in what used to be called the Salary Standards Group are the professional negotiators in this field, and they do the actual negotiating. But all the under-the-table work that goes on before they get to that point is done with me. And then I was in constant contact, of course, with the Salary Standards' professional negotiators, trying to make sure that things don't get to a point to where we have a strike and disruptions and things like that.

TC: Well, you got to a point where you had the strike there in I think about 1974.

JH: Well, I was in a different spot at that time.

TC: You were in a different spot then? Well, let's hold off on that then.

JH: All right.

TC: Let's hold off on that and maybe we can talk about that next time.

JH: Well, wait just a minute now.

TC: I think you had gone back over to Construction.

JH: Yes, I went back to Construction. I didn't stay in Operating, what, a year or two?

TC: It was, I think, maybe a little over a year.

JH: Yes, and I was amazed that I loved it. (chuckling) And I didn't want to leave. And along comes [James L.] Mulloy and [K. O.] Cartwright. Mulloy was then, of course, Head of the Power System. I couldn't believe it when they said, "Hey, we want you to come back and take over the Construction Section." Which, again, to me was another step way down, because Construction is all trades--I mean, the construction trades, not even the power operating trades.

TC: Yes, right. Sure, the operating engineers and carpenters.

JH: So, anyway, I resisted that pretty strongly, but finally I bowed to the better judgment of my superiors and said, "All right, if that's what you think ought to be done, I'll do it." So I went. It was just sideways, no pay change or anything. Again, for my own good it was a great move; it gave me a side of the business that I had only dreamed of. I didn't think

I'd ever be in it and didn't want to be. But this was really something.

The situation with the Department is that it had always had a large so-called Construction Section, and that's primarily construction that is not done by Power Distribution people. There were some separate groups of people and some low-level engineering people that did all the pole work and the underground work for the lines and feeders and distribution. Not the transmission and high voltage, but the underground and overhead distribution stuff, which is the great bulk all over the city, supplying every house, every structure of any kind. That's not done by the Construction Section. The Construction Section was supposed to be tailored according to the general construction industry on the outside of the Department. They did specialized stuff, like in a generating plant they would do the wiring and the installation of the equipment primarily, where it was not so big that it needed to be a separate contract. And for substations, they did all of the construction work.

TC: Oh, okay, so millwrights . . .

JH: Oh, yes, the highest construction trades, all the way from the bottom to the top. Every construction trade that exists, we had some, and they had their own line of supervision, their own construction superintendents, and two or three or so of those guys reported directly to me, and I had a very small office force. Again, it was a matter of dealing with people

and labor of a type that I'd never encountered at DWP. You know, I'd grown up in the midst of engineers, all these technical people, a delight and a joy to live with, and now here I am in the construction business.

TC: Yes, a different kind of person.

JH: Oh, what a different environment, even different from the Operating people. I loved it! (laughter)

TC: You liked that, too? Well, were they hard men to keep in line?

JH: You had to know how to interact with them. You worked with them only through their supervision. Their supervisors were hard men. They had come up through the ranks to rise to the top of their ladder, and they were trades superintendents and they were the hard men who handled the hard part of the thing. All I had to do was just to whisper, that was all it took from me. Because the thing was set up, fortunately, when I got there. I didn't have anything to do with it, but it was working like a charm. Oh, we'd have an occasional problem or a flap here and there and I'd have to help settle it, but primarily there were no real problems until the strike came along.

TC: Well, since we're about there, let's try to finish this off with talking about the strike.

JH: Yes, that was traumatic. Not only did the Operating people strike, and by that time I was not there, thank goodness, but I was in just as hot a spot because I was in charge of the

Construction people. They were called on a lot of times to take over and do something when nobody else would do it, because they had all the equipment and all the talent to do it. But these guys went out on strike; and they went out, they didn't come to work, period. They stayed home. Now, the Operating people, enough of them stayed on, particularly in the dispatcher's headquarters to keep power flowing. But the IBEW was going to take everybody out, you know. At this time, Carl Osborn had replaced Stinson at the Head of the Operating end of the business. And poor old Carl was on the hot seat at that time. That's the guy you need to go to Oak Creek Canyon to see. He prevailed finally on the IBEW head Ray Taylor.

TC: Yes.

JH: Carl will tell you. (chuckling) I believe he told the union there will no longer be an IBEW in this Department if you do what you're contemplating doing. Because the people won't have any power, and this Department management is trying to keep the power flowing to the people. And if IBEW stops it, you know who's going to get it. (chuckling) And the guy had sense enough to not do that. So we were saved, but it didn't prevent the hard feelings that a lot of engineers didn't come to work. You know, the whole kit and caboodle. Even EAA was out, and I had some of my good buddies walking the picket lines and trying to keep me from getting in and out of the building and so forth.

Talk about trauma. At that time, I was kind of required to drive a Department car because I was on call twenty-four hours a day for anything that happened. And to try to get that car into the parking lot of the GOB [General Office Building] and out again past picket lines was one of the most traumatic experiences I ever went through. Because here were these massive picket lines and they wouldn't let you through. And yet we theoretically had security people there from some outside organization that was supposed to enforce the "rules," if there are any such things in a situation like this, where you don't stop traffic, you let people go through. But they didn't just stay en masse and just stay on the street. I sat there with those guys surrounding my car and lying down under it and beating on it and I wondered, well, when are they going to jerk the door open and hit me over the head . . .

TC: And shouting at you and cursing you.

JH: Oh, yes, of course. Yes, what am I in for here? So I just kept the doors locked and sat there until they cooled off enough to open up a little place. It seemed like forever at the time, you know, and finally I could get in. Then I'd see that these guys are blocking everything. Their people that normally drive Department maintenance equipment brought in big trucks and parked them so as to block traffic in the parking garage area and elsewhere. I arrived one morning just in time to see one of these guys pull his big vehicle, his big lineman's truck in and park it across one of the entrances and

get out and start to leave. I collared him, little whipper-snapper that I am. (chuckling) I didn't think about what I would do, didn't even think about it. I yelled, "Where's the key to that truck?" So he pulled it out and I said, "Give it to me." He could have whopped me, you know. But he handed me the key and he said, "Oh, man, let's get it on!" But he handed it over. (chuckling) Not only that, but there were confrontations in my own office. But having established by that time a pretty fair relationship with the Construction superintendents, I was able to survive. I get butterflies just talking about this. (chuckling) It makes me a little breathless. It's almost like going back to the war, it was just as traumatic.

TC: But what was the beef to begin with?

JH: Just pay, I think.

TC: It was pay, and it built up to that?

JH: Sure, it built up.

TC: Didn't they parade around City Hall or something like that? Didn't they go downtown?

JH: Oh, sure they did. Yes, with their trucks.

TC: With the trucks, yes.

