ORAL HISTORY INTERVIEWS

J. PAUL CAPENER

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STATUS OF INTERVIEWS:
OPEN FOR RESEARCH

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Interviews Conducted and Edited by:
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Table of Contents

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1. In accordance with the provisions of Chapter 21 of Title 44, United States Code, and subject to the terms, conditions, and restrictions set forth in this instrument, I, J. Paul Capener, (hereinafter referred to as "the Donor"), of Redding, California, do hereby give, donate, and convey to the National Archives and Records Administration (hereinafter referred to as "the National Archives), acting for and on behalf of the United States of America, all of my rights and title to, and interest in the information and responses (hereinafter referred to as "the Donated Materials") provided during the interview conducted on October 26, 1995, October 27, 1995, and during the week of March 25, 1996, at Shasta Dam and at my home in Redding, California, and prepared for deposit with the National Archives and Records Administration in the following format: cassette tapes and transcripts. This donation includes, but is not limited to, all copyright interests I now possess in the Donated Materials.

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Date: 3/25/96 Signed: J. Paul Capener

INTERVIEWER: Brit Allan Storey

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Introduction

In 1988, Reclamation began to create a history program. While headquartered in Denver, the history program was developed as a bureau-wide program.

One component of Reclamation's history program is its oral history activity. The primary objectives of Reclamation's oral history activities are: preservation of historical data not normally available through Reclamation records (supplementing already available data on the whole range of Reclamation's history); making the preserved data available to researchers inside and outside Reclamation.

The senior historian of the Bureau of Reclamation developed and directs the oral history program. Questions, comments, and suggestions may be addressed to the senior historian.

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Oral History Interviews
J. Paul Capener

[Note: tape 1 of this initial interview on October 26, 1995, was stolen from interviewer's motel room, however, a brief précis has been reconstructed from the interviewer's notes. Fortunately most topics were subsequently discussed and expanded later in the interviews.]

- Born February 25, 1935, and lived near Riverside, Utah
- Has three sons and one daughter.
- As a youngster lived on irrigated and dryland farm operations with seven brothers and sisters.
- In the early 1960s studied engineering at the University of Utah and then at Utah State University near his home.
- Graduated with a degree in electrical engineering.
- Offered jobs by Reclamation and the Department of Defense.
- Moved into the Mid-Pacific Region and the Central Valley of California in June.
- Served as a rotation engineer at Shasta Dam, Los Banos, the region, and Tracy Pumping Plant.
- Permanently assigned to Shasta.
- Toyon Camp was losing Reclamation offices which were moving to Shasta Dam.
- Because he wanted to rise quickly in the organization, he applied for many jobs, but he was in California for several years.
- Then he moved to Elephant Butte in the Rio Grande Project where he did transmission line and switchyard work.
- Then moved to Palisades, Idaho for a promotion. There it was difficult to find people to fill the jobs, and they were closing the government camp.
- Moved to Loveland, Colorado, as an electrical engineer.
- Big Thompson flood occurred while he was there and it buried one of the powerplants.
- Fall 1976 moved to Shasta as the project manager.
- In October 1995 had worked for Reclamation for 31 years.]

BEGIN SIDE 1, TAPE 2. OCTOBER 26, 1995.

Storey: This is tape two of an interview by Brit Storey with Paul Capener on October the 26th, 1995.

Harvesting Sugar Beets

You were saying there was a team of two or three horses.

Capener: There was a team of two or three horses that were pulling this beet plow, and they would be loosening up the beets and I thought, "Well, gee, I'm going to try this." So I got me one of these knives and I went out away from where the crew was working and I started to pull the beet out. Well, I was out in the area that had not been plowed, and I had hooked onto this big beet and I was trying to pull it out of the ground. And, of course, it was just cemented into the ground because they hadn't plowed it yet. But they were plowing that particular row and the horses were coming

down pulling the plow. The horses and the driver were both kind of asleep. The guy that was driving the team, he was sitting there kind of asleep because the horses knew what to do. They would just walk down to the end and then they'd stop and the guy would wake up and turn them around and they'd go back, and they'd just follow right along.

So they were going along and the guy didn't see me, and the horses ran over me. I can still remember being just kicked and tumbled and everything else. Those horses were kind of kicking me around. Apparently, either the hook or the knife or something must have hit one of the horses, because it veered off to the left and the beet plow just *barely* missed me. Had it not done that, I would have probably sustained some major damage. But as it was, it was just a little shakeup. And then, of course, the people there that were doing the harvest, they thought, "Oh, man. This is terrible. You know, he was out there. He shouldn't have been out there. We should have watched him." So they rushed me back to my mother, and that was the worst part of the whole thing, was trying to explain to my mother why I was out there in the first place. That's where I got my retribution.

Sugar Beets Are No Longer Grown and Processed in the Area

But that was kind of the beet process. It was an industry that was the largest cash crop in the valley, and it has since gone out of business. They've stopped raising sugar beets in that part of the country. The prices just were not supporting them any longer. Although they still raise a lot here in California, but here in California, the normal sugar beet crop would probably raise about thirty-five-, forty ton of sugar beets per acre, and we were doing good if we got fifteen-, sixteen ton to the acre while we were growing up. So it's just the difference of the growing season and everything else here in California to be able to still have a very good crop of it, where we couldn't do that any longer there in northern Utah.

Storey: And so you only planted about twenty acres on your farm?

"We had a 100 acres of irrigated land. We had sugar beets, we had corn, we had hay, and we had grains. . . ."

Capener: We had a 100 acres of irrigated land. We had sugar beets, we had corn, we had hay, and we had grains. That was kind of the rotation we went through. So we'd have some wheat and have some barley. We'd have some alfalfa and some sugar beets and some corn.

Storey: How did you sell your beets?

Sold Sugar Beets to the Utah and Idaho Sugar Company

Capener: They were sold to the U&I [Utah and Idaho][1] Sugar Company based on market price. So we'd haul them down there and they would weigh the truck with the beets on it. Then you'd dump the beets out and then come back and you'd get the empty weight, and they'd give you back the dirt that you got, because when you dumped the sugar beets off, it would kind of go through a tumbling process and the dirt that was adhering to the beets would fall off, and then they gave that back to you, because they didn't want all that dirt. They had no place to put it down at the mill. So you'd haul that back and dump in on your field.

Then they would keep tally of the weight that you kept bringing in. They'd sample the beets and then they'd run their own analysis of the sugar content, and through that process they could determine how many tons of *sugar* you had actually sold them. Then based on the market price of the sugar would determine what you got paid.

Storey: So it wasn't a contracting process.

Capener: No, it wasn't. It was a market-driven. It was market-driven.

Storey: Did you raise those when you were running the farm?

Capener: No. The years that I was doing it, that was just too much activity to try and run that with all the other things that were going on, because it was a very intensive type of crop. So we didn't raise the sugar beets then.

Storey: And what did you do with the corn, for instance?

Raised Field Corn for Silage, but Del Monte Had a Local Cannery for Sweet Corn, Peas, String Beans, and Tomatoes

Capener: Well, the corn, there were two types of corn that could be raised there. Sweet corn, which is sold to the local cannery and they would can it up. Del Monte, I think, was the cannery that was in operation, and they canned corn and peas and string beans, tomatoes were the crops that they canned locally. Or you could raise field corn, which was then chopped into silage and fed to the cows, and that's what we raised. We had a big silo there.

Storey: And you had your own cows also?

1.

Note that in the text of these interviews, as opposed to headings, information in parentheses, ( ), is actually on the tape. Information in brackets, [ ], has been added to the tape either by the editor to clarify meaning or at the request of the interviewee in order to correct, enlarge, or clarify the interview as it was originally spoken. Words have sometimes been struck out by editor or interviewee in order to clarify meaning or eliminate repetition. In the case of strikeouts, that material has been printed at 50% density to aid in reading the interviews but assuring that the struckout material is readable.

The transcriber and editor have removed some extraneous words such as false starts and repetitions without indicating their removal. The meaning of the interview has not been changed by this editing.

Capener: Yes. We had our own cows. So we'd raise the corn and chop it and make silage out of it and then feed it to the cattle.

Sold Wheat and Barley after Storage at the Local Granary

Storey: What about the small grains? What did you do with those?

Capener: Well, the grains, the wheat and the barley, we sold the wheat, because there was a lot of wheat in the valley, a lot of dryland wheat. We would sell that, and, again, we'd sell it down at the granary, and it was all weighed and judged and the amount of protein was determined. And then we had it. We had it there until we sold it, and we could sell it any time we wanted, based upon the market. So we were always following the grain market. We knew how much the protein content of the wheat was that we sold, and the value of the wheat was somewhat based on the protein content. So we would sell it and then the warehouse and the granary outfit would deduct a storage cost and handling cost and so forth. That's what we did with the wheat.

The barley, we would either sell it the same way or we would take it down to a mill that would roll the barley. They would roll it and then we would bring it back and that would be what we'd feed the dairy cattle. So we'd feed the cattle a combination of grain, which was the barley, and silage from the corn along with the hay.

Kept Dairy Cows

Storey: So you had dairy cattle rather than beef cattle.

Capener: Yes. We had dairy cattle.

Storey: What size herd?

Capener: I think we peaked out at about seventy-five head of Holstein cows, milking about fifty at any given time. We had a Grade A dairy set up. We started off, I remember my Dad bought a couple of cows kind of as a hobby, and we had them in a fenced-off part of a Quonset [® or ™–a trademark name] hut. We milked them by hand to start with.

"We ended up with a Grade A dairy that had a walk-through-type milking facility. . . ."

We ended up with a Grade A dairy that had a walk-through-type milking facility. We could milk four cows at a time and a nice big stainless steel tank for the milk to go in, all refrigerated and cooled and everything.

Storey: Tell me what a Grade A dairy means.

Capener: Well, milk is sold–Grade A means that it is taken into the processing plants and sold for milk that you buy to drink. Like at your grocery store, you buy a carton of milk to

drink. Now, there's another grade below that which is turned into condensed milk, the canned milk, and then there's a grade below that from which they make cheese. So if you want to sell Grade A, you have very tight control. They monitor the milk. They check the bacteria in the milk to be sure that it's all *clean* and free of disease and bacteria and so forth. That's why you need a lot of very sophisticated equipment in the milking and the processing and the storage, because if it's not kept cool, it will sour and then they won't take it as Grade A.

Going down the scale of things, if you just have a milk can and two cows and you go out by hand and milk them and strain it into this milk can–I think they were about twenty-gallon milk cans or twenty-five, the truck would come around and they would manually pick it up and haul it off and they would make cheese out of that, because there was very loose control. You know, they didn't really care if there was a lot of bacteria, because they sterilize the heck out of it and all that stuff.

". . . Grade A was the more profitable. It had milk subsidies along with it, plus it brought a larger milk price. At that time, you had to buy a milk base, which was you had to buy from either the government or from another dairy a right to sell a certain amount of milk . . . by the pound. . . ."

So that was the various grades. The Grade A was the more profitable. It had milk subsidies along with it, plus it brought a larger milk price. At that time, you had to buy a milk base, which was you had to buy from either the government or from another dairy a right to sell a certain amount of milk, and it went by the pound. So if you bought a herd of cows, you bought with it a milk *base*, and you had to maintain a herd sufficient to support that base, to retain the base.

Storey: Now, when you say by the pound, you're talking about the fat content, is that it?

Capener: Right. The butterfat content.

Storey: The butterfat content.

Capener: Right.

Storey: How did you sell the milk?

Capener: We sold it to, I think it was Meadow Gold, I think was the name of the company. They would come around every other day, and I think we had about a 500-gallon stainless steel tank, and they'd come around with a refrigerator truck and with a hose, and just they'd just tap into the bottom of the tank and open a valve and pump it into their big tanker truck is what it was. And that's the way they did it.

Storey: Now, did they buy on the basis of butterfat content?

Capener: Yes. Volume and butterfat content. They would sample the milk as they collected it and put it in a little test tube type thing with a label on it, and that would be tested so that you would know how much butterfat you had.

Storey: And they had gauges on their pumps so they knew how much milk they got, I guess.

Capener: Right. Right.

Storey: Any other cash things on that farm? Did you raise pigs? Sheep? I heard you mention sheep grazing the beet tops.

Capener: No, we didn't raise sheep other than just some for own use. Sheep was rather difficult, because they generally were put out to range pasture. In the summer they'd be up in the mountains on range land, and then towards the fall when the weather got kind of bad, they'd bring them in and they had either to winter off the old hay that had been cut or the beet fields or whatever, that way. And then they would put them into large barns in the wintertime and feed them hay, waiting for the lambing season to occur in the spring.

"We got a lot of honey because the beekeepers would come around and want to put hives on your farm . . ."

We got a lot of honey because the beekeepers would come around and want to put hives on your farm, and they'd give you five or ten gallons of honey at the end of the season when they collected the hives. So we had hives in various places around on our farms, and they got all the clover and clover honey and got it that way.

". . . in the fall, the turkey farmers would come around with . . . turkeys in a flock and they would bring them on the grain fields, and they would . . . eat the grain that was left over from the harvest. They'd always give you a few turkeys . . ."

And then again in the fall, the turkey farmers would come around with, I don't know, hundreds and hundreds of turkeys in a flock and they would bring them on the grain fields, and they would sit there and eat the grain that was left over from the harvest. They'd always give you a few turkeys, so you'd have a few turkeys to eat. But most of the crops were basically the cash crops that we grew up with.

Brothers and Sisters All Went to College

Storey: Did I hear you say that *all* of your brothers and sisters went to college?

Capener: I didn't say that, but they did. Yes, they all went to school. Some of them married before they graduated. But I have three brothers that went through. Two of them became teachers and the other one, he went into engineering, too, into the electrical aspect of it, electrical engineering. A couple of my sisters, I think, got their degree and a couple of them married before they were out of college.

Storey: Did anybody go back to the farm?

Still Owns Two Quarter Sections of Dryland Farmland

Capener: No, although I still have two quarter-sections of dry farm that I purchased from my

brothers and sisters. I have a sister that owns some of the land, and I have a brother that owns some of the land. So we kind of bought out each other, those that were interested in retaining some of the land.

Storey: This is from the original farm?

Capener: Right. From the original farm. So I own two of the dryland farms that I've worked. Interesting, I took the boys out there. Now, this is going back quite a few years when they were probably in junior high and younger. One of our trips back to Utah, it was in the fall just before harvest, and I took them up on the side hill where this farm was that I farmed. We went out there and walked through it and I said, "Just look at this farm. Look at the land. Take the wheat and grind it up in your hands and get the kernels and chew them, you know, and if they make gum, it's good high protein. If it doesn't make gum, it's low protein. That's what my grandfather taught me. It depends upon how long it takes to make the thing gummy is an indication of how high the protein is." And they looked at it and they did as I asked them to do and they looked around. The oldest one said, "Well, Dad, it looks just like all the other farms around here. What's so special about this?"

"You know, that's the generation gap. That's breaking the ties to the land. . . ."

That tells you a lot. You know, that's the generation gap. That's breaking the ties to the land. When the memories and the traditions and so forth are not *part* of the land, then it's just another piece of land. So you're going back into more than just land, you're going back into a way of life. But since then, they've all come back and said, "Now, Dad, don't you ever sell that land." (laughter) He said, "I'm not sure whether I'll ever go back." But he said, "Don't ever sell that land. That's land we want to keep in the family."

Storey: I have the sense that when you graduated from Utah State and you decided to go ahead and become a practicing engineer, that it was hard for you to give up doing the farming, though.

It Was Not Economically Feasible to Go Back to the Farm after College

Capener: Well, it was. I think that if it had been more economically possible, I probably would have stayed there, because it's a freedom that you don't experience too many places and it's kind of a reward, risk-reward type life that you have a lot of control over what you reap by the amount of effort that you put into it. It's very self-reliant. But with seven brothers and sisters and looking at just the economics and the finances of it and so forth and all of that, it *just* was not going to work out. I didn't want to jeopardize their ability to kind of cash out on some of this stuff by saying, "Well, sure, let me buy it from you and I'll take twenty years to pay you," because that wasn't fair to them, because some of them needed the money.

"So we sold the irrigated land, which was 100 acres around the old homestead. . . ."

So we sold the irrigated land, which was 100 acres around the old homestead. A couple of our cousins bought that. They stayed on the farm and ran it, stayed with the dairy and kept that going. The dryland farm we actually bought. The kids bought that. I bought a couple, my sister bought a piece, and some of the others bought some, and so we kept the dryland farm.

Storey: And you have somebody then work that for you?

". . . the other cousin, got his education in teaching. So he stayed on the farm and he ran the dryland farms in summer and taught school in the wintertime. . . ."

Capener: My cousin runs it. My father and my uncle were in business together, and I have a brother that's about sixteen months older than myself and a set of twin cousins the same age as my brother. So the four of us kind of grew up on the farm. We did all the hard work, you know, while our dads sat around and watched. (laughter) At least that's the way we like to look at it. So, yeah, and one of my cousins went on, got his doctorate degree in physics at Weber State and he's a professor there. And the other one, the other cousin, got his education in teaching. So he stayed on the farm and he ran the dryland farms in summer and taught school in the wintertime. Now his sons are all running the farm.

Storey: Now, when you were on the farm, how were you aware of the water that was coming to you for irrigation purposes?

Irrigation on the Farm and Scheduling Water

Capener: Our farm was right next to the canal. The canal ran to the west of our farm, and next to the canal a short distance was the railroad, and then next to that was what we called the top road, which is kind of the service road that the farmers used. We would get a schedule, a tentative schedule, of when our irrigation turns came. We'd pay a dollar an acre for the water. So we had 100 acres of land. We'd pay $100 a year. That has since gone up, but that's what we would pay initially. Then there was a watermaster that would determine when your turn actually came. So you got kind of a tentative schedule at the beginning of the irrigation season, and that was upgraded and refined as time went on.