JH: Yes, with all the Department's maintenance [units], hundreds and hundreds of them. They just paraded through the middle of town around City Hall as you were saying.

TC: Was it a legitimate beef, though?

JH: Frankly, I don't remember. I never felt that they were that far out of line.

TC: The salaries, the wages?

JH: Yes. I felt at times that they were probably the other way out of line.

TC: Higher than they deserved to be?

JH: Yes, but I never was personally into the business of making a survey to see how we compared to PG&E or Edison or something like that. I was just there trying to cool the fire and keep things going.

So, anyway, by the time we got to where the rubber meets the road, I had established a good relationship with the Construction superintendents. Their reporting location was Palmetto Street headquarters at that time, so I was able to prevail on them to report. You can't make your journeymen report, they're full-fledged members of IBEW and they've been ordered to strike and not come to work. These Construction superintendents were also full-fledged members of IBEW and they had come up through the ranks and were true believers. But they were beginning to have some second thoughts about where they stood in this situation: Are we part of management or are we part of the working force? Divided loyalties here, so I was able to prevail on them. You guys are managers and you better report to your reporting location. There's not much you can do, but I want you there. And so they were, every day, all day long. They were there and they were there

for communication if we had to talk about something. But there really wasn't a whole lot to do because the workmen wouldn't report to work and they wouldn't let anybody else in. Fortunately, the strike didn't last long enough to cause any deep trouble.

TC: Did we lose power anywhere due to that strike?

JH: I don't think we did. I don't think we had any major power interruptions anywhere, because old Ray was smart enough to know that that was where he'd lose the battle. If you start incurring the wrath of the people who don't get power . . .

TC: Yes, there's no way you can explain that this is for your own good.

JH: (chuckling) Yes, so you can raise all the ruckus around Dewap you want to, but you'd better not interrupt the power in the system or you're in deep trouble. So that's the strike. We finally got that thing settled; it was a traumatic situation. That was my tenure as Head of the Construction Section. When I left, they even had somebody make me a nice little memento, which I still have somewhere around here. (chuckling) I couldn't believe it!

TC: Well, the supervisors stayed loyal out of loyalty, I guess?

JH: Sure, and they had plenty of arguments in their union, you know. The union said, "You can't do this. You're not supposed to do this. You're supposed to be out on strike with everybody else." "No, we're management, we'd better be there. There's not much we can do, anyway," so they were there.

TC: That says something about your relationship to those men.

JH: I thought so, that this had something to do with it. It may have had something to do with my progress in the organization, too, I don't know. (chuckling) But I was rather proud of it, that I had established a good working relationship there in a field that I had no previous contact with whatsoever. But I have always had an extremely strong penchant--I guess is the word to use--for construction. I do it myself. I built this house, I built my previous house.

TC: Oh, did you?

JH: So I like to build things. I built this organ.

TC: Oh, fabulous.

JH: And I built two or three other houses, so I had a lot of experience with construction. I came from a very rural state, Arkansas, and every prominent citizen was . . . if he was really prominent, he was a hunter, and if he was a good one he killed a deer now and then. But when I got out to California and I didn't realize, of course, this is a dying hobby, particularly in places like Los Angeles, so I carried on that tradition.

Through my technical orientation I was into firearms and building them and testing them. I built a machine to measure the velocity of high-velocity rifle bullets, just for fun, before they ever had them on the market for \$150. The army was the only one that had anything like that when I built mine. So, anyway, I hunted. I hunted deer in various parts

of the West, and these are kinds of things that tradespeople do. And I fish, and I still love to fish. So I had a sort of a rapport with these folks.

TC: Rapport, exactly.

JH: I seemed to know enough to realize that this was what I needed to establish relationships with these people on, and I did. I ate with them and I consorted with them, so we built a pretty good situation here.

TC: And it helped.

JH: And it paid off.

TAPE NUMBER: 4, Side A

March 26, 1992

TC: I wanted to first do some follow-up on the discussion we had last time of the nuclear program, and this is more of a footnote, I think, to the major efforts. As San Joaquin was in limbo there, there were two more projects that were at least set down on paper, and I think this was in compliance with a state instruction to know . . .

JH: Alternatives, yes.

TC: Yes, alternative sites. One was called the Eastern Desert Nuclear Project [EDNP] and the other was the Central Valley Nuclear Project [CVNP]. Eastern Desert was in San Bernardino County and the Central Valley idea was in Corcoran, California, which is up in Kings County, I think. Do you recall these particular projects?

JH: Just barely that there was such a thing.

TC: I get the feeling that they were projected mainly out of compliance. Was that what that was . . .

JH: Well, of course. They were certainly not the preferred alternatives.

TC: So, in that case, with those alternatives was it mainly just to get something on paper and have something in the works so that you could present that to the State and say, "These are our plans"?

JH: I'd have to pass on that because I was not in that part of the planning of the business. I just know that they were in the works.

TC: They were in the works, okay. All right, well, the next point I wanted to get at, and this is flowing a few years back in time, not too far out of sync though. I happened upon another of your papers that you presented.

JH: Oh, my! The earthquake. (chuckling)

TC: The earthquake paper.

JH: The 1971 earthquake.

TC: The 1971 Sylmar earthquake. I don't think we talked about that.

JH: No, we didn't. I forgot about it. I can't imagine ever forgetting about it but I did.

TC: This paper, let me cite it, is called "Earthquake Considerations in Substation Design." It's a panel presentation for IEEE's summer power meeting in July of 1971. It was sponsored by the Substations Committee of IEEE, I guess. I think that's the case.

JH: Yes, of which I was a member.

TC: You were a member then. Well, we can talk about the earthquake, I guess. It happened in February of 1971, and I know the Sylmar switching station there got pretty well trashed.

JH: Yes. Oh, boy! (chuckling)

TC: What did happen?

JH: Well, Sylmar was constructed under our usual seismic standards, which were very inadequate. Of course, we hadn't known that because we hadn't had a sizeable quake in so long in our territory. So Sylmar was constructed in the usual way that you would construct a station anywhere in the United States, except maybe a little more seismically oriented, but not much. And in addition, the design for some of that equipment had to be such that it was a super high voltage to begin with, with long strings of insulation, and a lot of that was made rigid--not realizing this was the worst thing you can do quake-wise--long strings of rigid porcelain, very brittle stuff. When that quake hit, with the epicenter so very close, the station was just, as you say, trashed is about the best word you can think of.