The ditch that came from the canal that went to the north of our field continued on past our field and served a number of other farmers from both the south and the north side of that ditch. We took all our water from the south side. So the farmers on that ditch would be given a schedule on when their water would start and stop, and that was generally like a couple of weeks ahead. We'd get the schedule that says, all right, you have the water from four o'clock Friday afternoon till 2 a.m. Tuesday. That's when you have the water.

Then the watermaster would set the gate on the canal so that it would determine how much water would come out. We didn't have that *luxury* ourselves. He would set that and then he would lock it. There was a chain around it. It's kind of a wheel-type gate and he'd turn the wheel so many turns and then he'd lock that

wheel and then we'd take the water. So since we were first on line, if we were the first one to start using the water, we would use it until our time was up. And if it was two o'clock in the morning, we would go out and we'd have to pull the dam out of the ditch.

And then the guy downstream, if his turn started from 2 a.m. to whenever and he had to have his dam set, because when we pulled the dam out of the ditch, the water ran down and the next farmer had to have his set. Then he would take it and then on to several different farmers. And then at the end of that run, the guy would come along and he turned the wheel down and he'd shut the water off, and then you had to wait until your next turn, which was probably a couple of weeks or so. Then he'd come back and open it up again.

Your turn may have occurred in the middle of somebody else's, so you'd come out at two o'clock and the guy downstream from you is using the water, and then your turn would start at two o'clock in the morning. So then you had to go out to a full ditch and you had to put your dam in in the ditch and divert that into your lateral ditches that then would go run down along the fields and over to the hay or to the corn or so forth. So you had to put the dam in the main ditch and then you had to bring the water down and then you would have to put intermediate little canvas dams, sticks to hold the dam, and you'd put the sticks into the ditch and a piece of canvas between the sticks and the water.

Then you would have to open up the ditch and generally we didn't use siphons then like they do now. We just took a shovel and went out there and opened up the side of the ditch, and the water would be backed up by the dam then flood over through these holes and off onto the alfalfa or the wheat. And then you'd let it run for four-, five-, six hours, and then you had to walk out there to be sure it was all getting irrigated and you had to walk down and judge about when it was going to reach the end of the field so that you could hurry up and reset your dam further downstream and plug up the holes and open new holes so that you'd keep it going without letting too much water *waste* at the end of the field. So it was a pretty demanding-type operation. Once you started irrigating, you had to pretty much be with it the full several days until your turn was over.

Storey: So it required a lot of effort.

Capener: It required very intensive effort and then a lot of watching. Unless you're raising something like corn where you had a lot of little turnouts that you had to put for every row, then it was very intensive. If you were irrigating a large field of hay, for example, it may take six, seven, eight hours for that to go from the source of the water at your diversion point until it reached the end of the field. In those cases, you had a little more time to take a nap or do something else.

Storey: Obviously the watermaster was controlling the *quantity* of water. How did you think in terms of the quantity of water? Were you thinking in acre feet or were you thinking in *time*?

Capener: We were thinking in time. Time and turn setting. If it was a good water year and there was plenty of water, he would say, "On this particular ditch, we're going to give you twelve turns." That was the turn of the handle on the gate, and that's the way we judged it. Twelve turns. Or if it was kind of a tight year and there wasn't a lot of water, he'd only give you ten turns. That means you're going to have less water. That was related to the flow of cfs or whatever we used. But we always gauged it by turns. We didn't measure it in the way of flow.

Storey: It was the turns on the [gate] ~~gauge~~.

Capener: Uh-huh.

Storey: Or I mean on the gate.

Capener: Turns on the handle. On the handle.

Storey: Yeah, on the gate.

". . . we had to keep the ditches clean so the water would flow freely through there, so we did a lot of effort in *cleaning* the ditches for *weeds* and so forth. . . ."

Capener: One revolution on the handle was one turn, and it was on like a screw. So one revolution of the handle would raise the gate however many threads were on that revolution. Then we had to keep the ditches clean so the water would flow freely through there, so we did a lot of effort in *cleaning* the ditches for *weeds* and so forth.

Storey: These were the ditches on your farm?

Capener: Both on our farm and the main ditch from the canal, the distribution ditch that would go from the canal and serve multiple farms.

Maintaining the Canals and Laterals

Storey: On the main laterals, in the main canal, who did that work?

Capener: In the main canal itself or the laterals from the canal?

Storey: The laterals *and* the canals.

Capener: The laterals from the canal, the farmers that were using those ditches would get together and clean it generally in the spring and maybe once during the season and then again in the fall. It was done by a horse. We'd generally have one horse that was *the* strongest horse that the people had, because the way those ditches were, you couldn't get a tractor in. You couldn't span the ditch with the wheels of a tractor so you'd use a horse.

Then you had a scraper, which is kind of like a V-shape with one part of the V being the blade that was put against the side of the ditch and the other side of the V

would be kind of a handle that you would hold onto. So you'd stand on the blade and hold onto the handle, and the horse would push it down this ditch. Then you had to put pressure from this handle to force the cutting blade against the side of the ditch, and that way it would cut off, shear off, the weeds and some of the dirt and so forth and you'd get a nice clean ditch. You had to be careful not get your foot down there or you would cut your foot, too, if you got your foot between the blade and the side of the ditch.

Storey: So everybody on that lateral would get together and do this work for the whole length of the lateral?

Capener: Right. Now, with the smaller ditches you could use a tractor, because they were smaller and you could span those with the wheels of a tractor. So then we would have kind of a big V blade we would use on that, and that was more mechanical. That was just a matter of going through with a tractor and cleaning those out.

Storey: What about on the big canals? Is it the Utah & Idaho Sugar Company?

Capener: It was, yes. They were not cleaned very often. The cleaning there was mostly in the way of weed control where they'd go along and spray the sides of the canal to keep the weeds down, because that would infringe upon the flow. So they liked to keep it free of weeds. There wasn't a lot of maintenance done with the canal itself. There were some in-line small dams in the canal that were used to maintain head, and they had to be maintained. These were little wooden structures in the canal, and they'd put boards in these to raise the head of the canal upstream from this facility so that you'd have enough head to divert the water on your land, because obviously the canal was running downhill, so it had some of these relift structures located every few miles down the length of the canal. The company would take care of all that. We didn't get involved. The farmers didn't get involved in that.

Storey: They put checks in.

Capener: They would put checks in and they would maintain them and everything else. And they would put the boards down.

Storey: And the watermaster worked for them?

Capener: Yeah.

Storey: Who owned the water rights, do you know?

Utah and Idaho Sugar Company Owned the Water Rights

Capener: I believe it was the Utah & Idaho Sugar Company that owned the water rights.

Mormon Church Created the Utah and Idaho Sugar Company

This is going clear back to, oh, I guess, the old pioneer days when somebody went

over to France. This is tied into the Mormon Church. One of those leaders was sent over to France to see whether we could grow sugar beets in Utah. So he went over there and looked at the sugar industry in France. He came back and said, "I think we can grow sugar beets." So they said, "Okay, go back and buy a sugar factory." (laughter)

So they started the sugar industry with importing [a] sugar factory from France. At the same time, they started digging the canals, because they needed the water for it. So they were digging the canals. They had to have so many contracts for sugar beets in order to warrant the purchase of a sugar factory, so farmers would sign up to grow some acres of sugar beets.

Storey: U&I, is that what it is?

Capener: Utah & Idaho Sugar Company.

Storey: Was it an LDS enterprise then?

Capener: Yes, it was. It was originally sponsored by the LDS Church, and they sold it off, oh, I don't know how many years back. But maybe fifteen-, twenty years ago I read that they had sold out their interests in that sugar factory.

Storey: I was going to ask you something about the water. Well, it must have been a good idea at the time. (laughter)

The Irrigation Water Supply Came from Bear Lake

Capener: Well, it came from Bear Lake. They built a small dam on Bear Lake, which is a natural lake, to get a head to divert into the canal. The point of diversion out of Bear Lake was in Idaho, and so it was quite a few miles before it actually got into Utah. It would go up into Idaho and around and then come back into Utah.

Changes in the Water Charge on the Farm

Storey: Now I remember what I was going to ask. The one dollar per acre–that was an acre of land, right?

Capener: Yes, acre of land.

Storey: When is it that you remember that charge of one dollar?

Capener: When I was very young, that was one dollar. I remember, I guess when I was more active in the farm probably in my high school years, it was three dollars an acre.

Storey: And what about when you were running the farm?

Capener: I don't think it was much different then. I think it was around four dollars an acre then. And back then we must have used two or three acre-foot per acre, I would

guess, based on what I know about irrigation out here.

Storey: So you were getting your water for about $1.30 an acre foot in those days, in the early sixties.

Capener: Yeah.

Storey: Okay, well, how were you recruited by the Bureau of Reclamation at Utah State?

Applying for a Job at Reclamation

Capener: It was through a placement service on campus, and they gave us a listing of people who were interested in hiring engineers. So I sent off applications to probably about fifteen-, twenty companies. Reclamation was one of those that responded with a show of interest and wanted further information from me. Then I started looking into what Reclamation was, because we didn't know too much about Bureau of Reclamation there because everything was more done by just the private . . .

END SIDE 1, TAPE 2. OCTOBER 26, 1995.
BEGIN SIDE 2, TAPE 2. OCTOBER 26, 1995.

Storey: You were saying that you didn't know much about Reclamation at that point.

Capener: No, I didn't. Like I say, I didn't have any direct contact with Reclamation on the farm, because everything was well established and did not have very much government intervention in the irrigation system that was used at that time. Actually, that probably dated back to the turn of the century when that canal was built. So then I started looking into a little bit about what Reclamation was, and when I saw what it *did* in the sense of what I would refer to the more *glamorous* portions of it, which was building powerplants and dams and electrical generation and so forth, which I had studied in school, it became very intriguing to me. Then as a side bar to it with the idea of it being tied to agriculture, that was just like frosting on the cake, because I felt that, you know, I had certainly some interest in agriculture as well, and land.

Storey: Did you know any other engineering students there who went into Reclamation?

Capener: No, I don't. I didn't. I'm not sure that I really went around and canvassed many people, because my time on campus was attending classes and *going* back to the farm, so I didn't have a lot of association with class members unless we were in a study group or something like that. *Most* of the ones I heard about were those that got what I guess would be the *real lucrative* offers like from Hewlett Packard and some of those in the electronic field, because engineering at that time was one engineering that served both electrical and the electronic. It's kind of split into probably several different subgroups now. I remember somebody got an offer from Hewlett Packard, and I think they were paying him like $10,000 a year and, *my*, we couldn't *imagine* anybody getting that much. So that was kind of something that went around.

"When I started with Reclamation, it was at a little over $5,000 a year . . . my cousin . . . said, 'Well, you ought to stay in school and get your doctorate degree.' He says, 'You'll never make anything going to work for the government.' . . ."

When I started with Reclamation, it was at a little over $5,000 a year, and I remember my cousin that was the one working on his doctorate degree, he said, "Well, you ought to stay in school and get your doctorate degree." He says, "You'll never make anything going to work for the government." He went on as a teacher, and I keep reminding him that he's a little behind where I am.

Storey: Yeah. That would have been 1974 when you went with Reclamation, right?

Capener: Yeah, '74. No, it was '64.

Storey: Excuse me. I'm sorry. '64, yeah. And you came in and reported to the regional office in Sacramento?

Capener: Um-hmm.

Storey: Who was your supervisor?

First Rotation Assignment Was at Shasta

Capener: Well, I don't really know who my supervisor was. They gave me a counselor, if you will, kind of a rotation engineer counselor, which I don't think I ever saw much of, because I went off on these different assignments. My first assignment *here*, which was about a six-month assignment, Ed Axtell [phonetic] was kind of my–Ed Axtell and Tom Gamble.

Storey: That was here at Shasta?

Second Rotation Was to Los Banos on the San Luis Project

Capener: That was here at Shasta. Then I went down to Los Banos on the construction job. At that time they were building the San Luis Project, and I really don't know who it was there. We were kind of out in a construction trailer, and I was working with some of the construction engineers doing inspection work.

Spent Some Rotation Time in the Regional Office in Sacramento

I spent some time in the regional office in Sacramento, and there I kind of got passed around to the various engineers that were staff engineers there. Some would be working on relays and checking relay settings and relay engineering, and some would go over and do the marketing, checking revenues and metering, and then over into the transmission lines. So it was a variety of people. [Robert] Pafford was the regional director at that time.

Storey: Did you ever meet him?

Capener: I saw him once. I remember in a meeting he walked in to give some kind of introductory remarks. And I went, "My word, there's the regional director." You know, a big, tall handsome-looking guy, so in control of everything and just impressive in his mannerisms and so forth. You know, I was so far down the line, I felt guilty even looking at him. But I saw him, but not in the way of any kind of interview or introduction or anything of that nature.

Storey: What grade did you start at?

Started Work with Reclamation as a GS-5 and then moved up to a GS-7 and GS-9 at Shasta and then moved to New Mexico for GS-11

Capener: GS-5.

Storey: How long were you a GS-5?

Capener: On the rotation it was a year, and then I was moved up to a 7 and up to a 9. Then I moved to New Mexico for an 11.

There Was a Grade Freeze That Prevented His Moving to the GS-11 at Shasta

They had some kind of a hiring freeze or grade freeze that came on, because I could have gotten 11 under the rotation program, but they said, "Well, we can't give you an 11 because we have this freeze on." I think it must have been a grade freeze. So I waited for a while and they kept saying, "Well, you know, this freeze, I don't know how long it's going to be on." And this other vacancy came up, so I moved down. I wanted to kind of see some different things anyway, so I didn't feel bad about that. But that's when I moved up to the GS-11.

Storey: The rotation program, did you have any say in what you did in the rotation program?

Wanted to Go to Denver on His Rotation, but the Region Felt it Couldn't Afford That

Capener: I had a say in choosing the sites that I wanted to go to. There was at that time a practice of going back to Denver on one of the assignments. I kind of wanted to go back to Denver, but I remember them talking about, "Well, you know, things are budget-wise tight and all that type of stuff. We couldn't send you to Denver. Where else would you like to go here in the region?"

Went to Tracy Pumping Plant for One Rotation

So I ended up going to other places in the region rather than going back there. So one stop at Shasta. Oh, I guess the other one was at Tracy.

Storey: At the pumping plant?

Capener: At the pumping plant, yeah. I spent a rotation assignment there.

Storey: The first one was at Shasta?

Capener: Yeah.

Storey: And you moved into Toyon camp?

Capener: Uh-huh.

Storey: How do you spell that?

Capener: T-O-Y-O-N.

Storey: And is that the one right down here below the dam?

Capener: No. No, below the dam is the old *construction* camp that the *contractors* used. The Toyon camp is to the east of us along Shasta Dam Boulevard. There's nothing there now except the remnants of the camp. You can still see some streets, and it's fenced off so you can't go there. There's one service building there.

Storey: One silver building in there.

Capener: Yeah.

Storey: On the east side of the road. I think I saw it coming up.

Capener: Well, it's kind of more on the north side.

Storey: Maybe the north side, yeah.

Capener: Right. That's it.

Storey: And you had a house trailer that you had bought in Sacramento, is that what I understood?

Capener: Yeah. Yeah. We had bought one there, and that's why–so I didn't have it there. I had it in the trailer camp just north, a place called Mountain Gate, which is just a little bit north of Central Valley. It's just north of us. And that's where I put the trailer.

Storey: Oh, and you lived there and then commuted over here.

Capener: Uh-huh.

Storey: Who was the project superintendent at that time?

Felix Dashen

Capener: Felix Dashen. Felix Dashen. D-A-S-H-E-N.

Storey: What was he like?

Capener: Oh, he was a rough old guy. Everybody just feared him. He would bring people in his office and there was just dead silence. You could hear the muffled voices coming out of his office. (laughter) Somebody would come out of there looking just completely degraded and washed out and everything else, you know, with a big, long face. They really got a talking-to by Felix. He was a pretty tough old guy from what they say. I had very little contact with him. But when I came back, he had since retired and I had an opportunity to meet with him on a different plane. He's a really nice guy. He mellowed a lot, they say, over the years and became much more sensitive to people and so forth and became quite active in a lot of service programs. So he changed over the years. But at that time, he was looked at as a pretty stern old guy.

Storey: In '64?

Capener: Yeah.

Storey: What was going on out here when you came out?

Arrived at Shasta as Reclamation Completed Construction on the Trinity River Division, Central Valley Project

Capener: Well, we were just finishing the construction of the Trinity River Project, and that was Trinity Dam and Powerplant and J. F. Carr Powerplant, Whiskeytown Lake, and Spring Creek Powerplant.

Storey: And there's a tunnel, I think.

Capener: There's two tunnels involved. One from Lewiston, which is just below Trinity that brings the water over the divide, the basin divide, into Whiskeytown. And then there's another tunnel from the lower end of Whiskeytown over that brings it into the Sacramento River. So there are two tunnels and four powerplants and a couple of dams. They were just finishing up the construction and we were in the acceptance stage. So there was a lot of testing going on as far as the testing of the generators and so forth.

Storey: Were you involved in that?

Capener: Yeah. I was. That was very interesting.

Storey: Tell me about it.

Testing Generators and Turbines in the Powerplants to Assure They Met Specifications

Capener: Well, the contractor was under certain requirements to meet various specifications, mechanical specifications and electrical specifications, and so after he had finished

the construction of the plant, then we had to run tests on primarily the generators and the turbines to ensure that the efficiencies were met and the output was met, the temperature rise of the generator was within the spec limits. There was a lot of instrumentation involved. They had to monitor water flow, so you had a lot of instruments in the penstocks and the tunnels, and so you had to calibrate those.

Reclamation Used the Self-velocity Test on the Conduit and Turbines

We did what was called a self-velocity test, which was kind of a standard test that the Bureau used. They'd go upstream and they'd put a bunch of salt into the water as the thing was in full operation. Then they'd have the sensing devices at different points. As soon as that salt water come by, it would trigger a spike in the curve or in the device. And then down maybe twenty yards down below would be another similar device, and so when the salt reached there, it would give a similar spike. Well, that would give the travel time of the water through the conduit and they knew the dam or the conduit they had and so forth so they could calculate the efficiencies of the conduit that way. That was part of the acceptances, was doing that.

Reclamation Also Did Heat-run Tests on the Generators

Then that information would be used to determine the efficiencies of your turbine. As that water was coming through, you knew how much water was coming through and what the flow was and so forth. Given the various mechanical formulas that govern that, you could tell the efficiencies of the turbine. Then the same with the generator. We would measure the temperature of the generator to see how warm it got based on the loading. We had very sophisticated devices to measure the voltage and the current flow in the winding and the temperatures. And we'd run heat-run tests, which means you'd bring the generator up to a certain megawatt output, and then you'd let it run there for maybe twenty-four hours, and during that time the generator would heat up. It was only supposed to have a certain temperature increase based on the loading of that. If it got beyond that, then there was some question as to whether it met the specs. It was all a function of the air flow inside the generator.

". . . at Spring Creek, for example, they didn't meet the heat run test [on generators], so they had to go in and had to change the baffling on the rotor that controlled the air flow, and we had to do some other changes in there to get more flow, air flow, through there. . . ."

Sometimes over at Spring Creek, for example, they didn't meet the heat run test, so they had to go in and had to change the baffling on the rotor that controlled the air flow, and we had to do some other changes in there to get more flow, air flow, through there. Then the air is cooled in there, as well. They have water coolers that are like large radiators, and the cold water comes through radiator and the air passes through that and it's cooled down and recirculated back inside the generator. That has to be regulated and looked at.

So all these various factors were monitored and we had instrumentation and wires all over the place and people out there reading all these test instruments. A lot of it was all manual stuff. They didn't have the computer stuff that we have now

where they get to have the computer monitor all that stuff and tell you. It was all manual and writing it down and page after page after page and then sitting down and compiling it and then running it through the formulas and all that stuff to evaluate whether it passed the test. And, by and large, they all did very well. They were very well-designed machines. With the exception of a little heating problem at Spring Creek, everything came through fine, and they corrected that.

Storey: How many people would it take to test one of the generators?

Testing a generator required ". . . about three engineers would be there, and they would have the services of a couple of electricians and a couple of electronic technicians that would do a lot of the installation of the instrumentation. . . . But at any given time, maybe only about a third to a half of those would be actually on site. . . ."

Capener: Well, generally about three engineers would be there, and they would have the services of a couple of electricians and a couple of electronic technicians that would do a lot of the installation of the instrumentation. Then those electricians would be there to hook up the wires to the generator buses, the big output of the generators. And then at certain times, we'd have plant mechanics there that had put a lot of the mechanical equipment in. They'd have to go in and put flow meters, say, *in* the tunnel itself and down in the draft tube, which is below the turbine where the water goes through after it leaves the turbine before it gets into the river to measure the water going out. And then you measure the speed of everything, the revolutions, so you have to have instrumentations for that. You had a team of probably, if you put them all together at one time, maybe eight or ten people. But at any given time, maybe only about a third to a half of those would be actually on site.

Storey: Maybe one person in charge of all this?

"You'd have a test engineer out of Denver who was the *spec* guy. He was the *expert*. He's the one that wrote the specs for it and all of that stuff, and he had to come out and see that it was all done right. Well, you had two. You had one from the mechanical and one for the electrical. They didn't necessarily do it all at one time. . . ."

Capener: Yeah. You'd have a test engineer out of Denver who was the *spec* guy. He was the *expert*. He's the one that wrote the specs for it and all of that stuff, and he had to come out and see that it was all done right. Well, you had two. You had one from the mechanical and one for the electrical. They didn't necessarily do it all at one time. A lot of times they'd come out and do all the mechanical acceptance, and then maybe several weeks or a few months later they'd come out and do the electrical acceptance.

Storey: But generally everything was up to spec?

". . . since then, we've *upgraded* the generators, and they now have more capacity than they did when they were *initially* installed, and that's due to mostly the

change of technologies with the insulation for the generators . . ."

Capener: Um-hmm. Yeah, it was very good. As a matter of fact, since then, we've *upgraded* the generators, and they now have more capacity than they did when they were *initially* installed, and that's due to mostly the change of technologies with the insulation for the generators themselves, where the copper bars are insulated. Originally, they used kind of a mixture of asphalt/mica-type insulation and now they go to an epoxy insulation, which gives you better insulation with less thickness of insulating material. And so they're able to use the same physical dimensions but change the ratio of copper to insulation materials.

"So now there's more copper and less insulation material, and the more copper, then the more you can generate. . . ."

So now there's more copper and less insulation material, and the more copper, then the more you can generate.

Storey: I'm not sure I know how to ask this question intelligently, since I'm not an engineer, but I'll give it a stab. (laughter)

Capener: Okay.

Storey: The fact that most of the equipment met the specs, was that because we wrote good specs, or was that because the companies responded to the specs well, or is it a combination? How does that work? You mentioned earlier, for instance, that you'd have to go in and fine-tune and *fix* and all that kind of stuff. I'm just wondering how all this *works* from a design engineering point of view.

"We had Westinghouse, we had General Electric, and we had Allis Chalmers. Those were the three principal bidders . . . a lot of other contractors that have come in . . . there must be at least eight or nine companies that are capable of building generators of this size. . . ."

Capener: I think the specs were very well written. We had had a lot of practice in writing specs by that time. We had gone through a lot of generations, a lot of powerplants were built. Then we had kind of a core group of contractors that would bid on them, and they knew what Reclamation expected. We had Westinghouse, we had General Electric, and we had Allis Chalmers. Those were the three principal bidders, and they had most of the work and did very well.

Subsequent to them, we have got a lot of other contractors that have come in, Hitachi now, and any number. Oh, there must be at least eight or nine companies that are capable of building generators of this size. So now it's more competitive and there's more looking at, "Well, what does this spec actually say and what can we get by with?" rather than, "What is the intent of it and how can we meet it?" So some of the things that we–and me not having any actual experience with it, but these are the kinds of things I've heard around with some of the problems the Bureau has had is with people that come in and try to get the contract and not put the money into it that

they should to give the product, and things don't work out and they try to get by with a technicality. Sometimes they do and sometimes they don't.

". . . the companies that were involved in that generator manufacturing–Westinghouse, General Electric, and Allis-Chalmers–none of those make those things now in the U.S. . . ."

What's interesting, the companies that were involved in that generator manufacturing–Westinghouse, General Electric, and Allis-Chalmers–none of those make those things now in the U.S. General Electric still manufacturers generators, but out of Canada. Allis Chalmers doesn't make any any longer. They merged with Siemens out of Germany. They were Siemens-Allis for a while, and then that was dissolved. Westinghouse still manufacturers them, but not in the U.S. National Electric Coil came on the scene for a while, then they moved abroad. Asea Brown Boveri [ABB] is a leader in that, and they manufacturer out of Brazil. There's an Italian firm that's pretty much involved in this now out of, obviously, Italy. Hitachi, and I think there's another Japanese firm is very competitive in it. So the industry is certainly more worldwide, and most of the American manufacturing has gone abroad.

Storey: Were you sent up here specifically to work on acceptance of the equipment?

Capener: No. When I came up, it was on rotation. It was just whatever was going on, and that was, at that time, the principal thing. Then I came back after I finished my rotation period, at the end of the year, then my permanent first assignment was here also. So I actually started here and then came back about a year later. We were kind of doing the same thing. When I came here, they were starting it and getting ready for it, and then when I came back, it was more in full swing.

Storey: Well, I'd like to keep going, but we've reached the end of our first two hours. I'd like to ask you now whether or not you're willing for information contained on these tapes and the resulting transcripts to be used by researchers both inside and outside Reclamation.

Capener: Sure. I have no problem with that.

Storey: Thank you.

END SIDE 2, TAPE 2. OCTOBER 26, 1995.
BEGIN SIDE 1, TAPE 1. OCTOBER 27, 1995.

Storey: This is Brit Allan Storey, senior historian at the Bureau of Reclamation, interviewing J. Paul Capener, area manager at Shasta Dam, on October the 27th, 1995, at about nine o'clock in the morning. This is tape one.

Yesterday we were talking about the testing process and the acceptance of the installation by the contractors for the Trinity project, and you mentioned that *most* of the things tested out properly and there weren't any problems. Do you remember any of the things that tested out insufficient?

Capener: One of the things that we *were* initially concerned about was the temperature rise of the generators at Spring Creek. This was reflected in the heat-run, what we call the heat-run tests, where you start the generators, you load them up to their full capacity, and then you run them for several hours, maybe half a day or longer, until the temperature stabilizes at whatever the highest temperature might be. The specs give you an acceptable temperature rise from ambient temperature up to full-loaded temperature, and if your machine exceeds that temperature rise, then you do not meet the specs.

". . . heat is the most damaging thing to the deterioration of the insulation around the copper coils inside the generator where you have very high levels of current flowing in there. . . ."

The purpose for that is to protect the insulation of the generator. The heat is the most damaging thing to the deterioration of the insulation around the copper coils inside the generator where you have very high levels of current flowing in there. The current through the coils creates a friction, if you will, you can liken it to friction, which causes heating of the coils.

". . . one of the things we were *always* concerned about is the heating, because that eventually can deteriorate the insulation of the machines and cause failure. . . ."

So that was one of the things we were *always* concerned about is the heating, because that eventually can deteriorate the insulation of the machines and cause failure.

". . . the original windings that were in Shasta, because after about twenty years of operation of the old asphalt/mica type, they were replaced. It was very evident from looking at those windings what the heat had done to them, because they were just brittle and dry. . . ."

This is kind of diverting a little bit back to the original windings that were in Shasta, because after about twenty years of operation of the old asphalt/mica type, they were replaced. It was very evident from looking at those windings what the heat had done to them, because they were just brittle and dry. There was no *pliability* at all to the insulation. It was just kind of a powdery-type insulation around the copper, and that was a reflection of age and the types of materials and the heating. It had just baked all of the pliable properties out of the insulated materials. And so heat has always been a major concern in electrical industries.

At Spring Creek the Manufacturer Used New Epoxy Insulation on the Generators

What we were experiencing at Spring Creek, however, was a different type of insulation, because with the Spring Creek units, the industry had pretty much abandoned the old asphalt/mica/asbestos-type insulation around the coils and were going to an *epoxy*-type material. And it was still rather new in the industry, the epoxy concept, so it was still kind of unproven. I think what the Bureau was doing is try to *apply* the old heat run or the heating criteria to a new insulation. So we were a little

uncertain ourselves as to what would really be an industry standard, on what would be an allowable heat rise, and that was part of the issue. The Bureau itself was a little uncertain. The industry was a little uncertain. But, of course, the manufacturer was very, very certain that they were okay. (laughter) There was no question in their mind that a few degrees above what we had required is not going to hurt anything.

So we went through a period of time, probably a year or two, working with Allis Chalmers to try and ensure that we had a machine that was as efficient as far as the heating properties were concerned as we could *possibly* get. They did a lot of re-engineering the air flow system inside the generator to try and be sure that there was enough cooling air that was circulating properly, there were no dead spots, dead air spots, inside the generator, that the air was properly mixed, it went through the coolers, the radiators that were water-cooled, and then recirculated properly. They have baffle plates, deflector plates, on top of the rotor, and the rotor, of course, turns, and those baffle plates kind of catch the air and cause the air turbulence and mixes the air and directs the air down from the top surfaces of the machine down to the lower surfaces so that you get a good mixing. Those were re-engineered, and a lot of things like that took place. Every time you did something, every time you changed something, you had to go through the whole test all over again to see what difference it made.

At the conclusion of this process, we were convinced that we had a good machine, even though it was very close to exceeding the heating limits of the spec. As I recall, we did bring it down to where we felt that it had met the intent of the specifications so that we accepted it. Looking back at that, we probably could have accepted it much earlier, knowing now the properties that this new material possesses. We were overly cautious. I think the Bureau has a reputation of that. Our specs were as tight as you're ever going to run into. If you're going to bid on Bureau stuff, you'd better be sure that you understand what the spec says and better be prepared to meet them. That has proven to be beneficial to us in the sense that we have very good equipment and good products. Whether it's added any additional cost to it is something that I don't know how we'd answer that, because it's all been a competitive process. So I'm sure the price would have been fair as well.

A Few Coils Did Not Pass Individual Tests

So that was the story there. We also had a few of the coils that were delivered that did not pass the individual tests. Coils are kind of like a large loop of copper standing maybe five, six feet high, fully insulated with copper leads coming out of the *top* of this loop, and then this loop is inserted into the iron *slots* of the machine. As those are delivered, each loop is individually tested for certain electrical characteristics and properties and they're what we call high potted [phonetic]. That means it's kind of like having a heart attack. You subject those to very high voltages for a very short period of time, and if nothing happens, they're okay. If something does happen, there's no question. There's a big bang or a pop or something and the insulation breaks down and it arcs through and it's rejected, of course, by then it's no good. We had a number of those coils that did not pass the test, and they were rejected and had to be replaced. Maybe a little *more* than we would have expected,

but it proved not to be a problem. The replacements were more than adequate.

Spring Creek Powerplant Occasionally Shuts down and the Reason Cannot Be Found

Then after that, the machine was put in service and has performed fairly well. Now, there is a legend about that Spring Creek powerplant, and I cannot attest to the validity of it, but I'll pass it on. The story is that that plant has had some very mysterious things happen to it. It has some alarms and some shutdowns and so forth over the years we've never been able to explain. The plant will just shut down or if people go over there and they look at it and they'll search and search and check all the printouts and the data that we have there, the monitoring information, we can never find it. And so it has a reputation. The story is that it was built on or next to a Native American burial site. Now, I don't know that there's any validity to that, but it makes an interesting story. So anytime we have any unusual things occur over there, that's the excuse we give. It's not that we couldn't *find* the problem, it's that these problems are caused by the spirits and, therefore, we're not accountable for them. Looking at all of our plants, that one does have a few little unusual peculiarities to it that is of interest to us.

Storey: Now, if I recall correctly, you said you were here about six months on that first rotation assignment.

Capener: Yes.

Storey: Was your entire time period devoted to testing the equipment and going through the acceptance processes and so on?

Maintenance Work on Circuit Breakers in the Switchyard

Capener: No. I did some other office-type work. There was some work on the switchyards that was done. This is just normal maintenance-type work. So I was also involved in that.

Storey: What would that involve?

Capener: That was maintaining of the circuit breakers in the switchyard, and they're like very large switches that enables us to disconnect the transmission lines from the generators, kind of like a breaker or light switch at your home where, if you want to de-energize the electricity in your house, you go out and you flip a breaker and then it's safe to work on your appliances. If you forget to do that, you're reminded very dramatically that those things are energized if you go sticking your screwdriver in the wrong place.

So those breakers are what is used to disconnect the transmission line from the generator so that you can, with other precautions, safely maintain equipment, go in and actually disassemble and maintain those parts of the equipment that normally would be at a high voltage, 115,000 or 230,000 volts. So those breakers are large

tanks and inside those tanks is filled with an oil material and then in there there's a switch that opens and closes. It does that in an oil environment rather than an air environment, because the oil tends to extinguish any arcing that might occur as the switch is opened.

After a number of operations, you get a contaminant in the oil because of the arcing. It tends to break the oil down to a certain extent, and those contact switches then become pitted from the arcing, and the mechanisms itself need to be readjusted so that everything is done in synchronism and in the right sequence and so forth. So about every couple of years we go in and we take the oil out of the tanks, and there are three tanks involved, and go inside and check everything, whether everything was tight, and then we'd go in and what we call dress the contacts, which means you go in, and if they were just slightly pitted, you'd go in and smooth them down so there were no sharp edges on it. You'd check all the alignments and so forth, and then you'd filter the oil. We have our own oil filtration systems, and the filtering of the oil would take any moisture out of the oil and any impurities. They go through a large press with large porous filtering material in them, and that forced the oil through those presses, and by so doing it would take all the impurities out, similar to what you have an oil filter in an automobile, except it was much larger. It would restore the oil back to original specifications, and so you could reuse the oil over and over and over again and you didn't have to throw it away. The only oil you generally lost was just what was kept in the filters and so forth.

So it was a very conservative thing, because those tanks would hold several hundred gallons each. So you're talking about 300 to 500 gallons of oil in a circuit-breaker combination, and that would be a lot of oil to have to dispose of and so forth. So it was all recycled and refiltered and reused.

That took probably about a week or two per breaker, and we have eight-, nine breakers down there, ten breakers. So that's something that we didn't do them all within any given year, but it took a good part of the fall of the year to go through and do that.

Storey: That was here at Shasta?

Capener: That was here at Shasta. And we had an equal amount down at Keswick. We had another bank down there that was similarly maintained.

Storey: Now, when you say oil, are we talking like motor oil?

Capener: Well, it's not quite as heavy as motor oil, but it certainly resembles it in color and texture and so forth. It is a petroleum-based product.