TC: Rocked. Seriously rocked. (chuckling)

JH: There was porcelain all over the place, and many, many millions of dollars worth of damage. The good news is that although the construction was virtually complete, the testing had not really gotten very far along, so the acceptance of the station from the prime, as we call them, contractors, GE/ASEA, I believe it was, acceptance had not occurred--official acceptance of that. And since they were the "prime contractor" for that station, they had to insure against these sort of eventualities. So, as I say, the good news was that the insurance company paid for that damage. I can't recall what it was, but it was astronomical. And it was

heartbreaking. You know, we were building the first thing in this country of that nature and it was really a pioneering effort, and to see it trashed, it was a heartbreaking situation.

TC: That, of course, the Sylmar station, was the terminus of the Pacific Intertie.

JH: Yes, high-voltage direct current, and quite a major departure from anything that had been done before. So it befell my lot at that time to be in charge of rebuilding that station, because of the position I held at that time. And dealing with this major contractor, this prime contractor and so forth, it was an interesting exercise to go through.

TC: So, in light of that, this paper is kind of interesting.

JH: Yes, it was very interesting.

TC: Naturally, your industry colleagues wanted to know, I suppose, what happened.

JH: Oh, absolutely. The whole country, and all over the world, needed to know what happens in a major substation when something of this magnitude occurs. We had some, of course, very interested highly technical people in the manufacturing industry, electrical equipment manufacturing industry. They really needed to know because they sell that sort of equipment all over the world, and lots of places get this kind of a hit occasionally. So they got busy . . . It wasn't this Department's place to do fundamental research in this, but General Electric, I recall particularly, got very deeply into

it and had some extremely brilliant people work on it for quite a while. What I had set forth here in the IEEE presentation is a combination of the technical research that they concluded, plus our own experience in the substation. This was really the solution to how you build a substation to make sure that this sort of thing does not happen again, and, of course, it was of major interest to the industry. And it was extremely interesting to all of us to see that instead of building things as strong and rigid and sturdy as you can build them, you do the opposite: you build them loosey-goosey and swing and sway and let her go. Just let it go.

TC: So they can go with the roll.

JH: The more you can let it move without breaking anything, the better off you'll be.

TC: Fascinating.

JH: And the natural vibration frequencies are extremely important, too. This research concluded that the major frequencies involved in the earthquake waves are fairly slow, so you build your equipment so that it does not synchronize with those and vibrate in a sympathetic vibration with those frequencies. So you avoid those particular frequencies. It was extremely interesting.

TC: Very interesting, yes. Now, do you remember the day of the earthquake itself? Were you living out here in Castaic then?

JH: No, I was almost as close to the epicenter as Sylmar. I just lived across the reservoir in Granada Hills, up on a hill

there, on Knollwood Drive, right across from the station. I was trying to get my tie knotted in front of the mirror, standing, and suddenly I couldn't stand up. No way could I stand up. I could not believe that a house could withstand such a shake as that, even though I'd designed and built it, because it was too severe for me to stand. I had to crawl to get anywhere.

TC: Did you have an inkling, after you checked life and limb? You must have thought, "My Lord, we're so close to the station."

JH: Well, we knew, of course. All the power went off and we knew we had severe damage somewhere, so it didn't take many calls to find out that Sylmar was trashed.

TC: In speaking to some of the other men about this, it's a very memorable moment when this happened.

JH: Oh, boy!

TC: People remember exactly what they were doing and where they were.

JH: Somebody said that old hard-nosed Floyd Goss--bless his soul, he's long gone--one of the hardest characters we knew, actually cried when he went out and looked at that station.

TC: Did he really?

JH: Yes. He'd been a disbeliever in the beginning that such a thing could be accomplished, you know, a direct current conversion of that amount of power into a major system from almost a thousand miles Northwest, and he'd been converted over. "Hey, yeah, I think we can do it. By golly we're going

to do it! We did it! It's done!" and then whammo--down it goes. (chuckling)

TC: A little disheartening there.

JH: Oh, boy, and he was, I guess, the Chief Electrical Engineer.

TC: Yes. I guess he became converted in the process of the actual step-by-step building of the thing.

JH: Yes. Of course, he had to approve its initial beginnings, so he had some belief that it would work, and had worked on smaller scales in other places.

TC: Yes, but this was, as you say, unique.

JH: Unique in pioneering the longest and highest capacity and voltage and so forth.

TC: In the paper you say that coordination among the West Coast utilities was initiated by the Department and with this Substation Subcommittee of IEEE. What was that? Mainly a sharing of information kind of coordination?

JH: Yes, through IEEE, primarily through IEEE.

TC: So that PG&E and Sacramento would all be concerned with this?

JH: Oh, yes, sure. And, of course, with the publication of this paper they had it.

TC: You mentioned the year before a Chilean man had talked about this very thing, and if I could find the citation to that . . . Maybe it's in the discussion, and I suppose somebody brought it up.

JH: Oh, someone brought it up during discussion.

TC: Okay, that's what it is. That the year before the same summer power meeting in Los Angeles, somebody named Pedro Beutler from Chile presented a paper on seismic considerations, and it was a very sparsely-attended meeting. The point was raised that if he had given it in 1971 it would have been a very well-attended meeting.

JH: This one was extremely well-attended, this particular meeting.

TC: Well, that's very interesting. I have a lot of miscellaneous subjects and topics to cover here, and I think we're moving along on a more or less chronological flow. Last time, and I guess this would fit in here, you suggested that we speak some on the recruitment of engineers. I know as you were coming up in Department management, this becomes more of a concern. It's funny, men in your generation tended to come to the Department for different reasons. Bill Sells was in the army, I guess, down in San Diego during the war. And you came out after the war. But somebody like Dennis [B.] Whitney, who I've recently spoken to, was recruited by Jim Mulloy in about 1959, 1960 or so. He spoke about that, not being all that aware . . . Being up in Oregon, he was aware that there was this L. A. Department of Water and Power, but he said by meeting Jim Mulloy, that's the thing that really did it for him. He said, "I want to work for this guy." Was that a general program of sending out the top engineers to speak to students?

JH: Oh, I don't know if you would say top engineers, but at the "Electrical Engineer" level, which we were kind of considered as the first level of management . . . It's the first really supervisory level in the Engineering series, and we were fairly young. We could still relate to the college gang and they could still relate to us, and yet by that time we had enough years in the Department to where the powers that be in the Department could have evaluated us to see if we were the proper character to send out on these sorts of missions, which were pretty important. Because, as you know, the Department has always been pretty well run by the Engineering series, we figured the people that come in through the engineering recruitment program are going to be the ones that become the Chiefs later on. So we knew we had to do the right kind of a job. This was part of the effort and it went on for many years, a regular program. The faces, of course, changed as recruiters moved up to higher levels, but it was an extremely interesting and rewarding experience. A learning experience, too, for both the recruiters as well as the recruited, I hope.

One of the things that was of most interest to me, and I think most valuable in my later career, was the broader perspective that I got from having to understand the broader picture to tell these folks that were coming out of school. There are other parts to this thing besides the detail of engineering of substations and power plants and so forth. There are other things that are important--not many, but there

are some. (laughter) Like money, and where does it come from and what does it cost, and capital, and a few other things like that. But in addition, there are also personality factors involved to a great degree. Because we had only a few minutes' time to evaluate a candidate to see what sort of a score we would give; in other words, would we want to make an offer to this person or not? So recruiters had repeated orientation, I guess you'd call it, or educational sessions from people from UCLA and private consultants, that were able to teach us what to do and how to do it. I recall one that I attended that had the most effect had to do with peeling an onion. The instructor equated this interview process that we went through with a candidate with peeling an onion. You meet a person and you may see the outer layer, but then you peel that off and there's another layer. Then you peel that one off, there's another one, another one, and you keep on going until you get as far as you possibly can. You really know what's inside of this character, if you can, before you offer him a job in the Department.

TC: Very interesting.

JH: It was very interesting. We got to learn a lot about psychology and human relations. It was important and so informative. It hit home so hard because it confirmed so much of my life philosophy, which had been forming, of course, since I was born. (chuckling)

TC: Sure, through all your experiences.

JH: I attended early on a college which was oriented toward religion, and that was always a good portion of my life, and these things dovetailed perfectly. You know, human relationships, that's what basically religion is all about: human relationships.

TC: Sure, exactly.

JH: And they dovetailed and just reinforced or reaffirmed what I had come to know, and it was very rewarding in that respect, too.

TC: I suppose when you're talking about all this equipment, this technology, this mathematical kind of approach to power system operations, planning, et cetera, you know, you can move away from that human relations part. I suppose there could be a tendency to just see it as cold, to objectify it.

JH: Yes, that's right. You become so internal, so introverted, in effect, and electrical engineers have a bad tendency to do that, become introverted and steeped and buried in their numbers and technology. We forget that there are greater, bigger things than this, and forget how really big God has to be in order to have accomplished all of this.

TC: Yes, that's true. So did you go to various colleges around the country?

JH: Oh, yes, all over the country. Those varied from time to time, which schools we recruited from, but we'd go all the way . . . not clear to New York City, but Chicago, I believe, at times was about as far as we usually penetrated.

TC: But how many per year would go out?

JH: Oh, you mean the recruiters?

TC: Well, yes, how many recruiters would there be?

JH: Oh, we probably had a dozen or so at the most in any one year, because none of us could be gone for a long period of time. Each one of us might have recruited four, six, eight schools, and it was a nonstop situation to recruit. Interview all day, grab a plane, hopefully get to the next place at midnight, get up, interview all day. It was really a marathon.

TC: Plus, you have to be on, too.

JH: Oh, yes, you had to charm. (chuckling) Try to be charming.

TC: You had to be at your best in presenting the Department to these possible candidates.

JH: Yes. It was a killing schedule but none of us really complained about it because I think we were all getting a great deal of satisfaction from it.

TC: Was there any--what's the word--reluctance on the parts of these potential recruits to join up with a municipally-owned utility?

JH: You know, if any of them ever had any particular concept of the differences between municipal and privately-owned utilities, I don't recall any of them ever saying it to me or mentioning it. Most of them were strictly still in their numbers, you know, and just looking for a job.

TC: Were these recruitment expeditions successful?

JH: Oh, yes, highly successful.

TC: Did you tend to generally get some of them to come over?

JH: Oh, my goodness, yes. In fact, there were times when . . . Well, almost all the time we had to beat them off. We just couldn't interview all the people that wanted to be interviewed, we just didn't have that many interviewers or the time. So we'd have the placement offices at the schools screen them for us and we'd only the top graduates. We'd only interview the top graduates.

TC: I guess if we're talking about the seventies, 1970s I guess this would be, I guess there would have been no real shortage of engineers at that time. I know that the profession has had its ups and downs, as far as . . .

JH: Yes, there were ups and downs in that respect. There were times when we were not overwhelmed, yes, because there were so many jobs out there that we'd have to take a few of the . . . maybe under B average at times, but not much.

TC: Interesting. Well, I wanted to touch on a couple of projects that I think you may or may not have been associated with--I think you were. For instance, Navajo [Generating Plant]. You had some association with that, I believe. I know Navajo was largely committee work. I know Burton Currie, for instance, was with the coordinating committee.

JH: Yes, Navajo Generating Plant, the Department was not the prime contractor for that. Where we got most of our taste of it was the transmission from there to L. A. As you say, the plant was mostly committee work because we didn't do the prime

contracting, but the transmission system from this direction was our job, and that was an extremely interesting project, too. Larry [Lawrence] Schneider was the big wheel in that, and I was in the middle of it, too, and Armando Gallindo was the technical expert with people working for him. This was something that was a little new and exciting, in that we needed to go over there and get this transmission line built. To get the land for the line to go through a pristine territory was beginning to be a problem. But more of a problem were property owners, cattle ranchers. Then, when we finally had the permission to build on the land, we had to deal directly with those landowners as the transmission line constructor came through with his crew across hundreds and thousands of acres of cattle land. We had some interesting experiences with cattlemen and transmission line builders' conflicts, of which there were many. (chuckling)

TC: How did you resolve those? Just by meeting with them and explaining?

JH: Well, the usual ways. Again, here human relations . . . I ended up going over with one of our attorneys at one time and having several sessions with a particular cattleman. I could have written a paper on that, except that it would have been a little risqué. Because the problem was basically that the transmission people could not keep the gates closed and the wrong cattle got with the wrong cattle. This particular cattleman was trying to . . . Let's see if I can remember the

story. (chuckling) He was trying to keep his large breed of cattle, the bulls, from mating with the heifers, which is the cow that's about to have its first calf, because the heifer was not big enough to handle the calving of a full-size, large breed calf. And these transmission line people were just harem-scarum. They'd leave all the gates open half a dozen times a day and drive these poor cattlemen out of their gourd. They'd go out there, and too late a lot of times, you know, the mating had occurred.

TC: That's serious.

JH: That's a serious problem for a cattleman. Of course, we tended to take it lightly to begin with, but we soon found out it was not a light matter. So, as I say, I ended up with an attorney over there talking with them.

TC: Would that have been Ralph [B.] Wesson?

JH: Red Lloyd. He probably worked for Wesson. I worked with Wesson a lot later on. But, anyway, Red's gone, he was older than I. But we resolved it. The cattleman along the way made a statement about these transmission people making a hundred bucks a day. You know, that was unheard of anywhere in that part of the world for doing anything. So we resolved it by saying, "Well, how many days do you think you've actually spent rounding up and trying to correct the problems these fellows caused you, and how many do you think before we get through your area? How many will it take? You have to get people out there to separate these cattle and get them back in

their proper places." So he gave us an idea, and that's all we really needed, because we just gave him \$100 a day for however many days that was. And, of course, that was nothing to the project. But to him, he was overwhelmed, and he ended up being a great buddy. (laughter)

TC: Again, human relations. That's what it takes.