Storey: But it isn't PCBs or anything.

Doble Testing

Capener: No, it isn't a PCB, it's an oil. PCB is used more in transformers than they are in

circuit breakers, because you are trying to achieve a different type of thing in a transformer. So these were not PCBs.

I remember one of the things I had to do was to go over and do what we called Doble testing. A Doble is a trade name of the manufacturer that provides test equipment.

Storey: D-O-B-L-E?

Capener: Yes. What you do is you rent the equipment from the Doble Engineering Company, and then we use that equipment to test breakers and insulators and so forth. Then after we gather all the test information, we send it back to the company, and as part of the contract they will then analyze that. They bring in similar information from all over the industry, because their equipment is used by most power agencies.

So they act as kind of a engineering consulting firm and a statistical analysis group. They would come back and say to us, for example, that the type of bushing or breaker that you have, these are typically what people are experiencing in the industry as far as evaluating these electrical properties that we were then testing. So then they would project that to say, "Yours is right in line with the rest of the industry," or, "These values are a little high. You may be getting some moisture in the insulated bushing."

The bushing is a large porcelain conductor . . . Well, the conductor is inside the porcelain. It's the device that enables you to hook a live transmission line, which is just like bare copper, and bring that electrical current down inside the breaker, because somewhere in there, it has to be insulated so that it doesn't arc to ground. That is referred to as a bushing. That's kind of a difficult thing to describe verbally, but you see them in all transformers even out on the light poles where the wire actually hooks to the transformer. Hanging on the light pole there's a little spigot thing kind of sticks up there and it's generally made out of porcelain or glass or something.

Storey: Sort of knobby, I think, sometimes.

Capener: Yes, it's kind of knobby. And that keeps the current from arcing over to ground or to the metal container or something, because it kind of holds it away from the earth or the conducting metal. Those have a tendency to maybe acquire moisture in them or maybe there's some small cracking that occurs and so forth.

But, anyway, that Doble testing was something we had to do. That's one of the things I did, was I would go out and run the test equipment. I had an electrician that would help. The electrician would generally be up on top of the breaker and he would move the contact points, the cables and so forth, to different places where we'd hook those up to the conductors or to the bushings or so forth, and then we'd take our tests and then we'd have to go to another similar type setup on one of the other tanks and do the same thing over and over again. It was probably about a one-day operation to go through a breaker and make all those tests. Then we'd sample the oil

from the breaker and run some electrical breakdown properties of the oil.

All of that was used in determining the condition and the reliability of the breaker. Once in a great while we would find one of these large porcelain bushings that would indicate some bad properties, and that would give us enough lead time to procure a new one so that we were assured that we would not jeopardize the reliability of the system or of the circuit breaker. So it was a good preventative maintenance tool and a good management tool in the sense that you could minimize the spare parts that you kept on hand because you had some assurances that you had adequate lead time to bring on replacement equipment.

Storey: For instance, when you were doing the testing at Spring Creek, were you living here and commuting there? How did that work?

Capener: Yes, I was living here, not too far from Shasta. Shasta is the–at least at that time when we were basically the Shasta Field Division was what we were called–our responsibilities were the Shasta, Keswick, Spring Creek, Carr, Trinity powerplant, and Red Bluff Pumping Plant. We actually went down and did the maintenance on the Red Bluff Pumping Plant. We had a central shop or central location. This building, the Upper Vista House, as it is called, was where the office people resided and the engineering staff.

Storey: That's this building right here.

Capener: Right.

Storey: The Visitors Center.

Started Work at the Toyon Office and then Offices Moved to Upper Vista House, the Visitors' Center

Capener: Currently. At the time that I started here, we actually were working out of the old Toyon office basically, which is just a couple of miles from here. That was the old construction camp. And again all of the office and engineering staff was located there. Then the crews were located in two areas. We had one location here at Shasta, and then we had another set of crew–electricians, plant mechanics and operators–down at Keswick. From those two locations, we serviced the entire geographical area going up as far as Trinity and down as far south as Red Bluff. So, yeah, we'd do our preparation over at the office. Then we'd go out on site and there would be an electrical crew that would meet us there, and then we'd go through and conduct our tests and so forth.

Storey: So, for instance, when you were doing the Spring Creek testing, did you start out at Toyon and then drive down there on government time?

Commuting to Worksites Was from the Assigned Duty Station and out and Back in the Normal Work Day

Capener: Yes.

Storey: Or did you go there and *then* start government time?

Capener: None of the reporting places were very well defined, so we *always* reported at the office. We picked up a government car, and then from there we would drive to the site. The hourly employees would report to their designated work stations, which was either Shasta or Keswick, and then they'd follow the same pattern–go into their shops, they'd get their tools and everything, and then they would drive from *that* point in the government vehicle out to the work site, and then returning in time to put away their tools and clean up prior to the quitting hour, which was normally four o'clock.

Storey: So starting at seven or six or what?

Capener: Seven-thirty with a half-hour lunch, from seven-thirty to four o'clock. Our hours would vary a little bit in the summertime. We would try to work earlier in the morning because it would become very *hot*, especially if you worked in the switchyard and had to go *inside* those tanks, as the electricians did, it was like climbing in an oven. This big metal tank and very little air circulation and it would get maybe 120 degrees inside of there by mid-afternoon. So at that particular time and that particular type of maintenance function, we tried to start at six o'clock in the morning and then we'd cut short in the afternoon, putting in our eight-hour days.

Storey: But it was flexible enough that you could do that?

Capener: It was flexible in the sense that we agreed with the IBEW, International Brotherhood of Electrical Workers, who represents the hourly employees, by mutual agreement, we would do it for that particular task. It was *not* a management option without the consent of the workers or IBEW. So there were a few things like that that were mutually agreed upon that we did. Other than that, there was very little need to change the work hours and they were seldom changed.

Storey: I sort of have the sense that you're talking about working here on your rotation as well as when you came back, is that true?

Testing Work Was Done on Rotation and after Permanent Assignment to Shasta

Capener: A lot of it's the same, because when I was working here on the rotation, I got started into some of this testing out at Spring Creek and so forth, and that was still going on when I came back, after about a lapse of about eight, nine months and I came back again. Because we had three plants to test–Trinity, Carr, and Spring Creek–so the acceptance tests extended over a period longer than a year. So I did, I got some of it initially and then I got some of it when I came back again the second time.

Then since all three plants were very, very similar, the testing was very similar. General Electric was the contractor that was awarded Trinity and Carr powerplants, and then Allis-Chalmers was awarded Spring Creek. The design was

very similar. The layout of the plants, physical appearances of the plants, were very similar. They just were adapted to accommodate maybe the peculiarities of the water systems, the dams, because Trinity is right below Trinity Dam, and so it has a different penstock arrangement, that being the way the water is brought from the dam into the powerplant. With Carr and Spring Creek, they receive their water through a tunnel directly into the powerplant, so the approach is a little different.

So there were some variations there, but, by and large, the plants are very, very similar. Two units per plant. The office is laid out about the same. The control room is about the same. Very similar in appearance. The outside architecture is very similar, too. That was built about the same time that Palisades plant was built. Some of the workers that actually worked at Palisades, Idaho, the Bureau people, came out here on construction and worked. And if you look at the design of Palisades, you'll see the similarity. They look very much the same. There's a family resemblance to those plants.

Storey: Same designers, I suppose.

"You see that in a lot of the Bureau facilities, dams that were built at a similar time period with similar requirements, the designs are very similar. . . ."

Capener: Yes, they were. You see that in a lot of the Bureau facilities, dams that were built at a similar time period with similar requirements, the designs are very similar.

Storey: You mentioned ~~that~~ the engineers, the mechanical and electrical engineers who came out from Denver to do the acceptance tests. Do you remember any of their names and what they were like?

Lyle Klataske

Capener: I really don't. I remember Lyle Klataske, who still works there in Denver, has always been very involved in the electrical testing. I'm not sure that he came out. He may have. That far back, he may have been kind of starting, too. He may have come out on things like that. There was a fellow by the name of Johnson, the mechanical engineer–I forget his first name. He's been retired for many, many years. He may have come out from Denver. Lyle Klataske has been recognized as one of the real authorities, I guess, in rotating machines and generators and serves on a number of IEEE (said as "I triple E") committees and so forth, gives a lot of lectures and things. Very, very, very knowledgeable individual, a very personable guy. I just can't remember the names of others that might have been coming out.

Storey: Anything else you did in your rotation up here?

". . . everything . . . required to keep a powerplant in operation. It's not just something that you park in a garage like a car and when something needs to be done you take it down to the service station. *Everything* was done here. Machine shops had all the lathe and milling machines and everything else in there to do almost *everything* that needed to be done. Even to making parts. . . ."

Capener: Well, I think a lot of it was just really getting to know the area and becoming familiar with powerplants, because this was really my first exposure to a powerplant and there was a newness about it. There were so many dark corners to go look into inside the dams and all the equipment and all the supplies and everything that was stored. You know, you just were somewhat overwhelmed with all of the paraphernalia and all of the materials and all of the spare parts and everything else that was required to keep a powerplant in operation. It's not just something that you park in a garage like a car and when something needs to be done you take it down to the service station. *Everything* was done here. Machine shops had all the lathe and milling machines and everything else in there to do almost *everything* that needed to be done. Even to making parts. We had machinists that give them a block of metal and they'd make anything you wanted out of it. So sometimes the real fine intricate pieces of equipment that were required are the governors of the generators, and the governors are the things that control the speed, a very, very sophisticated type of equipment, very delicate, sometimes we'd have problems in there.

Issues with Governors on the Machines

Woodward Governor Company was the manufacturer of most of those. Either that or Pelton, and both very, very state-of-the-art companies. Every once in a while there would be something that they would just not be able to help us with, some peculiarities of the operation of the governor, and we'd get our people together and they would say, "Well, let's try this, and this, and this," you know, kind of experiment around with it and maybe take a component, a little piece of metal or something that was in some peculiar shape and they said, "Let's build another one a little different shape and put that in and see how that works." There was a lot of this mechanical interlocking would go on. So if you change the shape of a piece of equipment, of a part, it would change the whole operation of the machine. So our machinists would be able to go out and do that, cut those things to a thousandth of an inch tolerance and put it in there and we'd refine it. We actually did make some refinements on a governor that Woodward Governor came out [with] and thought, "Boy, that's pretty good. We'll adopt it in our design and so forth."

"No matter how long you're in this business, you can always learn something of a practical nature from the people out on the front line that are doing the work. . . ."

So we did have very high technical tradespeople. It was just interesting just talking to them and learning how they did things, the practical aspects of maintenance and why they did things the way they did it and so forth. That's something that you always learn from, from the people that are actually out doing the work. No matter how long you're in this business, you can always learn something of a practical nature from the people out on the front line that are doing the work.

Storey: You mentioned you did office work. What is "office work" for an electrical engineer on a project like this?

Office Work at Shasta Dam

Capener: Well, some of it is ~~making~~ moderate design work. If we wanted to change something in the plant, if there's a new piece of equipment that was going to be installed, for example, we had–

END SIDE 1, TAPE 1. OCTOBER 27, 1995.
BEGIN SIDE 2, TAPE 1. OCTOBER 27, 1995.

Storey: You were saying that, for instance, for a new piece of equipment you'd develop drawings.

Making Drawings to Install New Equipment and Make Changes and Correcting the As-built Drawings

Capener: If we acquired a new piece of equipment, regardless of whether it was mechanical or electrical, there were drawings that had to be prepared so that we could give the drawings *and* the equipment to the electrician or whoever, and they would then go out and install it. So part of what I had to do was go out and get the existing drawings and then make the changes on those drawings to reflect the installation of a new piece of equipment.

Schematic and Wiring Drawings

And so you'd generally have at least two types of drawings. You'd have what's called a schematic, which would kind of give you a one-line drawing showing this wire goes from point A to point B, and then here's the equipment, then you hook it to terminal A or terminal C or whatever on that equipment, and then from terminal B on the equipment you run another wire over to this control panel and you hook it up to this particular control block. It's all laid out on one sheet of paper, irrespective of maybe these points may be several hundred feet apart and located at different levels in the plant. A schematic showed it all as if it were on one flat plane. So you did that and that would give the individual an overview of the total job, and they could just look at it and see, "Yeah, that's the way it needs to go."

But then when they actually came to put the installation in, they would find that this wire from point A to point B meant that you had to have a 500-foot-long piece of wire and you had to run it three floors down through a lot of cable trays and that's where you hooked it up. Well, in order to do that, you had to have a more detailed drawing, and those were called the "wiring" drawings, and they showed each wire and each terminal block and all of the routing of the wire through the different cubicles or the different levels of the plant and so forth. So those two drawings had to be changed and modified.

Red and Green Drawing Modifications

We did what we called a red and green. If there were a wire that was to be removed, you would trace over those with a green pencil. That meant anything that was green you take out. Anything with red you put in. So those are the old red-

greens. Then when the technician actually installed it, they would verify that that, in fact, was the way they did it.

Processing Drawings and How it Changed over Time

Now, if they could find a better way of doing it, and they had some liberties to change it, then they would modify that red-green. They'd mark it up with *their* red and green and then they would initial it to show that they did it. Then those drawings would come back to *us* and then we had to have a clean copy of the drawing. So then we had to prepare another set that was free of all of the smudges and the coffee stains and everything else from the actual installation.

Then we sent those off to Denver to be revised. The original drawings then would be revised so that they would take the red and the green. They would make the changes on the original drawing and actually *remove* the ink from the original drawing where it was colored green on our working drawing, and then they would draw a new ink line where we had indicated red. Then they would send that back to us, and then we'd put that in our file so we had a current accurate drawing.

The only problem was it would take about three years from the time we sent it off to the time we got it back, so we never could rely on the accuracy of our drawings. So our files were *full* of red-green prints because there was a such a long time in that process. It wasn't until the Denver engineering group relinquished control of those original drawings–that was sacred property, the original drawings, and *nobody, nobody* changed those things except the people in Denver. Well, finally, they decided, "Yeah, I guess we can let the people out in the region *change* those drawings." So when that occurred, then the process went much smoother.

". . . today we make all those changes here locally and it's all computerized on auto-CAD and . . . a process that used to take several years from the original clean markup until we got it returned can be done now in a few hours. . . ."

Now today we make all those changes here locally and it's all computerized on auto-CAD and we can generate a full drawing in a few hours. We just go back to the *file* that's all on computer disk and we pull it up on the machine, and with the computer light pen and so forth, we just go in and change this and this and this, save the file, and it prints it and it's done automatically. So a process that used to take several years from the original clean markup until we got it returned can be done now in a few hours.

Storey: How often are drawings changed?

"There's drawings being changed almost all the time. . . ."

Capener: There's drawings being changed almost all the time. We have a full-time–well, actually two people that run the auto-CAD, and their responsibility is to make drawings, either make corrective drawings or new drawings that our engineers may want to have. So it's a continuing process, always doing it.

Storey: Do you remember, by chance, when the transition took place from the Denver office to the local offices?

Capener: Oh, I don't. That's been, I'd say at least close to twenty years ago or so.

Storey: About the time you came.

Capener: Yes.

Storey: As a historian, I'm interested in something. Are there copies of the original drawing anywhere, or are there only copies of the revised as-is drawings, as-built drawings?

Capener: There may not be any originals of the original drawings. Now, copies, it's possible there are copies of them. We go back to some of the specifications that were issued. They would have and print those drawings. For example, if we look at the original spec of Shasta, the way that the building was intended to be laid out, the architecture of it and so forth, we have books that show that. Whether there's any original drawings or not, I don't know. Maybe the archives might have some of those. I don't think we have those around.

Storey: They're removed from the files when they're outdated, is that right?

"When we make changes . . . We just love to stamp "SUPERSEDED" across the drawing. . . . We then keep it for a little while afterwards and then throw it away, just to be sure there were no problems. . . ."

Capener: Yes. When we make changes, we generally take the old one, which is then superseded, and we have a great big stamp. We just love to stamp "SUPERSEDED" across the drawing. You know it's outdated and gone. We then keep it for a little while afterwards and then throw it away, just to be sure there were no problems.

Storey: Did you do anything else in the office?

Working on Testing Information, Inspection Reports, and Design in the Office

Capener: Well, then there was the evaluation and compiling of some of this test information that came out. There was some minor design work that needed to be done in connection with installation of equipment and so forth. Some of the work that the craft people did, they filled out maintenance sheets that would indicate the maintenance they did on pieces of equipment. It seems like there's a piece of paper for everything that we did. So if they went out and did maintenance on a motor, there was a sheet of paper they had to fill out saying, "I checked the bearings and I checked the alignment and I checked this and this." And so they had to check all that stuff.

Storey: On a what?

Capener: On a motor.

Storey: On a motor. I didn't understand.

Capener: If they were just going out to, say, do maintenance on a five- or ten-horsepower motor or an air compressor or some piece of equipment like that, there was always at least one or two maintenance sheets that they had to fill out to indicate that they had actually done that work, and any tolerances that they had to measure, they would write those tolerances down.

Well, then all that stuff had to be handled, and one of the things I did was I'd take that information and I'd review it and I'd put it in the right folder and indicate that it had been done at the right time and so forth. If there were any variations over a period of time, then I would go back and check the records and so forth.

"It wasn't very . . . technical engineering work, but it . . . acquainted you with the process. A lot of what you do on rotation was not to come in as a practicing engineer, but just to *learn* what's going *on* and learn the complexity and the *extent* of the work that is associated with the electrical industry. So . . . you have to know the whole gamut, the very simple things and . . . the more interesting engineering activities that go on. . . ."