JH: But it was a sticky wicket for awhile. He could have shut us down.

TC: Sure, and who could foresee that? I mean, these aren't the kinds of problems you can sit down and anticipate.

JH: Exactly.

TC: They come up in all kinds of bizarre forms.

JH: Larry Schneider met up with him before I did. Larry drove his car up behind the rancher's pickup and horse trailer one day--he didn't know who it was--and the rancher got out and he was madder than hell because one of these events had just occurred. (chuckling) And he pointed out to Larry, "Well, you see those cattle over there? They're all mixed up now and they're going to get mated, the wrong bulls and the heifers." Larry Schneider said, "Well, gee, why don't you just get some cowboys out there and round them up and separate them?" And the old rancher said, "There's my horse, take off. Go ahead." (laughter)

TC: You do it. What a picture!

JH: This got to be a big laugh when I gave what amounted to a paper before the Department engineers on this particular

problem, this topic, one day in the GOB auditorium, and it was a full auditorium because a lot of people heard what it was about, and it really brought down the house.

TC: Oh, I can imagine.

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JH: Can I amplify just one certain point on what I was just talking about?

TC: Absolutely.

JH: The settlement with the cattle people. This particular rancher, and of course there were other similar cases . . . What's involved here is you're spending public money, and you can't be unreasonable about it. You have to do something reasonable, you can't just pay the guy off with a bribe. So all we really needed was some idea of what this man's costs were that we were causing him to incur.

TC: I see, yes.

JH: So that he could have a reasonable, a legally reasonable sum that we could pay him and take care of his problems.

TC: Yes, there was some logic to it, not simply a payoff.

JH: Yes, indeed, that could be upheld, you know, if some citizen wanted to say, "Hey, my power bill is too high because you gave this guy too much money."

TC: Right, sure. Well, how about Palo Verde, the nuclear plant?

JH: Palo Verde, again, was a nuclear plant. The prime contractor was Arizona Public Service and we only were involved a little bit in . . . Let's see, did we have any special or different transmission, additional . . . I don't remember. I don't think so. I think primarily, again, we were just buying a

portion of the plant; so, again, this was more committee people and I was not quite high enough to be on those committees at the time. We were just extremely interested in watching the technical design because that was kind of the phase I was in at the time, and delighted to see it going as well as it did. It was one of the best plants ever done.

TC: The Palo Verde Plant? It's a nuclear plant, of course.

JH: Yes, and one of the few that really came in reasonably well in time and budget and so forth.

TC: Had there been opposition to that in Arizona?

JH: Oh, yes, but not near what there had been in the eastern part of the country. The problems were the technical problems of getting this thing done, and they had an extremely competent manager in charge. We conferred with him a few times because we were having similar thoughts of doing the same thing still. Anyway, that was not a big factor in my career.

TC: Well, how about Intermountain Power Project?

JH: Well, that was quite a bit later.

TC: That was more recently, yes.

JH: That was the project that I left when I left the Department. Do you want to jump that far ahead?

TC: Well, no. What would have been in between?

JH: Well, just a lot of personnel work. As Assistant Engineer of Design and Construction, that was primarily oriented toward personnel work. Those were the duties of the Assistant to the Engineer of Design and Construction. So that was again a lot

of human relations and, again, thank the Lord for all I had learned one way or another along the way in those areas.

TC: But it would be handling . . .

JH: Problems that the first, second, third, and fourth level supervision can't handle eventually get to be grievances and they end up there. Of course, they can even go higher, but everything from D&C that couldn't be settled at a lower level filtered up. Of course, it isn't just problem areas. Personnel has to do with a lot of other areas, too, everything that has to do with personnel in a division of that size, a few thousand people. So that was, again, an interesting job, but I was glad to move up to the Engineer of Design and Construction and take Larry Schneider's place when he retired. Then, from there into the Assistant Chief which is where you're getting to.

TC: Well, what were the duties of the Engineer of Design and Construction?

JH: Well, Design and Construction has always in my mind been the primary reason for the uniqueness of the Power System of the Department of Water and Power. The Design and Construction Division had a Construction Section and several Design Sections, wherein we did great portions of the Power System's work, both design and construction, as the name implies. Not many utilities ever did that, and particularly publicly-owned utilities. Almost none were large enough to justify that sort of arrangement. Of course, this was one of the great selling

points for recruiting engineers. They could look forward to doing some real Power System engineering work. Whereas if you went to most utilities, even the largest privately-owned utilities, mostly what you would do would be contract administration, because all the major project work would have been contracted to other people.

TC: That's really an interesting distinction.

JH: You surely have gotten this concept. I hope you have because this is a really unique feature, next to the . . .

TC: I don't think I've gotten it expressed so clearly. I think it's probably been implied, and I think in some cases I didn't catch what was being said.

JH: Well, remember you've talked to Sells . . .

TC: Bill Sells and Larry Schneider and Howard King.

JH: Howard King? Yes, well, Schneider and King both came up through D&C, and Sells had a lot of time . . . not in D&C, but they all should have realized this. But maybe they don't think about . . . don't remember that this is one of the real unique features. Another thing is that I don't believe any of those folks were involved with the recruiting effort at that time. It didn't really get underway until they were . . .

TC: Higher up.

JH: It could be, but anyway, this was one of the really unique reasons for this Department's excellence, continued excellence, not only the engineering orientation of the whole management series clear through the General Manager, but the

engineering orientation of the design and construction of power facilities. I'm sure the Water System has the same situation. So, where were we?

TC: Well, I was just asking about the duties and responsibilities of the Engineer of Design and Construction.

JH: Yes, okay.

TC: Well, let me ask one thing, a sideline perhaps, but now System Development [Division] came along in about 1967 and took certain of the planning interests from Design and Construction.

JH: Yes, you've talked to Howard King. (chuckling)

TC: Yes.

JH: He was the instigator and initiator of that move. Howard may not like this, but this is what I've always thought, and I don't care whether he likes it or not. (laughter) He was ready for a promotion and there wasn't a place for him. So, in my opinion, he created the . . .

TC: System Development.

JH: System Development, yes, and became the first Head of it, of course. I can't in retrospect say that it was a bad move, but at the time it looked like something that was strictly done for Howard.

TC: Well, did it take important work away from Design and Construction?

JH: Yes. Oh, absolutely, it took the heart. This is really the beginnings. This was the highest caliber of work in Design

and Construction, but it was no longer in Design and Construction, it had been separated out. (chuckling) So I was rather bitter about that. Although I was at a lower level and I never said anything to anyone about it.

TC: Sure, well, that was 1967.

JH: But that's what I felt about it.

TC: Of course, it has gone through its changes, too.

JH: Oh, I should say. It's no longer doing . . .

TC: Conservation and Planning [Division] is the idea now.

JH: Yes, and it's still the same orientation of deciding where the people are going to get their power and how they're going to get it.

TC: I guess over the years some manner of smooth working with System Development, PO&M, and Design and Construction seemed to have . . . They seem to have managed to work together.

JH: To get along? (chuckling)

TC: Yes, to get along.

JH: Well, yes, there was no choice about that.

TC: I guess that's the good part of an organization where, if you guys want to get paid . . .

JH: You're all in one place and you have one head man in charge of you all, and you'd better get along. If you can't figure out ways, we'll get some heads who can figure out ways. You know, it's do or die.

TC: Yes. So, anyway, the duties and responsibilities of Engineer of Design and Construction, how did that fall out? I guess

the division heads would get together and sort things out. Is that the way it works? Did you sit with the Chief and the Head Engineer of PO&M?

JH: Yes, of course, there were always formal committees of division heads, but more importantly any of them were as close as your phone, or walk up a flight of stairs and there he is, you know. And you're always in other sorts of . . . Well, there was at one time the Department Speakers Club, which was a good converging . . . What's the term they use today, when males get together and . . . (chuckling)

TC: Oh, yes, right, bonding or something.

JH: Bonding. Yes, bonding is the word I'm looking for.

TC: Beating drums and chests and that stuff. (chuckling)

JH: Yes, and, of course, there eventually got to be bonding--not only males but we had females as well--but nothing peculiar.

TC: Tell me something about that. There are a couple of women engineers. In your time there--this is going back to recruitment, and excuse me for jumping back--did you ever have anything to do with recruiting women engineers?

JH: There was never an emphasis of whether it was a male or a female. It was strictly a sexless situation, as far as we were concerned. And the situation, as you probably are aware, is that there were practically no female engineering students, so there were practically none to recruit. So the situation didn't arise until I was gone.

TC: Yes, I think that's a more recent phenomenon.

JH: And there are some now, sure. Well, there's no reason there shouldn't be, but there just weren't at that time. I remember when I was going to SC [University of Southern California] we had one girl student.

TC: Well, that's very interesting, too.

JH: That was way back. That was a real rarity in those days.

TC: That's the late forties, sure. When I was collecting documents to try to find where you were during different years, I came across some interesting items that raised some questions in my own mind. These were legislative review items. They weren't long papers, they were memos that . . . You wrote some and I think other people wrote them, too. I'm just wondering, was that a regular activity? There was one I have somewhere in my notes here that had to do with a bill that was in the California Assembly that had to do with who is liable for injuries that happen during an earthquake, for instance. You had to get some people from Legal and find out whether we should support this bill or oppose it or take no stand. And this happened on a number of different topics. I just want to get a sense of what . . . Did someone just come up with a . . . Did Charlie [Charles A.] Erickson or somebody just hand you a memo or a note saying, "Look into this thing for us"? How did that fall out, is my question? Was it a regular activity or was it kind of a special activity?

JH: You know, that must not have occupied a very major part of my career, because I can't remember any of those particular

instances. What I do remember about that subject is that we always had a "lobbyist" in the legislature and he, of course, needed these kinds of analyses. But to my knowledge I was never in the spot where I did much of it, if any. I don't recall.

TC: Okay, I was just wondering. I know the Department has to be aware of these things and be on top of any sort of thing that happens, and I suppose that's what the lobbyist's job is, also, to warn as to upcoming legislation that may have an impact. I'm just chomping at the bit to get at IPP [Intermountain Power Project]. I don't know, are we too far? Are we there?

JH: Oh, yes, we're there. Yes, because as I moved from Engineer of Design and Construction, of course, I moved into that Assistant Chief Engineer spot, which carried with it the committee membership, whatever they call it, the governors, the board . . . The IPP Board. So I was a member of that IPP Board when I got to be the Assistant Chief, and that got to be the particular major project. It was about the only one we had going with any consequence at the time and it was really an interesting one. I guess you may have heard this from other people.

TC: I've heard various versions of it, yes.

JH: The thing was originated before my time, as you well know, before I got into it, and went on for so long. These things take so many years to come to fruition, but the gentlemen over

in Utah who headed a group of small publicly-owned utilities in that state--I'm sure you've had this story from other people--proposed the project since they could not swing such a monstrous plant and they could see the need for it and the good it would do them, particularly in their battle with Utah Power and Light over there. We mentioned way early on that in the Department we hadn't experienced any particularly troublesome rivalry between public- and privately-owned utilities. But in the state of Utah they were still fighting the Civil War, and the small publicly-owned utilities there banded together in order to fight Utah Power and Light, which was the only private utility, and it was bitter and they had incidents continuing all the time. And it was bitter. I mean, not just underhanded but publicly they were just nasty to each other, just downright didn't get along at all. (chuckling) So these small utilities banded together, and when they needed a big partner to swing the deal to get them into the big time, why, they came to the Department and said, "Hey, join us and we'll build this big plant. We can build it in Utah. There's plenty of space over there and you won't get in trouble with the environmental movement too much." So we were happy to accommodate that and so there we got into the project. We had the unique situation here of not having the top administrative level of responsibility for this plant, because that had to remain in the state of Utah. They had their own IPP Board, which was composed of the chiefs of those

little publicly-owned utilities in the state of Utah. But then we were the builder, we were everything else. They just had the top administrative and they, on paper, were responsible for raising the money. But again, even though they were responsible for raising the money, they didn't have the net worth to justify raising that kind of money, so the Department was again called on, since we were also the major "stockholder" and the major user of this plant-to-be. Of course, we had the local publicly-owned utilities, Riverside, Anaheim, Glendale, Pasadena, and Burbank, involved with us. This went on for years and [was] extremely interesting. (chuckling) We had to deal with Utah Power and Light in this process and made some good friends there. (laughter)

TC: What? In terms of smoothing over some of these problems?

JH: Well, it started off with all this nastiness going on. This group of small utilities in Utah had their own attorney, whom they'd had from the year one, Civil War. (chuckling) And, of course, some of the chiefs in Utah Power and Light accounted for the opposite side of the fight. They couldn't even be in the same room together; it was just something awful. We had to coordinate with Utah Power and Light, and had to intertie with them, and keep the state happy in order to make this project feasible. Oh, they'd come to such nasty situations that I ended up being referee more than once--I mean, literally referee--to the point of sending Utah Power and Light out. I'd say, "Go out. Get away. Closet yourself, I

have to talk to these guys." Then I'd tell these small utilities' attorney, "Now, you go. Go somewhere and get out of here. I want to talk to the people that hired you." And my word to them was, "You're either going to have to fire your attorney or something drastic like that, because this project's not going to go if you don't do something different from the way it's been done. Because he has had too much of a background of fighting with Utah Power and Light and he's not ever going to change. He's going to continue to fight, and Utah Power and Light likes that fight, you know. But even though you like your attorney's combativeness, if you want this project to go, you're going to have to do something different. This is not going to fly the way it is." So it was that kind of refereeing I had to do with that board.