It wasn't very skilled engineering work or very technical engineering work, but it was something that acquainted you with the process. A lot of what you do on rotation was not to come in as a practicing engineer, but just to *learn* what's going *on* and learn the complexity and the *extent* of the work that is associated with the electrical industry. So in order to do that and really appreciate it, you have to know the whole gamut, the very simple things and the repetitive things and the difficult things physically that may be required, as well as the more interesting engineering activities that go on.

Storey: You were talking about the heat in the–I want to say switches. Is that the right–

Capener: In the circuit breakers.

Storey: In the circuit breakers. Were there ever any safety problems, while you were around, with that kind of thing?

Safety Then and Now

Capener: We had our own safety definitions, I guess, back then. We would have people in there working inside those tanks. If they got hot and tired, then they would come out and somebody else would go in there and work. There was not the monitoring and the precautions that we experience today. Today when they go out and do that, we have certain liquids that they are to drink on a regular basis to replace the body minerals and fluids and so forth. The temperatures are monitored so that they're not exposed to excessive heat and so forth. We are much more sensitive to those things today than we were back then. It was more if the guy was a big macho guy and he wanted to get out there and sweat and work himself down, why, he did. There were other people, however, that were there to spell people. But I don't know that

anybody actually *suffered* from this type of work. I don't recall anybody ever being what I would called exhausted or overworked physically. There was always enough people around to be sure that that didn't happen.

Worked as a Construction Inspector on the O'Neill Forebay Pumping Plant on the San Luis Unit During His Rotation at Los Banos

Storey: Let's see. Your second rotation assignment, I believe it was at Los Banos?

Capener: Yes. That was construction.

Storey: That must have been quite a shock moving from winter at Shasta to what, spring or fall or summer in Los Banos?

Capener: Yeah. It was interesting. I got there when the pumping plant–this is the Bureau's pumping plant–O'Neill was being constructed. That was the one that I was associated with, and I was working as an inspector.

Storey: A construction inspector?

Capener: A construction inspector, right. We worked out of a trailer. We had a little construction trailer out there, and there was an inspection crew of four or five people. We were charged to go out and ensure that the contractor did what they were supposed to do. The particular time that I got there, there was a lot of concrete work going on. So we had to do all the inspection, which entailed not only the electrical but, to a certain extent, the structural inspection.

Checking Rebar Placement and Conduit Placement

What that meant was that we had to be sure that the contractor adhered to the guidelines and the rules pertaining to the way that the building was constructed in the sense and the detail of, for example, if he was putting in reinforcing steel, which we call rebar, it had to be spaced so many inches apart, each bar, and it had to be four inches from the edge of the wall or the edge of the form. If the concrete [surface] was too close to the rebar, then the concrete would have a tendency to fall off and chip off. So it had to be at least four inches.

So we'd go out there when the contractor was close to being finished with putting in this steel. With our little tape measures we'd go out there and measure this and see if it was four inches. You know, we'd try to look important. And the contractor is standing around there twiddling his thumbs saying, "Ah, here comes these inspectors again. I have to stop work now and wait for them." And so we'd go check all that stuff to be sure the steel was in there properly and the tie wires, which would tie crossing steel together, was done and was twisted right and so forth.

The conduit was embedded into the concrete in many instances, so that was another thing we had to check. We had to check the bends of the conduit as it turned corners and so forth and a run of conduit, and a run of conduit being defined as from

one opening of the conduit, say, if it was coming out of a wall, to the other end of the conduit, which would be at another wall where it would actually come out to a free surface. It could only have so many bends in it, and a bend was defined like 180 degrees total. So if he had two 90-degree bends, that was his 180 degrees, or if he had 30-degree bends or 45-degree bends, then he could have more bends. So we had to go in and check the number of bends in the conduit to be sure it met the specs.

Storey: Now, when you say conduit, what are we talking about?

Capener: You're talking about a two-inch or a three-inch or a five-inch or six-inch thin metal pipe, and through the conduit they would run wires. So if you're going to run a wire from one room to the other, a lot of that would be in the floor, in the concrete floor through these conduits. If there were too many bends in the conduit, the electricians couldn't get the wire through. After making two or three bends, you just couldn't pull it through. There's too much friction. So we had to ensure that that didn't happen.

The designers would lay it out to how the conduit was supposed to be laid, but the contractor had the flexibility or the latitude to change that if he wanted. If he could convince the engineer in charge for the Bureau that it was better to take a different route from point A to point B, then he could do that. But if he did, then that meant that the original drawing was not right, so we had to change it to reflect what we call "as built." And we had to check the bends and we had to check all that stuff.

Then we had to check the ends of the conduit to be sure that the contractor didn't let any concrete fall down into the open end of the conduit. They were supposed to cover it with little caps, and sometimes in the course of placing the concrete and so forth, these caps may come off. Well, obviously the contractor wanted to hurry up and put it back on and act as if nothing had happened, because if there's any concrete got down there, then everything had to stop until we could verify that the conduit was not plugged up.

". . . by and large, they were great. You know, they knew what they were doing. They wanted to do a good job. So a lot of this was just kind of learning a little of the trade and kind of feeling a little importance in your position and so forth. . . ."

So we had to go out there when the concrete was being placed and kind of stand around and really give it the old eye to be sure everything was going fine and kind of have a scowl on our faces like we were old mean inspectors so that the contractor wouldn't try to get away with anything. But, by and large, they were great. You know, they knew what they were doing. They wanted to do a good job. So a lot of this was just kind of learning a little of the trade and kind of feeling a little importance in your position and so forth. They tolerated us, I guess is a good word for it, because they knew what they were doing. They were old hands at that and they wanted to make a good job, too.

So that was a lot of what I did. Then there was still the drawings that had to be marked up to reflect the "as built" and so forth. It was fun because it was out

where the action was and you could see things being done. You could see buildings being constructed and walls going up and smell the fresh concrete. All that stuff was kind of exciting.

Storey: Did you have to take concrete samples and things?

Civil Engineers Took Concrete Samples

Capener: No, I did not. The civil engineers were responsible for that. In our inspection trailer, we had both the civils and the electricals. So civil engineers would take samples of the concrete, and they would make what they called a slump test on them. That means that you'd put it in kind of a cone-shaped container, the concrete, and then you would place the flat end of the cone on a table, and then you would pull the cone off and then you would measure how much the concrete would slump, how much it would kind of squish down. That was a judgment of how much moisture was in the concrete and how good the concrete was, and there was certain standards that had to be met in the slump test. If the thing just squashed down like a pancake, it obviously was too watery and it was no good. If it just didn't move at all, then it was probably too dry. So somewhere in between there was an acceptable range.

So the civils were out there all the time doing that, and they'd even check the concrete at the *batch* plant where the concrete was being mixed, which may have been several miles from the actual construction site. They would go out there and have their little labs. So they would check the concrete as it was being mixed, and then again they would check it perhaps on site, if they felt it was necessary to do that.

Storey: Where is the O'Neill [Forebay] Pumping Plant?

Water Storage on the San Luis Unit

Capener: It's down by Los Banos, which is probably about sixty, seventy miles south of Tracy.

Storey: What did it do? How did it function in the system?

Capener: The idea there was a pump storage facility. There's no natural river that was dammed up. What we did was in conjunction with the construction of the State Water Project, which also pumps water from the delta just about a mile or so from our Tracy pumping facility. The idea was that you take the excess water in the delta which would come down from the Sacramento River and the Feather River and the American River and a lot of other smaller rivers. There were certain times of the year when there was just a surplus of water. So the idea was we'd pump that water south. Originally we would just pump that water at Tracy and down the Delta-Mendota Canal, and then we'd use that water in the spring and in the summer. But it was limited in that there was no storage capability. When you didn't have the water in the delta, you couldn't pump it south.

So the idea was that we'd build the project down there and build a large reservoir. In the wintertime, we would pump the water into the reservoir. So these

plants were both pump-generator plants.[2] They would act as pumps in the winter to pump the water into the reservoir, [San Luis] ~~Los Banos~~ Reservoir, and then in the summertime or spring when you wanted that water for irrigation, they would act as generators and they would take the water out of the reservoir, through the generators, and back into the canal to be used further south.

Storey: So was O'Neill the pumping plant to move the water into San Luis Reservoir?

Capener: Yes. Well, no, it moved the water from the Delta-Mendota Canal into a forebay.

Storey: Into the O'Neill forebay.

Capener: Into the O'Neill forebay. And then there was another very large plant that the state built, and that moved the water actually from the forebay into the San Luis Reservoir. It was a joint project, 45 percent Federal and 55 percent state funded. With the exception of O'Neill, the state water project does the operation and maintenance of the facilities, the large pumping plants and so forth, and we just pay our share of it.

Storey: Did you do the inspection on the O'Neill Pumping Plant for your entire rotation there?

Capener: Yes. I would occasionally go out to some of the outlying relift plants, but just kind of as an orientation, but I spent my time there for the three months.

Storey: Did you ever run into any problems?

Capener: No. If there were problems there, I was unaware of them. I think the one thing I do recall, when they took the forms off once on a wall that had a door through it, the upper part of the door frame had a big sagging arch in it. (laughter) Somebody didn't have it braced properly, and so they had to go in, the contractor, and *grind* it down to a nice square angle, and they weren't very happy with that. But, no, there were no construction problems that I was aware of.

"My wife had a problem because we lived in our trailer down there kind of out in the sticks, and there were snakes and she was deathly afraid of snakes. . . ."

My wife had a problem because we lived in our trailer down there kind of out in the sticks, and there were snakes and she was deathly afraid of snakes. I'd always take our little boys out there on a walk and I'd point out the snakes to them and I'd say, "There's a nice snake. Let's go catch it." And so we caught a snake once, a great big old gopher snake. It must have been three feet long. They were so happy with that snake, these kids, we brought it home. That was a mistake. (laughter)

2. There were two pumping-generating plants involved. The O'Neill Pumping-Generating Plant moved water from the Delta-Mendota Canal into the O'Neill Forebay where it was picked up by San Luis (William R. Gianelli) Pumping-Generating Plant and pumped up into San Luis Reservoir. When water is delivered from the reservoir or forebay then the plants are used to generate electricity.

Storey: Yeah. I can imagine.

Capener: My wife did not appreciate that at all. She was not very happy with snakes But I kind of liked to expose the kids to some of that stuff, and *they* liked it.

Storey: So you weren't in a construction camp down there then?

Capener: No. Like I said, we had our trailer and we just were living in a trailer park, which I think was kind of built to accommodate the influx of workers on the project. As I recall, it had a small part of it that was probably the old original trailer park, but most of it was new, expanded just to accommodate the construction workers there, and a lot of the construction workers lived there. But there was no camp, per se. Everybody just kind of found their own housing, the construction workers and Bureau people.

Storey: Did you run into the project construction engineer while you were there?

Capener: No, I didn't. I couldn't even tell you who it was. I don't know who it was.

Storey: Who was your supervisor out at the O'Neill plant?

Capener: That I don't know either. I can remember talking with the head of the inspection unit maybe two or three times, and from then on it was just us inspectors went out and did the work.

Storey: How many inspectors?

Inspected Reinforcing Steel and Conduits in the Pumping-Generating Plant

Capener: There was probably about four or five that worked out of this trailer and we had responsibility to monitor the steel and the conduit and so forth and the drawings, which was what was being done at that time. With the exception of myself, the others were old-time inspectors. I mean, they had been around so long that they just knew everything, how to do it and all the procedures and so forth, so that the engineers very seldom came around to check on us or anything else. They had a more central reporting place someplace else.

I was just engrossed in the actual construction and was more interested in watching the thing being done and observing the practices and the techniques and the equipment and all of that. To me, that was very, very interesting.

Storey: How many electrical engineers, do you suppose, out of those four or five people? Were the inspectors engineers?

"The inspectors were not graduate engineers. They started out as inspectors and they . . . learned their trade through the experience they gained. They were capable of inspecting the multiple disciplines. . . ."

Capener: No, the inspectors were not. I was the only engineer there, and this was on like a rotation of training engineers. The inspectors were not graduate engineers. They started out as inspectors and they just kind of learned their trade through the experience they gained. They were capable of inspecting the multiple disciplines. They would do the steel inspection; they would do the concrete inspection; they would do the electrical inspection; they would do the equipment installation inspection. So they would stay with the project all the way through.

The engineers, the resident engineers, the ones that were assigned to the construction activity, they would check on some of the specific *engineering* functions like the concrete, to be sure that was done, and maybe some of the equipment check-out as that was coming in and review any major changes that the contractor may want to make. That's where the engineers came in. But the inspectors were kind of the ones that kept the flow of work going from day to day with the contractor to be sure that everything was running smoothly and was being installed as per spec and deal with the minor problems that came up and those types of decisions.

Storey: So there *were* engineers that came out to the inspection site?

Capener: Occasionally, yes. They'd generally come out once or twice a day and meet with the contractor's chief engineer or construction engineer, and they would review work schedules and time lines and so forth to see how they were going, were they on schedule, or if they ran into any problems, was equipment going to be on time and this type of thing.

Storey: Let's see, this would have been '65?

Capener: Yeah.

Storey: And about how long were you down there?

Capener: Three months. These were all three-month tours.

Storey: And your next tour then?

On Rotation at Tracy Pumping Plant Testing Relays

Capener: The next one would have been Tracy. Tracy Pumping Plant.

Storey: Tracy Pumping Plant. Similar kind of work, or . . .?

Capener: Well, Tracy was an established plant. It was built as part of the original Central Valley Project, so the pumping plant was one that had been in operation for many years. It was a little different because my first experience at Shasta, of course, was with a generating plant and now this was with a pumping plant. They're very similar in appearance and in electrical properties. It just serves a little different function.

The work that I did down there was of the same type that I did at Shasta

except a little different variation. There's equipment testing. We did a lot of relay testing down there, which the relays are electro-mechanical devices that have the ability, and maybe they're in like a container of about four inches wide and maybe five inches deep and six or eight inches tall. Inside that there's electro-mechanical devices that sends the current from various points in the plant, and they are there to protect the equipment. If there's, say, a big odd rush of current from the generator due to a fall on the transmission line, this relay will sense that and there's some magnetic properties that will cause, say, a shaft to turn inside this relay, and by turning that shaft it has little contacts on the shaft, and when those contacts make up with the stationary device they'll send a message out to the circuit breaker in the switchyard to open because there's too much current going out on the line.

"There were a number of different types of relays designed to protect against any number of different occurrences from frequency imbalance and over-voltages and over-currents or under-currents . . ."

There were a number of different types of relays designed to protect against any number of different occurrences from frequency imbalance and over-voltages and over-currents or under-currents and all of that type of stuff.

". . . there was a whole panel in the control room that was filled with maybe thirty or forty such relays, and they had to be tested and calibrated every year to be sure that they were operating properly. . . ."

So there was a whole panel in the control room that was filled with maybe thirty or forty such relays, and they had to be tested and calibrated every year to be sure that they were operating properly.

The way you do that, you'd pull the relay out of this container on the panel board, and you take it over, and we had very large test equipment, and you'd hook it up to that test equipment and then you would simulate the conditions that this relay might experience under normal conditions. You'd simulate a fault and you'd simulate normal conditions and so forth, and you'd check that it would operate under designed parameters, that it would operate in the time that it was supposed to and under the conditions that it was supposed to.

That was something that I had not encountered before, and so I spent some time doing that. I think probably about 30 or 40 percent of my time down there was involved in that type of work, and the rest of it was kind of going out with the crews.

END SIDE 2, TAPE 1. OCTOBER 27, 1995.
BEGIN SIDE 1, TAPE 2. OCTOBER 27, 1995.

Storey: This is tape two of an interview by Brit Storey, with J. Paul Capener, on October 27, 1995.

You also spent some time going out with crews for–

Capener: Yes. I went out with the crew to just kind of learn their work and what they were doing, not to give any kind of direction or inspection, but just to become *acquainted* with the type of work that the crafts did.

Worked with Three Crews: Communications and Instrument Mechanics, Line Crew, and Electricians

There were principally three crews that I worked with. One was the technicians, the electrical technicians, which we now call communications and instrument mechanics. They did the maintenance on the two-way radio systems, on the microwave systems, and on the more sophisticated electronic equipment. There was the line crew, which had the responsibility of maintaining the transmission lines. And then there was the electricians, which did most of the installed equipment that had any electrical characteristics to it. They did the work on that and the breakers, circuit breakers, and motors and things like that.

Objective Was to Develop a Feel for the Work Activities Going into Operation and Maintenance

So as part of the orientation of the rotation engineer, it was just to learn what type of work was done and how it was done and who did it, so you had a better feel for the scope of the operation and maintenance complex. So part of it was to actually do some real work and help the resident engineer, and a lot of it was just learning and observing and being familiar with what the Bureau does.

Storey: The transmission lines would have been transmission lines into the pumping plant?

The Transmission Lines into Tracy Originated at Shasta

Capener: Yes. These were transmission lines that *actually* originated at Shasta. There was a Shasta-Tracy 230,000-volt transmission line that started here at [Shasta] ~~Tracy~~ switchyard and went all the way down the valley into the Tracy Pumping Plant. Now, it had a few stops on the way, but it was the Bureau's transmission line.

The idea was, of course, under the original Central Valley Project, that the energy generated by our powerplants would be available to operate our pumps. So the transmission line was built–this was back in the early forties–to provide the electrical energy at Tracy to operate the pumps to pump the water up into the Delta-Mendota Canal and then send that water down into the San Joaquin Valley for the irrigators.

~~Storey: You said it started at the Tracy switchyard?~~

~~Capener: The Tracy switchyard is adjacent to the pumping plant.~~

~~Storey: Down there. So it started here at a Shasta switchyard?~~

~~Capener: Yes.~~

Storey: And went down to a Tracy switchyard. I see.