TC: Again, I suppose the human relations idea comes into that, too.

JH: Oh, yes, this is human relations of the first order here.

TC: Would it be shouting matches?

JH: Oh, yes, that, too. Ooh! (laughter) Yes, as the Department, we had to spend a lot of time over there. Well, I remember the first time we did particularly. Because of plane schedules and time schedules, we met with Utah Power and Light before we met with the people we were partners with, and, man, I thought they were going to walk out on us, that they were going to cut the project and go home, you know. They were that mad because we had met with Utah Power and Light first.

TC: Seemingly favoring them?

JH: Yes, oh, anything that Utah Power and Light might know before, or might find out before our partners found out, caused fireworks. Of course, that was not really a problem, but they perceived it as such. Labor relations, too, were very touchy in the state of Utah. One of the touchiest things about getting that project accomplished was getting the labor unions pacified and work-with-able. (chuckling)

TC: Well, Utah is a right-to-work state.

JH: Oh, yes. Here's a big project and the unions control the steelworkers. I mean, how are you going to get that structure put up if you don't kind of coordinate with and collaborate with the unions? So we had to.

TC: There was a beef, I know. I read an article about it that came out. It was an article in some business journal in the early eighties, 1981 or so, that talked about how Bechtel [Corporation] was chosen to be the construction company for IPP and Orrin [G.] Hatch was up in arms because they were going to bring in the union and make it a closed shop situation. And I know that you had to write some letters relating to this whole thing. I saw those letters.

JH: Yes, those were the crucial times and the difficulties of getting a project like that accomplished. Again, there are always unique features, and those were the unique features of this particular one that we had to work around and overcome one way or another. As you can see, it was done, and, of

course, we all had to give great credit to dear departed Jim [James] Anthony. You haven't heard of Jim Anthony?

TC: No, I don't know him.

JH: You've heard of the Anthony Office Building, have you? AOB?

TC: Yes.

JH: Well, that's named for Jim Anthony, who was the project manager for IPP, from early on right on through, and the man I would say we should give more credit than any other for getting that job done appropriately on time and under budget, and the only one that's ever been done that way. (chuckling)

TC: He was with the Department?

JH: Oh, absolutely.

TC: Okay, I don't know that name.

JH: He was the project manager, not the project engineer on site. Administration was where I was, but he was the guy in the day-to-day hassle, who really chose and selected all the people that worked immediately on that project. He had to build a city. We didn't have anybody that built cities, but Jim found the right people in the Department, got them into the right positions, civil service not withstanding. And all these labor relations things, he was right in the middle of them. He was the most active at those levels and made the project possible.

TC: Well, how was that business sorted out with the project being union or non-union? Was it a mixture?

JH: Yes. Oh, yes, we had union people and we had non-union people, sure. Then they had to work side-by-side and that was worked out. As I recall, it was a first with this particular kind of arrangement, but something had to be done. Everybody knew if they didn't get along there wouldn't be anything to work on, so . . . (chuckling)

TC: Yes, I can believe with the building trades, construction trades, unions, there's a strong desire to have complete control.

JH: Oh, yes, exclude everything else, and that was not possible in this situation. Fortunately, they had sense enough to realize that if they didn't collaborate there wouldn't be any project, probably.

TC: Of course, it was in the early eighties, too, when unions were having a difficult time keeping the kind of control that they had previously.

JH: The control that they had become accustomed to, yes. And, of course, Utah Power and Light was, as I recall, totally unionized. That was a problem, too. And they had a man on this board, you know. Ooh! (chuckling) It was one of the most interesting and one of the toughest projects I ever had to deal with, because it involved people, not technical matters. Very seldom any technical matters that we had to resolve, but people matters, legal matters and . . .

TC: Just getting people to cooperate and work together who were at odds.

JH: Oh, at the worst odds, and for the biggest possible reasons, you know. Billions involved here. And speaking of that kind of money, Salomon Brothers was chosen to handle the financing and selling the bonds. So they put a road show together, which included a few people from Utah, but not very many, and a few people from Dewap, and we went barnstorming around the nation to the major cities speaking to people who buy bonds.

TC: Like investor groups.

JH: Well, yes, investors, and we'd just go to the major cities. Well, Salomon, this is their business, selling that sort of security so that projects can proceed. It was an experience that I never thought I would have.

TC: What would have been your role? To explain various engineering features?

JH: Yes, explain features that were of importance to people who were going to buy bonds, which is how secure they are, and how likely is this project to succeed? We had to point out that Dewap was the greatest and the biggest and the best that ever existed and had the best credit rating, all these kinds of things, which harkened back to recruiting days a little bit.

TC: Sure.

JH: So everything you learn comes into play later on.

TC: That's right, use it some more.

JH: I had a spiel to make and, of course, others had their own spiels. But talk about, what do they call it, the rubber chicken circuit? We'd plop off an airplane and jump into

these black, long limousines and be ferried out to some fancy establishment. I remember in Chicago we had a ride on Lake Michigan. (chuckling)

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March 26, 1992

TC: Well, let me just ask you a couple of things about your promotion to Assistant Chief. This was one part of it, obviously, overseeing IPP. What was the process of selection, first of all?

HH: Oh, well, there was an exam, the usual Civil Service exam.

TC: The usual Civil Service exam, okay.

HH: And then they brought in chiefs from other utilities, primarily private utilities because that's primarily what there is of any size, and then an occasional public utility was brought in, and the interview process, and scores and so forth. Need I say more? I mean, it goes just like any other . . .

TC: Yes, what was the competition? How many men were in the running for this?

HH: Gosh, I can show you the list, or I could have before I threw it away. You know, there'd probably be a dozen or more at least.

TC: All from your general level?

HH: Yes, and even at that level, it isn't limited to electrical anymore, you know. You're Principal Engineer, you're not an electrical or civil. So we had Duane [L.] Georgeson. Do you know Duane?

TC: Yes, I know him, sure.

HH: He took the exam. (chuckling)

TC: No kidding?

HH: He didn't do well because it was such a far-out thing in the Power System, but he did well enough. So it was the top people in the Department and they were really looking to step into the General Managership if your ambitions looked in that direction. I never even thought of that. I never even thought, in fact, of replacing Mulloy.

TC: So you were Assistant to Jim Mulloy?