Capener: Right. If I got that mixed up, I'm sorry.

Storey: I just wanted to clarify it on the record.

". . . Pacific Gas and Electric . . . were very opposed to any kind of *Federal* transmission system, and they were very opposed to any kind of Federal *generation* system as well. As a matter of fact, they were so persuasive here locally that they had convinced the city of Redding, which is just a couple of miles from our Keswick powerplant, they convinced them *not* to buy any Federal energy. They said, 'We will always provide energy cheaper than the Federal Government can.' . . . Actually, in our Keswick switchyard, we have some open bays out there in the switchyard with breakers in them for the city of Redding, because we were so certain that the city was going to sign a power contract . . ."

Capener: There was a lot of opposition to that in the early formation of the Central Valley Project. It was a new concept that there would be a federally owned transmission system, and the local utility, Pacific Gas and Electric, lobbied *very*, *very* strongly for that not to happen. They were very opposed to any kind of *Federal* transmission system, and they were very opposed to any kind of Federal *generation* system as well. As a matter of fact, they were so persuasive here locally that they had convinced the city of Redding, which is just a couple of miles from our Keswick powerplant, they convinced them *not* to buy any Federal energy. They said, "We will always provide energy cheaper than the Federal Government can."

The Bureau wanted to sign a contract with the city of Redding for power. Actually, in our Keswick switchyard, we have some open bays out there in the switchyard with breakers in them for the city of Redding, because we were so certain that the city was going to sign a power contract to take their power from our Keswick powerplant. We had the breakers out there, and they were out there when I came on my rotation, and they were not hooked up anything. They were just out there, because they were going to be the city of Redding.

Well, the city never signed a contract, and it wasn't until quite late, I think it was sometime in the mid-fifties or so before the city finally signed a contract with the Bureau for Federal power, and they didn't opt to build a transmission line. They took the power from another source. So it wasn't until probably the seventies or early eighties that the city actually brought in a transmission line into the Keswick switchyard, and by then the switchyard was under the jurisdiction of Western Area Power Authority (WAPA), so they built their transmission line.

The Transmission Line from Shasta to Tracy Was Transferred to WAPA

Storey: What about this transmission line that you were mentioning that goes from Shasta to Tracy? Was that also transferred to WAPA, or is that still a facility of ours?

"All the transmission lines were transferred to WAPA. . . ."

Capener: Yes. All the transmission lines were transferred to WAPA. And from Shasta we had a transmission line that went all the way down to Tracy. We had another one that went to *Cottonwood*, which is just south of Redding, which is a large interchange switchyard owned by Pacific Gas and Electric. So we *tied* into their system at Cottonwood. Then we had another line that went all the way down to Elverta, which is just north of Sacramento, and that then provided energy to that area and to the city of Sacramento, who bought quite a bit of energy from the Federal Government originally. So those were the transmission lines that were started.

The Transmission Line Crews Were Transitioning from Wood Poles to Steel Towers

So I went out with the line crew a lot and saw a transition that was taking place, and that was going to take place probably for the next ten or fifteen years, of replacing the old wooden transmission poles with steel towers. When they built the lines, some of them were built out of steel, kind of a lattice structure you see common around the country. Others were just poles, two large poles side by side with crossarms at the top, maybe up about thirty feet-, forty feet, and that was the structure that supported the transmission lines.

Why Wooden Transmission Poles Required Replacement

Well, after many years, they found that those poles would start to deteriorate. They would rot away. The biggest problem they had was with the bugs and with the woodpeckers. Woodpeckers would go up in those poles and they'd just love to hammer holes in them. These poles were treated with creosote and other preservatives to try and prolong their life, but the woodpeckers didn't care. They'd go make holes in it, and that opened up the interior of the poles to the weather and to the decay and rot and so forth.

Linemen on the Wooden Poles

The linemen had a way of checking the poles before they'd climb them, because they'd climb it with spikes on their shoes, these side spikes.

"They actually had big kind of linemen boots, and they were very proud of those boots . . . they would have them all shined up . . . It was kind of a badge, I guess, of the linemen, was their boots. . . ."

They actually had big kind of linemen boots, and they were very proud of those boots, you know. These were the laced, high laced halfway up to your knee, and they would have them all shined up and everything else. It was kind of a badge, I guess, of the linemen, was their boots. Then they'd hook on these climbing spikes that would strap onto their boots. The spikes would be on the inside of their ankle and they'd force that into the wood as they went up. Then they had a strap around their waist that they would put then around the pole so they could have some support if they wanted to lean back. And up the lines they'd go. Up the poles they'd go. But

they didn't want to climb a pole if it was rotten, because they might get up there and the darn thing may cave in on them or they may lose their footing because they'd stick that spike into the side of what appeared to be a good pole, but inside would be all puffy and powdery and it would break out from under them and down they'd go.

Testing Wooden Transmission Line Poles for Soundness

So they had a couple of ways of doing that. One was they had a hammer. They'd just go and tap the side of the pole, and they had this experience, this ear, that they could listen to the ring of the pole and they could tell you whether it was good or bad. So in some of these older poles, they'd go up there tapping the poles and listening to the echo and to the ring of the pole and, "Ah," they'd say, "This is a bad pole."

Well, then they'd go out and get kind of like a drill. The purpose of this was to take a core sample or a plug out of the pole. So they'd drill this in. It had a hollow center in the drill. So they'd drill it in halfway into the pole, and then they'd pull the drill out, which would then extract the core of the wood, and then they'd examine that to see if it was good or bad. So that was their concern. They were very proud of their craft, and they were able to go up those poles without stopping. How fast they could go up was kind of a pride. Then they would work up there.

Groundmen Assisted Linemen

They had groundmen that would be on the ground. The groundmen were generally old linemen that couldn't climb anymore because their knees gave out on them. So they'd be confined to the ground work, and they threw ropes and baskets and so forth. They'd be exchanging tools and parts up to the linemen up above. They'd go up there and they would change out the crossarms and they'd change out insulators and they'd splice conductors. They did a variety of things. It was all done by climbing.

"There were no bucket trucks at that time, so it was all just manual-type stuff. . . ."

There were no bucket trucks at that time, so it was all just manual-type stuff. Up the pole you'd go and you'd unbolt one crossarm and lower it to the ground and haul another one up and bolt it at the top of the poles and put the insulators on them. It was very interesting work to watch, because they were so good at it. Everything was done in synchronism with the work and so forth. So that's one of the things I was kind of was very interested in. The electrician-type work that was down there was very similar to what I saw up at Shasta–as was the more technical electronic work.

Storey: What kind of problems were there on the transmission lines? Did they go out to fix problems? I think what I'm hearing is sort of general maintenance type of things.

General O&M on Transmission Lines, Including Insulators Targeted with Firearms

Capener: There was a combination of general maintenance. There was just hundreds of miles of transmission lines, and through a series of inspections they would kind of get an idea of which poles were in a certain stage of deterioration or which crossarms were approaching failure, because as those crossarms would weaken, they would bow from the weight of the conductor. If you had one there that had a pretty good bow to it, you know it wasn't long before that thing was going to break. So you'd go up and you'd try to change that out before the thing actually failed.

Then there were insulators that would get shot at from target practice from people, from vandalism type. They'd go up there and you'd see a big chip out of the insulator, and you'd have to go up and change it. Then there was storm damage, lightening strikes, and things of this nature. I remember one time we had a crop duster plow into the transmission line. It was banking to make a turn and didn't quite make the turn and hit the transmission line with the underbelly of the plane during the banking maneuver and slid along the transmission line for about a hundred feet and then fell to the ground. The pilot walked away from it.

Storey: Luckily.

Capener: Yeah. But it *really* tore up the transmission line. Needless to say, the conductor was all ruined. And so the line crew had to go out there and change a few hundred feet of conductor and then check the poles and insulators and everything else. So it was quite a job. But I went out on site and saw that. It was kind of interesting. It puts things into perspective that, you know, some of these people that are out crop dusting and so forth, you know, there's hazards out there.

We didn't have any markings on the poles similar to what you see on river crossings where they have these big yellow balls or orange balls actually on the conductor so that people that are flying down along rivers, on river patrols or across canyons or something like this, they can see the conductors. Because sometimes you can't see those from the air. They kind of merge in with the landscape and you don't see them. With the advent of the crop dusters around, that was one of the hazards they had to experience.

Line crews ". . . were always busy all summer long doing . . . maintenance and into the fall. They tried in the stormy weather to have a lot of shop work to do . . ."

So they were always busy all summer long doing this kind of maintenance and into the fall. They tried in the stormy weather to have a lot of shop work to do where they would preassemble, say, crossarms or insulators or things of this nature, ready for the next season–and always ready to go out there if there was a line that went down because of storm damage.

Storey: Yeah, and I guess they would have to replace poles?

Capener: Yes. They did have to replace a lot of poles, too. The way they would do *that* is they did have a mechanical auger on an auger truck and they'd go *adjacent* to the pole and

they'd dig a hole right next to where the pole was. Then they'd either just put the new pole right in alongside the existing pole and then after they got the crossarms and everything else up, then they'd saw the existing pole off about three feet above the ground and then strap the two together so the one would act as kind of a little reinforcement.

If the old pole was not sound below ground, then they would remove it, and that was a different kind of operation. Then they would build what they called maybe a shoe line, which means that they would put two supporting structures, one on either side of the existing pole, maybe thirty, forty feet away from it, and that then would take the weight of the transmission line. And then with the weight of the transmission line *off* the pole, then they could just take it down and then replace it in place with a new one.

Storey: Did they have to interrupt the electricity in order to do these?

". . . they did have what they called the hot-line work. . . . they could do some things with the system energized. . . ."

Capener: Generally they did, although they did have what they called the hot-line work. Major stuff they did, they tried to take the line out on clearance, which means that you de-energize both ends of the line. You ground the line. You actually put a clamp on the conductor and then from that you run it down to the ground and either you hammer a big copper rod into the ground and hook the end to there or something equal to that so that if by chance something should fall across the line to energize it, it would be intercepted by that ground and be diverted to the ground rather than onto where the workers were working. So they tried to do most of their work that way.

But if they couldn't get the outage, then they could do it with what they called hot sticks. That was kind of a different thing to watch, because they'd go up there and they'd actually, with the line energized, they would have these long sticks kind of like a mechanical arm but just a long stick with certain limited control capabilities. With those, they could unhook the conductor and then they would have insulated ropes that they would tie onto the conductor and then suspend it below the insulators so that it wouldn't fall to the ground. Then they could then take the insulators off and then put new insulators on and then bring the conductor back up and hook it up, and they could do that energized. So they could do some things with the system energized.

Live-line Handwork

Now, today they have the insulated bucket trucks. They have live-line Bureau handwork where they can actually go up there and work on something with it being energized and do it with no insulating gloves or sticks or anything else. They actually go in and the whole system is at the same voltage, including the lineman.

I had the experience to do that later in my career when I was working in Colorado. We had what they called the Live-line Bureau Hand School where you'd

have these insulated bucket trucks. That means that the tires of the truck obviously would be at the ground potential, but the bucket up there where the man was working would be at the same potential, same voltage, as the transmission line. So you got in this bucket and they put you up closer and closer to the transmission line, and as you got maybe five or six feet away from it, the hair on your arms started to stand on end and you could just feel the electro-mechanical fields there. You'd go right up and you'd hook onto the wire, to the live conductor, and hook it right to the bucket that you're standing in, and you could go right up there with your bare hands and grab hold of that live conductor. That was a technology that was developed later, and it's still used in some parts of the country. I don't think they allow that in California. I don't think that's a practice they make in California. But they did in Colorado at that time.

So I have a little card somewhere in my boxes of memorabilia that I'm a certified live-line Bureau hand operator or whatever. So I've actually gone up to a 230,000-volt line and grabbed hold of it. Kind of like the birds when they fly and sit on the conductors. They must feel that.

Storey: As long as they don't touch two at once.

Birds Are One of the Problems on Transmission Lines

Capener: As long as they don't touch two at once or touch the ground or something, they're okay. One of the problems we had were the birds, because the eagles, one of the larger birds, would like to sit on top of those poles, the wooden poles, because it gave them a good view of the countryside for hunting purposes. So they'd sit up there and even make nests up there. So once in a while, as they approached the top of the pole, they'd come from the bottom up and they'd get too close to the lines and they'd get zapped.

Storey: Did you see any of that while you were at Tracy?

Capener: I saw some nests up on top of the poles, but I didn't actually see any of the fatalities. It was not common, but it did occur.

Storey: Let's see. Anything else that you did at Tracy?

Capener: No, I think that kind of covers it.

Office Work in the Region on Rotation

Storey: Then you went to the regional office for a rotation, is that right?

Capener: Right.

Storey: What did you do there?

The Region Tended to Do Design Work and Calculations about the Behavior of

the Transmission System under Various Conditions

Capener: Well, that obviously was office work, because that was where a lot of the engineering work was done was in the regional office. They did some design work there that was perhaps more complex or complicated than what we would do out in the field.

"Out in the field, we didn't want to spend a lot of time doing design work. It was more oriented to go out and deal with practical issues and problems of making things work and getting things installed and replaced . . ."

Out in the field, we didn't want to spend a lot of time doing design work. It was more oriented to go out and deal with practical issues and problems of making things work and getting things installed and replaced and so forth. In the regional office, they did more of the design.

They did a lot of relay calculations, which means that as the system was changed, as more transmission lines were being built or more loading was put on the transmission lines, you had to run through some rather sophisticated calculations of what would happen if a line were to fail or if you were to have a short on the line or an open line and so forth. They'd have to run through a lot of calculations on what the current would be back at Shasta Powerplant, for example, if the transmission line failed down around Tracy. And that would change based upon system configuration. If PG&E [Pacific Gas and Electric] or SMUD [Sacramento Metropolitan Utility District] or somebody added more load or a new transmission to it, the calculations would change because this whole electrical system is all tied together. So what you do down at Fresno or Tracy or Portland or various places like that has an impact on what will happen at Shasta under fault conditions.

So the responsibility of the people down there, at least one group of them, was to continuously go through that as changes were made and recalculate the conditions at our various powerplants under abnormal conditions. The *results* of those calculations were used to adjust the settings on these protective relays that were located at the powerplants so that if things had to be more sensitive, then you would determine that through these calculations and then you would send that information up to Shasta, let's say, and then we'd go out as we did the relay maintenance and make those adjustments to reflect the changes in the electrical systems, transmission systems. So all of that type of work and calculations and so forth were done down in the region.

"That was real what I would call mainstream-type electrical engineering and power engineering to do that. Today very little of that is done, because computers do it all. . . ."

That was very interesting work. That was real what I would call mainstream-type electrical engineering and power engineering to do that. Today very little of that is done, because computers do it all. You just plug the information into a computer screen or something and it does all the calculations and so forth. We did a lot of that just manual with slide rules, and it took hours and hours and hours to go through the

multitude of layers of calculations and so forth. And now all the fun is taken out of it, because you just put the numbers into a program and it goes through and tells you. So a lot of that was done.

". . . another function that we did down there was to review the transition equipment of our customers. We would have certain requirements imposed on our power customers . . . they had to maintain a certain types of equipment at this interface point in order not to cause any kind of disturbances on the power system and to be sure that the voltages on the power systems were maintained. . . ."

Then another function that we did down there was to review the transition equipment of our customers. We would have certain requirements imposed on our power customers like, for example, city of Sacramento or city of Palo Alto got power from us and a multitude of others, and they had to maintain a certain types of equipment at this interface point in order not to cause any kind of disturbances on the power system and to be sure that the voltages on the power systems were maintained. So if, for example, they had a type of a load in their city that affected the voltage on the power system, then they were required to purchase and install offsetting equipment–capacitors is a good example–to maintain voltage during light loads or heavy loads.

So we had to go through and monitor that with the customers and determine what we call power factor correction to ensure that if the power factor relationship between voltage and current on the power system was not what it should have been, then according to the contracts we *had* with these cities, they were obligated to install certain equipment. So that was another thing that was done through the regional office, was checking all of the power customers and were they adhering to their contractual commitments in regards to providing the type of equipment protection, and voltage support and so forth that they were supposed to. So a lot of that was done. I remember spending several weeks just going through and looking at the power factor information from all of these customers to be sure they were adhering to the contractual requirements.

There Was Some Dead Time

Then there was just a lot of–well, maybe not a lot, but there was just some what I guess I'd call dead time. Sometimes everybody's just too busy to do anything for you and they say, "Well, you don't know quite enough to do the real hard stuff, but we don't have any of the other stuff to give you. So here's a whole bunch of material to read." So they'd give you all this stack of stuff to look at and to read and review and everything else. You just knew it was kind of fill-in because they were so busy doing something else, and you'd kind of be, well, maybe a pain in the neck to have to explain everything to when they wanted to get things done in a hurry. So they'd give you that.

". . . that wasn't too frequent. That was probably the slowest time because so much of it was desk time. The other assignments seemed to go very fast

because it was out in the field and out where the work was and . . . time went by very rapidly. Three months in Sacramento seemed to drag because so much of it was desk work and book work and the calculations type of things. That kind of convinced me at the end of that rotation that I don't think I wanted to be in that type of setting. . . ."

But, you know, that wasn't too frequent. That was probably the slowest time because so much of it was desk time. The other assignments seemed to go very fast because it was out in the field and out where the work was and there was just kind of a pace and the time went by very rapidly. Three months in Sacramento seemed to drag because so much of it was desk work and book work and the calculations type of things. That kind of convinced me at the end of that rotation that I don't think I wanted to be in that type of setting.

Offered a Job in Construction at Los Banos but Wanted a More Stable Situation

I did have an offer when I was at Los Banos to join the construction side of Reclamation, the construction office there offered me a job. They said, "Come to work for us in construction." You know, its all exciting and everything else, and I went home and talked to my wife about that. And she says, "No." She said, "That's not stable enough. Most construction people move about every two or three years. So let's not do that. Let's stay with the operation and maintenance." So we *did* and we moved about every two or three years. (laughter) I was with operations and maintenance until I came here to Shasta.

". . . this offer came at Shasta after my last rotation with the regional office. I was very happy to accept that, because having been here, I understood it, and . . . I thought this is really where most of the action is because we have the major power generation up here. . . ."

But we passed that up and then this offer came at Shasta after my last rotation with the regional office. I was very happy to accept that, because having been here, I understood it, and then, having seen the rest of the region and making a comparison, I thought this is really where most of the action is because we have the major power generation up here. We had a transmission line crew up here as well and the dams and the reservoirs, all that stuff, and the area was more to our liking, so we accepted that job and came up here.

Storey: And then how long were you here?

Capener: I was here three or four years at Shasta.

Worked at Shasta for Four Years

Storey: That would have been about '65 or early '66 you moved back up here?

Capener: Uh-huh.

Moving Reclamation Offices out of and Moving the Job Corps into Toyon Camp

Storey: You mentioned Toyon Camp yesterday, and you mentioned that it was closing down. Do you remember anything about the closing down of the camp?

Capener: Well, the camp wasn't exactly closing down in the sense it was being abandoned. What was happening at that time was that Reclamation was moving out and they were moving the Job Corps [Center] in. I remember that when I was here on rotation, we were in the government camp, and then when I came back on my permanent assignment, they were right in the middle of moving. They were not allowing anybody, any government people, any Bureau people, to move into the camp and they had given them a timeline by which they all had to be out of the camp because they were turning it into a Job Corps. This was one of two Job Corps in the region, one at Shasta and another one over at Trinity, at Lewiston, which was the old construction–the Bureau construction camp over there was being turned into a Job Corps [camp].

Upper Vista House, the Visitors' Center, Was Converted to Hold Offices on the Upper Floor

So they converted this building, this Upper Vista House, which prior to that was just strictly a visitors center, they converted the upper floor of that to our offices, and they were in the process of moving everything from there into here. So I started my assignment with the offices over at Toyon, and after about a year or so we were all located over here. And, again, the purpose was the Job Corps. So they turned that all into a Job Corps and it did very well for a number of years.

Storey: So this would have been about '66 or so?

Capener: Um-hmm.

Storey: Project manager moved up here?

Capener: Yes.

Storey: All of the office staff?

Capener: Right.

Storey: Did you have an office up here?

Capener: Yeah, I did, down at the other end of this floor.

Storey: Did you have an office mate?

Capener: A what?

Storey: Somebody else in the office with you?

Capener: Oh, yes. This whole floor was full of staff. Actually, we had our procurement people up here. We had all of our engineering staff up here. We had our office support help up here. Our warehousing people were located down in the warehouse, but the procurement arm of it was up here.

END SIDE 1, TAPE 2. OCTOBER 27, 1995.
BEGIN SIDE 2, TAPE 2. OCTOBER 27, 1995.

". . . basic functions of engineering, offices services, were located on this floor. All our crews were down in the plants, but they were there originally anyway. . . .There are windows all around on the three walls of the office area, because this was a viewing area originally. It was all open-air viewing. . . ."

Capener: Our basic functions of engineering, offices services, were located on this floor. All our crews were down in the plants, but they were there originally anyway. So we filled up this floor. It was not a very good change in the sense that this is not a good straight rectangular building. The walls are not straight. There's support pillars in the middle of an office and so forth to support the roof. Walls are kind of all different angles, as you can see. But it was good in a sense that it got us closer to the work, and the view was great. There are windows all around on the three walls of the office area, because this was a viewing area originally. It was all open-air viewing. What now is our outside window wall was all open air, and the only closed rooms we had were interior against the east wall of the top floor. There were three rooms there that had some archeological displays and some artifacts and so forth that were displayed to the tourists. But this whole floor was an open-air floor.

Then there was a floor above us which was the roof, and there was railing around the edge of the roof, and there was a concession up there, a nice little hot dog stand type thing with refreshments and light snacks and so forth, and they had picnic tables out there with umbrellas over them. The tourists could go up there and enjoy a nice sunny view with little snacks and so forth. That all went away when we came over and converted this to an office. They did have a snack bar downstairs that they used.

Then there was a doorway from what was the second floor that was directly into the auditorium. About midway up the auditorium there was a landing. So the visitor could go in at the bottom floor into the auditorium and see the film and the view and so forth, and then if they wanted, they could just exit from there directly into the second floor of the building through the auditorium. That doorway was sealed up, so the auditorium was kind of reserved strictly for the tourist part of it.

A Few Windows in the Offices Broke Due to Expansion Space Not Being Adequate

One of the problems we had with this building was the windows, because these large open view areas now had to be enclosed with windows, and so they installed some tinted glass. I remember the first summer after the installation was completed, we were sitting back in our office and we hear this terrible *bang*, and

everybody was going, "What was that?" And we looked around there was this big crack in the window from top to bottom. They didn't allow enough expansion, and so as the glass heated up, and it was tinted glass so it attracted a lot of heat, it expanded, and the forces in there were such that it just caused the window to just *crack*, a big *bang*. And there were about five of them that went that way, not all at the same time, over a period of a few years. And so it was very interesting. You never knew whether the window was going to fall on top of you or not sometimes.

But we got through that okay, and, by and large, this has been acceptable. It has its problems with having the organization split into so many different areas geographically. I mean, that does cause a few problems.

Storey: Who was the project manager when you came back?

Felix Dashen Was Project Manager at Shasta

Capener: Felix Dashen. He was here.

Storey: Did you get to know him then?

Capener: Oh, a little better. Yeah, but still he dealt mostly with his immediate staff, and I was two layers below. There was a division chief and then there was a branch chief and then there was me. He dealt mostly with the division chiefs, the maintenance division, and then under the maintenance division there was electrical branch and mechanical branch and so forth. He was courteous and he would talk with you and so forth, but he didn't spend a lot of time chit-chatting. He was occupied in a lot of other stuff.

Storey: Did he retire before you left here?

Capener: No, he was still here when I left. He didn't retire for a number of years afterwards.

Storey: Working on his human relations, huh? (laughter)

Capener: Yes, uh-huh. (laughter)

Storey: I think at some point you mentioned yesterday doing office calculations for the sale of electricity. Did I misunderstand that? Or was that at a different location?

At Shasta They Kept Track of Power Deliveries and the Accuracy of the Metering Devices

Capener: Not for the sale of the electricity, per se. What we did is we had existing contracts with power customers, and we had to ensure that the terms and conditions of those contracts were met, part of which was the metering of the power delivery. Generally the Bureau owned the meters and the metering devices, the transformers and so forth. So we had to often recalculate the adequacy of those devices to be sure that the meters were not running slow because of changing conditions on the systems. So we

had to verify that, and there were quite a number of those that had to be done. All of that went with the formation of Western Area Power [Administration]. They assumed all our responsibility.

Storey: That would have been about the time you came here?

Capener: No, that didn't occur until–well, it started when I was in New Mexico, and actually I think it finished up when I was in Idaho.

Storey: Oh, really?

The Transfer of Facilities to WAPA Occurred after His Return to Shasta in 1976

Capener: Well, let's see. Colorado. No, I guess, when I was in Colorado they still had the transmission lines, so it hadn't taken place then. So the actual formation of Western–well, I guess it did. I guess when I started here in '76, we still had all of the system. So it was within a few years after I came here as area manager or project manager, that Western was split off.

Storey: Were you, for instance, doing things like–am I understanding this–double-checking to make sure how much electricity each customer got? Is that what was going on, or was the metering thing more your issue?

Capener: They were all tied together. It was basically the same function, the same position. We would take the meter readings, kind of like you currently do on your home, we'd take that information and we would run some calculations on that to see not only the quantity of energy delivered to a customer, but during the period that they were receiving that energy, did they maintain the voltage and so forth at the site that they were contractually required to. So there was a certain check that had to be made on a monthly basis in regards to the delivery of the power to the customer.

". . . there was another kind of oversight that was required to ensure kind of a gradual growth by the customer did not jeopardize the equipment that was installed there, so that the equipment became undersized. . . ."

Then there was another kind of oversight that was required to ensure kind of a gradual growth by the customer did not jeopardize the equipment that was installed there, so that the equipment became undersized. So you had to look at load projections on the part of the customer, check that with the metering equipment that we had installed to be sure that the metering equipment was adequate to not only meter the current deliveries but the projected deliveries. Because there was generally a two- or three-year lead time required to change out the equipment if that was necessary. So those calculations and those things had to be done as well.

Storey: But were you involved in the accounting process for power revenues and that kind of thing in any way?

Capener: Not in the sense of the number crunching or whatever. That was handled by others.

It was handled out of the regional office, and they had a regular branch there that *took* the information and processed it into a bill and then collected the revenue and so forth.

Storey: What else did you do while you were back at Shasta? Anything new?

The First Uprates at Shasta Were Beginning

Capener: Well, when I came back after my rotation, we were starting the first *uprates* of Shasta. In other words, the *original* windings that were installed in the forties had reached their life expectancy, so we were going to replace those with new windings. While I was here, during that four-year period, I think we replaced at least two of those windings and two of the generators. Maybe three. I don't recall exactly.

". . . that was very interesting, because at that time we had to disassemble the whole generator . . ."

But that was very interesting, because at that time we had to disassemble the whole generator, and that was the first time that I had seen *that* happen. You take the thing completely apart. All of the major components are removed and stored out there on ~~the floor of~~ the generator floor of the powerplant.

". . . that was a good opportunity to do some work on the turbine that you couldn't do with it in-place. . . ."

We'd take it down and even take the turbine out, because that was a good opportunity to do some work on the turbine that you couldn't do with it in-place.

"Everything was taken out and you could stand up on top of the walkway there and you could look over the rail down at the hole in the floor where the generator used to be and all the way down and see the water down at the bottom. . . . you put work platforms in there so that there was only a short time that you could actually see all of that . . ."

Everything was taken out and you could stand up on top of the walkway there and you could look over the rail down at the hole in the floor where the generator used to be and all the way down and see the water down at the bottom.

Of course, in the development of the work, you put work platforms in there so that there was only a short time that you could actually see all of that, and then we put some platforms in to act as work platforms from which the workers would work at various levels.

Testing the Old Asphalt/Mica/Asbestos-Type Insulation on the Windings

So that was interesting, because we had to take everything apart. Then what we wanted to do [was] test the windings that we were removing, because we knew that they had been there a long time, they had been subjected to a lot of heat, they

were the old asphalt/mica/asbestos-type insulation, and all our information told us that those things were just about ready to fail. So we wanted to take them out, put them on the bench, and do what we call a high pot. In other words, we would simulate a high voltage on it. We would actually hook them to a machine that would generate voltage far in excess of what they were normally subjected to, and that would cause any bad spots in the insulation to fail. We would then wrap the outside of the winding with aluminum or something that would conduct electricity. So if the insulation popped, it would go right to the ground through this covering that we placed on the winding. There would be a big bang when that happened, just like discharging a small firearm or something like that.

"One of the reasons we got the uprate was the fact that this machine was so old and everybody expected it to fail. . . . So we took it up about 25 percent higher than the operating voltage and nothing failed. . . . they were in very bad shape. There was no question about it, but they just didn't fail the way we thought that they would. . . ."

One of the reasons we got the uprate was the fact that this machine was so old and everybody expected it to fail. So we got down to taking everything out, and the winding was still in place. The rotor was out, the center part of the machine. We said, "Okay, let's just jack the voltage up on this thing and see what happens." So we got up to the operating voltage and *nothing* failed with the lining still in the iron slots in the machine. So we took it up about 25 percent higher than the operating voltage and nothing failed. We said, "Something's wrong here. This thing should have failed. It's so old and powdery dry and everything else, and it's not failing. What's wrong? Shut it down and don't tell anybody, because the thing is supposed to be so bad. And now if we tell them it's not failing, they'll think we're wasting all our money by buying new windings and everything when we have a good machine already. So let's crank the voltage down and let's take these coils out. Don't tell anybody what we did."

So we did that and then we starting to take the windings out. Well, when we took them out and started to take a knife and cut into the insulation, obviously we could tell that it was just terrible insulation. It was dry and powdery. We could see where there's a lot of static electricity and electrical discharges interior to the lining. So they were in very bad shape. There was no question about it, but they just didn't fail the way we thought that they would.

So one of the things we did was we ran a little experiment in that we wrapped these things with the aluminum foil and then we put them on a work bench and we individually tested a lot of them until they did pop, and we'd run the voltage up on them. At about 120 percent of their normal operating voltage or 130 percent, they'd start popping. Then we'd go in and we'd examine what actually happened and try to dissect it very carefully into the point of actual failure and try to get some kind of an assessment of what the insulation was like at that point. We generally found that it was just a dryness, that all the pliability had long since left the insulating material. We found a lot of white material which is the result of corona. Corona is caused by a very small electrical discharge, kind of a sparking. It doesn't go to ground. It just

sits there and fries, makes a little crackling noise. That crackling noise and so forth eventually will cause the insulation to fail. We found a lot of that in there.

". . . we spent a number of months going through and making a big statistical evaluation of the linings. We must have tested thirty or forty . . . We thought maybe that would be of value, but it proved that it really wasn't much of value because the new insulating materials that were coming on the market were such that people really didn't need to justify the replacement of the old linings. . . ."

So we spent a number of months going through and making a big statistical evaluation of the linings. We must have tested thirty or forty of those things on the bench, at what voltage they failed and so forth. We thought maybe that would be of value, but it proved that it really wasn't much of value because the new insulating materials that were coming on the market were such that people really didn't need to justify the replacement of the old linings. They were pretty much related to age and operating condition.

". . . plants that were what we call peaking operation, which means you start them each day . . . and you run them at full bore for maybe six-, eight hours during the peak load and then you shut them down . . . up and down like that every day, they heat up and then they cool down. . . . so the copper expands and contracts though that same cycle. It's that, in addition to the heating, that adds to deterioration. . . ."

What we found industry wide, those plants that were what we call peaking operation, which means you start them each day and you bring the voltage up and you run them at full bore for maybe six-, eight hours during the peak load and then you shut them down again, and then up and down, up and down like that every day, they heat up and then they cool down. They heat up and they cool down, and so the copper expands and contracts though that same cycle. It's that, in addition to the heating, that adds to deterioration. This was occurring kind of industry wide, and so we thought maybe we'd have some information that might help some other people, but it wasn't really necessary. It was pretty much accepted that those things were by the wayside anyway.

"So we tore the machines down and put the new windings in. . . . And went through all the acceptance tests again, similar to what we had done at the Trinity plant . . ."

So we tore the machines down and put the new windings in. It was all done by General Electric. They had the contract to do that. It was very interesting to see that happen. And went through all the acceptance tests again, similar to what we had done at the Trinity plant and were doing there, too, except in this particular case we actually had to remove all of the old insulation that had been there. So it was a little different variation.

Storey: And was it an upgrade as well as–

Capener: Yes, it was. Those original machines were about 75 megawatts. We put the new windings in and they were up close to 100 megawatts, so we got a pretty good uprate out of them as well.

Storey: Why was it possible to upgrade like that? In the same size, I guess.

". . . the more copper you have in there, the more electricity you can generate. . . . you're limited by the amount of copper you have by the ratio of copper to insulation. . . . the new epoxy material could give you the same insulating properties with less thickness of insulation, so that allows you to put a larger ratio of copper to insulation in that new winding. . . ."

Capener: The real *constraint* that you have in the machine is the amount of copper that you can put in the individual iron slots, and that's where the electricity is actually generated. The voltage is actually generated in those copper bars that are *embedded* in the iron slots, because the magnetic field goes through the iron, stationary iron, and as that magnetic field goes through the iron, it also goes through the *slots* which you have your copper bars in, and as that magnetic field goes through the copper bars, it generates electricity. So the more copper you have in there, the more electricity you can generate.

Factors to Be Considered in Uprating Generating Equipment

Well, you're limited by the amount of copper you have by the ratio of copper to insulation. So if you need more insulation around that copper bar, that means you have to have less copper in there. Well, the new epoxy material could give you the same insulating properties with less thickness of insulation, so that allows you to put a larger ratio of copper to insulation in that new winding. So the actual copper was greater, insulation was less, but the insulating properties was the same. So with more *copper* in there, you had then the potential of upgrading the machine, because you could induce more of a voltage and more of an electrical current in those copper bars.

Then there were other peripheral things that had to be looked at. Your field, your electrical field which is the rotating part of the machine, that had to be evaluated to be sure it could provide enough magnetism, if you will, to accommodate your uprate. They could. They were sized such that we had enough capacity for that. Then we had to look at the turbines to be sure they could stand the additional *water* that would be required to *turn* the rotating machine.

Storey: The turbine is the part where the water hits the wheels and moves the–

Capener: Right. The turbine is the waterwheel that's located *below* the electrical generating portion of the machine, and there's a large steel shaft that connects the turbine to the rotating part of the machine.

Storey: That's the rotor?

Capener: The rotor, yeah.

Storey: And that's part of the generator?