HH: That's correct, yes, and the thought never occurred to me, since he was somewhat younger than I, that I might need to replace him. And along comes this situation where I need to do that, and, ooh, this one's kind of scary. I told him I didn't want to do that. Well, in fact, I wanted to retire.

TC: Yes, well, the situation was him becoming General Manager, right?

HH: I don't think so. That came up later.

TC: That came up later?

HH: yes. What brought it to a head was my request to retire when he was having similar thoughts. I think it was about 1979 or 1978 or something like that. We hadn't really groomed anybody or thought about who might replace me or what. You have to do a certain amount of that, to kind of think about what . . . You do the best you can, even though there's still an exam. You know, the guy has to be reachable, no matter who you think you might want. The exam has to prove you are qualified. So

I remember Mulloy--and I can't remember who was with him--on one of our trips to Utah. He got me in a motel room over there. (chuckling) He said, "You know, you're going to have to stay on. We're going to have to train somebody," so I agreed to stay an extra year. So we got Norm Nichols into a position expanding his experience and making him a better candidate for my job.

TC: So he came up through System Development, I guess?

HH: Yes. But we began to show him all the ropes that were involved in my particular position, then I retired a year later, a year later than I expected to.

TC: Well, this is all the time, too, when Louis [H.] Winnard was General Manager. I'm not interested in getting into touchy matters as such, but this was a case where somebody was brought in from the outside; and you have what in management I think they call an organizational culture that doesn't work well with that kind of thing. Now, how did that sit with you personally that he came in as GM?

HH: Well, I thought it was an ill-advised move, but as far as my personal progress or any personal feeling about it, I didn't give it too much thought. As far as what they had done, I figured, well, this is not wise. And I think it proved out not to be.

TC: Yes, it seemed to bear out that way. So what other activities did you have as Assistant Chief?

HH: Well, again, it was personnel, labor relations and all the bargaining, in which the table-to-table and nose-to-nose bargaining is done by bargainers. I had to bring the information to them and coordinate with them and take the information back and forth. So all those kinds of personnel matters, plus the usual grievances that filter on up again.

TC: They must be pretty serious to get that high up.

HH: Well, I don't know if you'd say serious or not, but at least not resolvable to the employee's satisfaction and he keeps pushing it.

TC: He keeps appealing, right.

HH: He keeps appealing it and it goes on up. And there's even a higher level in the General Manager's office, too, but mine was the next to the last stop.

TC: Let me ask you a couple of, again, sideline kinds of things having to do with the industry. We've talked several times about IEEE. How about American Public Power Association. Did you have any activities with APPA? Did you go to those kinds of meetings, those kinds of conferences, very often?

HH: Oh, my. APPA? No, I did not attend, so therefore I was not very active in that organization. I know the Department was a participant in it, one of the major participants, and I kept well abreast of what was going on there at all times.

TC: Was it a useful organization, or is it a useful organization?

HH: Oh, yes, it's a good organization. I just don't recall having a lot to do with it. I know I did have something but I can't recall what it was.

TC: Okay, how about EPRI, the Electric Power Research Institute?

HH: Again, this being formed of utilities, yes, a very useful and desirable organization, and I didn't have any particular contact with them.

TC: I asked this question to Mr. [Burton A.] Currie and I got an interesting response. When you retire, I use the word ritual, for lack of a better word, because it is kind of . . . there's a ceremony that goes along with it. How did that work for you? What was your retirement ritual? He said that at the time he retired it was just after Floyd Goss, I guess, retired.

HH: Yes.

TC: And Goss did not want a dinner, he just wanted an office party if people had to say something, so Mr. Currie thought that he'd do the same thing. Now, when you retired, was there a major kind of effort, dinner . . . ?

HH: No, we pretty well followed that example and kept it small and informal as possible, the only formality being before the Board [of Water and Power Commissioners] for a few minutes in one of their meetings. Everyone had that, of course.

TC: Well, you know, we've covered quite a bit here in these last number of sessions. Have I left out anything of great import that needs to be covered?

HH: Well, if you're through with questions, I have one thing I'd like to add, which I mentioned a while back.

TC: I'm through, yes. Shoot.

HH: And it's come up occasionally as we go along. You know, I'm an old Arkansas hillbilly and so is my wife. We came out of small places there and unsophisticated, and at this stage we feel like we've accomplished a great deal more than almost anyone who had such small beginnings. So we look around to try to figure out how this could be. We look at our early beginnings and our schooling and so forth and try to see if we were doing so much better than the competition along the way, and the answer is no. We were above-average but we were not the super cream of the cream of the crop in any sense in life's competitions. And yet, as time went on, all of our competition dropped by the wayside. And I see this particularly coming from USC. Most of the top people in my class came to the Department of Water and Power, and this was just the way things went in that particular few years there. And tough competitive exams have been a way of life, you know, like you have in school only more so. I mean, the toughest technical exams are at the lower levels. How can a guy like me have survived and come through time after time after time, and all these brilliant people that were tops of their class all the way through, one by one, dropped by the wayside? I have to attribute it to a power above and beyond myself. I'm not that good, and never was, but I had this upbringing from

the beginning in a school with a religious orientation. And on through life I have kept to that. The only thing I can figure that I had that this extreme competition didn't have is this philosophy of life, that somebody up there is looking after me. And I'm going to be eternally grateful for that. And so, along the way I have showed my gratitude, continue to show my gratitude through my work in my church. I really learned to build with my hands, building classrooms at one of the little churches I attended in the San Fernando Valley. And I look back, and hey, that was a marvelous thing I learned there. But I didn't do it to learn. I did it to help. Gratitude here, and eventually it got to be a tithing gratitude.

TC: What church is it that you're a member of?

HH: Well, I don't know that one church is going to make a difference, all that much difference over another. I'm not that strict about affiliation; however, I have always been a Baptist, whatever that means to you. That's what my ancestors and forbears were and I just never strayed from it, didn't see any need to change. I never saw any reason to change from it so I'm still there. I realized as I came along that this denomination is a poor denomination. We don't have the parishioners, as you might call them, who have very much money. They're usually working-class . . .

TC: Working people, yes.

HH: But again, that didn't bother me. I felt, well, what it's doing for me I can't complain about, and maybe I should be living for what I can do for the church instead of what it can do for me. So there you have it.

TC: Well, that's a good thought to end this on, a very positive thought. I want to thank you as we're on tape here for these sessions. I think this will be a very good addition to this series that we have. There are a lot of insights on things that we just didn't know about, and so much gets lost in the paper documentation, so this is the value of this kind of thing.

HH: Yes, I think the value here may be more in the human relationships and the church orientation. I hope people will profit from that, as I have.

TC: Okay. Well, thank you. Thank you very much, Mr. Holland.

HH: You're welcome.

END OF INTERVIEW