Capener: That's right. And the turbine is like a large waterwheel, and the water from the lake, as it comes down from the lake *to* the turbine, is under lake pressure. It's a closed system. So the pressure you have at the turbine, the water pressure, is the same that you'd have very close to the bottom of the reservoir. So it's very high pressure. Then that water under pressure comes out and impinges against the turbine and causes it to turn, just like a pinwheel, a windmill or something of this nature. So it's directed against the turbine, and it causes the turbine to rotate. Then after that energy is transmitted from the pressure of the water to the rotating energy of the turbine, then it drops down below the turbine and out to the river. So it's kind of an energy exchange from the static energy of the reservoir into the rotating energy of the turbine. And then that is transmitted up to the rotating speed of the rotor part of the generator.

"You have to have everything sized properly so that you have the capacity of the turbine to drive the generator. If either one is undersized, then you run into a problem. . . ."

You have to have everything sized properly so that you have the capacity of the turbine to drive the generator. If either one is undersized, then you run into a problem.

"What we found in the old system was we certainly had adequate turbine capability . . . and that was designed that way intentionally because that way when the lake got low, you could still operate at full power, because you had enough spare capacity in your turbines, but you couldn't operate at full turbine capacity with a full lake, because . . . your generator couldn't take it. So we'd always have maybe 80 percent of the turbine capability in operation when the lake was full, but then when the lake was down thirty or forty feet, we had 100 percent capability of the turbines. . . ."

What we found in the old system was we certainly had adequate turbine capability, but we didn't have generating capability to take advantage of that, and that was designed that way intentionally because that way when the lake got low, you could still operate at full power, because you had enough spare capacity in your turbines, but you couldn't operate at full turbine capacity with a full lake, because under the old original winding, your generator couldn't take it. So we'd always have maybe 80 percent of the turbine capability in operation when the lake was full, but then when the lake was down thirty or forty feet, we had 100 percent capability of the turbines. So they were matched that way because of the fluctuating reservoir.

So all of that was looked at, and replacements were made where appropriate, and things were beefed up where necessary, and the new windings were put in, and went very fine, very good. That was started on my first permanent assignment here, and then when I came back in '76, lo and behold, we started again.

When He Returned to Shasta in 1976 They Started Upgrading Again

Storey: And did you get another upgrade then?

Capener: Yeah, we did.

Storey: Because we had new and better insulating materials?

Capener: Well, actually, yeah. We did the units one and two, which at this time, then this would have been their *third* upgrade, and we did have better materials by then as well. So units one and two are rated about 135 megawatts, because they've gone through the upgrade process twice. Units three, four, and five have been upgraded once and they're rated about 100 megawatts, and they're scheduled to be upgraded starting next year again. We're going in the fall of next year with a program that will result in upgrading units three, four, and five, and they'll be upgraded comparable to units one and two, about 130 megawatts.

Why He Applied for Every Position That Came along Looking for a Promotion

Storey: You mentioned yesterday in the interview that you were applying for every job that came along because you wanted a promotion.

Capener: Uh-huh.

Storey: I take it that means you didn't feel that the promotion potential at Shasta was very good.

Capener: Well, what I saw was that you have opportunities locally as you have staff turnover. There's certain numbers of positions that are needed, and you come in at the bottom of, say, the engineering levels–for promotions to occur, you've got to move into another position. In other words, you have to climb up the ladder. You reach a plateau in the position that you're at, at about a GS-11, practicing engineer at that time. Now, to move up to 12, you had to move up to branch chief, and then to a 13, you had to be a up to a division chief. Well, the branch chiefs and division chiefs were fairly young people and they weren't anxious to go anyplace. I said, "Well, I can stay here for ten or fifteen years and then take my chances that when they move out that I'll be able to move up, or I can start to look around at positions that become open where they do advertise and take my chances of getting a more rapid promotion." The risk to that is is you may end up in some areas you don't really particularly like, but that may be short-lived if you then can get a promotion subsequent to the first few moves that you make.

Accepted for a Job at Elephant Butte

So we did decide that. We thought, "Well, let's take our chances." You know, there's not a lot of places in the Bureau that you look at and say are not desirable. We weren't at all hesitant to move out into the rural setting or the country setting or the mountains or even the deserts. We didn't look at the Dakotas with a lot of great enthusiasm. (laughter) You know, we knew that that was kind of cold

weather. So we did. We applied probably for about six months at maybe half a dozen different jobs and then was accepted at the one at Elephant Butte.

Storey: Did you have a career plan at that point, or was it just to get to the next step?

"To me, that seemed more rewarding to be in those types of positions where you had both the technical engineering background and decision process, and then you could translate that into an actual hands-on type production through to the crews and to the foremen. . . ."

Capener: I think my career plan was to become more involved in the whole Reclamation process and more involved in the engineering process, which I saw you'd have to really move up into more of a decisionmaking role and to where you had more control over the activities that were going on such as a branch chief would then supervise maybe a number of *foreman* that were then in charge of the crafts. To me, that seemed more rewarding to be in those types of positions where you had both the technical engineering background and decision process, and then you could translate that into an actual hands-on type production through to the crews and to the foremen. And to me, that was really kind of an ideal situation where you had ties to both areas and both fields, because I still like to see the work accomplishment and things being done and the practical aspect of things as well as the technical–as well as the engineering.

So that's kind of where I wanted to target to, and so I kind of looked at that as the next step and not really knowing too much on what might happen beyond that. I kind of was taking it one at a time. I had no expectations of ever, say, being a project manager. That seemed so far out of reach to me at that time, I just didn't really look at it.

Storey: What else was going on at Shasta besides the upgrade of the powerplant while you were here?

Changing Switchyard Equipment for the Upgrade

Capener: Well, along with the upgrade, we had to change some of the equipment out in the switchyard, so we were replacing some of the circuit breakers with larger breakers, and that meant that we had to do some reconfiguring of the switchyard.

Storey: You had to match the equipment to the generator capacity?

Capener: Yes. That's right. Right. We had to match them, because of the new generator capacity we found that the breakers had to be upgraded and we had to do some reconfiguring of the switchyard. Some of the high bay wiring had to be redone.

Rebuilding the Wooden Shasta-Tracy Transmission Line with Steel Towers

We also started a program replacing one of our old, I guess it was the Shasta-Tracy transmission line, which was wood pole. We started replacing that with steel

towers. So that was a multi-year contract-type program. So I was involved in that and going out and assisting in the survey of the sites and establishing the foundations that the towers would be built upon and then doing some of the follow-up inspection as the contractor came in and built steel towers to replace the wooden poles that were done.

Storey: Did we do any rerouting? Sounded like we did rerouting . . . the way you were talking.

Capener: Well, the lines were built on the same right-of-way. The transmission line itself was not rerouted. I don't think there was any new lines built other than what came over from Trinity that had already been constructed. So, no, the lines were not rerouted, they were rebuilt.

Storey: Explain to me a little more of the process of rebuilding. I'm hearing something in there that doesn't . . . (Capener: The transmission lines?) track for me. Yeah.

Capener: Rebuilding a transmission line is a couple of things. You can rebuild the structure itself. An example of that would be replacing the old pole-type structures with steel towers. Then the conductor might need to be rebuilt, and by that we mean upgraded to a larger conductor because now you want to put more energy down the transmission line. So those can be done either independent of each other or they can be done together. In this case, they were done together, because the plants were being upgraded, there was going to be more generating potential, both with the upgrading of the three units and then the potential of the others shortly thereafter. And the condition of the old wooden lines, wooden poles, was such that we felt that they needed to be replaced with steel.

So that was the upgrade or rebuilding of the transmission lines, and it entailed going out on basically the same right-of-way, the same easement, and determining the space between the new poles, because that would be different than the space between the wood poles, because they wouldn't always be in the same location because the wood . . .

END SIDE 2, TAPE 2. OCTOBER 27, 1995.
BEGIN SIDE 1, TAPE 3. OCTOBER 27, 1995.

Storey: [This is tape 3 of an interview by] Brit Storey with J. Paul Capener on the 27th of October 1995.

"So the rebuilding of a transmission line required basically a whole new engineering of it, because it's almost like going back and building a brand-new one. . . ."

Capener: So the rebuilding of a transmission line required basically a whole new engineering of it, because it's almost like going back and building a brand-new one. We call it rebuilt because we have one that's coming out of service at the time the new one is being put in. So you have to go in and you have to survey it. You have to determine

where your new poles are going to be located and your new towers are going to be located.

Then you have to go in and determine what kind of footing is required for those new towers, and that you have to take soil samples. You have to drill down in the ground to get some idea of what the geology is like. Then you have to design the footings based upon the contour of the land, because some of the footings will be basically *at* ground level, and then if the ground *changes*, then you've got to build the footing up with maybe a two- or three-foot concrete extension above the ground. So all that had to be done, and then you ended up with maybe about four different types of footings that was available to the contractor. We had to specify what type of footing would be located at what sites.

Then given that information, you design the tower, and the tower would basically be the same from location to location, but you had to take into consideration changes of direction of the transmission line. So if you were going to angle the line– in other words, you're going to make a bend in a transmission line like a bend in the road, it had different physical characteristics, because now the *forces* at that point of transition were different than if it was a straight line. So you had a different kind of design.

Contractors Built the Foundations and Steel Towers and Reclamation Put in the Conductor

So all of those things had to be done, and then you ended up with a specification that told the contractor what type of footing to put in at each location, what type of tower to build at each location, and that was the contract. We put the conductor in ourselves with our own crews. So that had to be done.

Served as Field Supervisor of the Transmission Line Rebuild

Then part of what I did, when I was here, was to go out and be kind of like the field supervisor of that activity, to check the contractor and check his work, and that he was meeting the specifications, and then to deal with any abnormalities that may have come up.

That process went on for, I think it was probably about two or three years, it took to build and replace that line under that contract, and it was not done continuously, it was done during particular times of the year, generally in the wintertime when we could take the line out of service and it was raining a lot. We always liked to used to do those outside work in the rain, because it was too hot in the summertime. So that was a good winter job to go out there and do that. And then our transmission line crew would come behind and they would string the new line and the new insulators.

"The idea was to minimize the outage of the transmission line, because if it were out for a long period of time, it jeopardized your reliability, because if you had one of the other lines go down out of Shasta, you might run into a situation of

limiting the amount of energy you could generate if you didn't have the lines to carry it. . . ."

The idea was to minimize the outage of the transmission line, because if it were out for a long period of time, it jeopardized your reliability, because if you had one of the other lines go down out of Shasta, you might run into a situation of limiting the amount of energy you could generate if you didn't have the lines to carry it. So we'd try and build a certain number of towers and then string the conductor and then tie into the existing line. So it was kind of building in stages to minimize the outage of the line itself. Therefore, you know, it took a number of years to do it. It was kind of interesting because it was a real true construction type job going out and building those towers. It was interesting. Then we replaced a number of the breakers in the switchyard because of sizing, and now that the new machines were there, that had to be done.

Storey: I asked you about where you started work and whose time you traveled on and that kind of thing. If you're working a construction line from Shasta to Tracy, that's a *long* ways. How was that handled?

Capener: We didn't have the full responsibility of that line all the way to Tracy. The Tracy line crew had the responsibility from Tracy up to just about where Sacramento would be, and then we had the responsibility from here down, so there was a dual responsibility in regards to the overall length of the line. What we would do is if we were doing a lot of work down there, down in the valley, sometimes the transmission line crew would just go out on detail, and they would stay a week or two out on the job site, living out of motels and working that way. I normally would not do that, because I didn't have to be there all the time. So if there were things going on, I would generally report here and then drive down and check on things for a few hours and then come back.

Storey: We're running a little over. Is that a problem for you?

Capener: No. That's fine.

Storey: I'd like to finish up Shasta before we stop today, if we can. Did you, working here in the office, do a lot of consultation with the Denver office on issues and problems?

Capener: I didn't do a great deal of consultation with them. That was handled by the branch and the division as far as working out any type of engineering problems that were of a level that needed to be dealt with. My consultation process was mostly with, say, the branch and division people to present to them the issues and the problems and the suggestions and so forth, and to work with engineers out of Denver that were *assigned* to assist on the issues and problems out here. So the upper levels would work out maybe the arrangements and the direction that a job was to go, and then both levels would delegate down to their staff the actual execution of the day-to-day type stuff.

So occasionally I'd have an engineer staff come out from Denver that would

spend a few weeks out here, if necessary, to deal with any on-site issues that were rather critical or complex. They would generally be a group, somebody out of Denver, somebody out of the Sacramento office, and then the field office would kind of work as a team. And it would be at the level that I was working with that would normally occur.

Storey: So you didn't ever pick up the phone and call Sacramento or Denver particularly?

Capener: I would often call staff people in Sacramento, the working engineer down there, but very seldom would I actually get in touch with anybody in Denver unless it was somebody that had already been out here working on a project and it was kind of like a follow-through-type stuff.

Storey: Were there any limitations on the use of the phone?

Capener: No. No. If we felt a need or had a need to do anything, we could do it.

Storey: Who was the branch chief? I presume this would be the person who hired you?

Ed Extell and Tom Gamble

Capener: Yeah. Ed Extell [phonetic]. Ed Extell was the branch chief when I came here.

Storey: You had worked with him, I believe, when you were on rotation?

Capener: No, let me back up a little bit. Ed was the division chief. Tom Gamble was the branch chief. That's the way it was set up.

Storey: How were they to work with?

Capener: They were very good. Ed was a very personable guy, and Tom was a very sharp guy. So, you know, if we had any real technical problems or anything else, you'd kind of work with Tom on that. He was very quick with the engineering issues. Ed was also, of course, very knowledgeable in engineering, but his experience had been a lot related with people-type experiences. So they were both very good to work with.

Actually, we had a very congenial group, I think, at least from my perspective. There weren't a lot of stories and rumors and everything else going around the office. It was kind of more of a family-type thing. There may have been some problems that I was unaware of that were going on, but I wasn't really interested in knowing all those things anyway. I was more concerned in just getting to know the job and getting the work done and getting out and learning.

Storey: Were there any other major projects while you were here that you were involved on?

Capener: Well, let's see. We talked about moving the office over to this building. We talked about replacing and upgrading some of the Shasta units.

Storey: Anything maybe over at Trinity or down at Whiskeytown?

Capener: No. Trinity and Whiskeytown were relatively new plants, and they were going along just fine. We didn't really have any issues with them.

Storey: I think we've pretty much covered the acceptance process yesterday, the different kinds of tests and things.

Capener: Um-hmm. No, I think everything else was the major things we covered, the transmission lines and the work on that and the switchyard and the units.

Storey: When was it that you moved to Elephant Butte?

Capener: Well, I was here about four years. I'll have to go back and check my records to give you the exact dates that would have been.

Storey: At an estimate about maybe 1970 or so. Okay. Well, I appreciate you taking time today, and I want to ask you once again whether or not you're willing for researchers inside and outside Reclamation to use the material on these cassettes and the resulting transcripts.

Capener: That will be fine. I have no problem with that.

Storey: Great. Thank you very much.

END SIDE ONE, TAPE THREE. OCTOBER 27, 1995.
BEGIN SIDE 1, TAPE 1. MARCH 25, 1996.

Storey: This is Brit Allan Storey, Senior historian of the Bureau of Reclamation, interviewing J. Paul Capener on March the 25th, 1996, at about two o'clock in the afternoon, at his home in Redding, California. This is tape one.

I think about 1970 you moved to Elephant Butte.

Moved to Elephant Butte in the Fall of 1969

Capener: It was actually August of '69, the fall of '69.

Storey: Could you tell me about it down there, please.

Capener: Well, Elephant Butte is a field office of the Rio Grande Project, and it was built–one of the *first* Reclamation projects was the Elephant Butte Project. The dam built there at Elephant Butte was like 1911 or something like that, one of the real early projects of Reclamation.

"it has a very large dam there that has only filled . . . about two or three times in its history. . . ."

The idea, of course, was to impound water on the Rio Grande River and then use that for irrigation down the Rio Grande Valley, so it has a very large dam there that has only filled, the reservoir has only filled about two or three times in its history. So the Bureau certainly made an adequately sized dam. And then there were some upstream dams built in the mountains above Albuquerque and up into the headwaters of the Rio Grande to kind of cut off some of the water supply, as well. So the filling of the reservoir was not something that was to be expected. It was a very large reservoir, as I had mentioned.

It got its name from a butte that was kind of an outcropping of rocks, very *large* outcropping of rocks in the center of the river valley, and it looked like the head of an elephant. Although some never quite see it, that's the name that was given. It was built in the early part of the 1900s, and the water was used in the Rio Grande Valley, all the way down to El Paso. In the summertime, when they were irrigating, the only water that was released was that used for irrigation purposes, and so when you got down to El Paso, the Rio Grande River was dry. Of course, that forms a border between the U.S. and Mexico, and it runs right through El Paso, Texas. It's a concrete-lined channel through there that's a big skating board and roller skating, bicycling, and now, of course, it serves as a highway for people who want to go from one side of the border to the other.

This is one of the sites that was selected by the Bureau of Reclamation a number of years back when they had a number of Reclamation facilities painted, paintings made of the facilities for a cultural arts program, and Elephant Butte, the reservoir with the butte sticking up out of the water, was painted by Peter Hurd, a well-known artist of the Southwest. So it is now part of the cultural history, the art history of Reclamation, as well.

Had 400 to 500 Miles of Transmission System

We had primary transmission lines in that project. We had transmission lines that came all the way down from Albuquerque clear down to El Paso, and then they went out to White Sands to the east and out into Alamagordo and other portions of western New Mexico and almost into Arizona. So it is primarily a transmission system. We had, oh, 400 or 500 miles of transmission line and two transmission line crews, and we had the dam and a small powerplant.

"The powerplant was shut down in the wintertime when we were storing water for summer use. . . ."

The powerplant was shut down in the wintertime when we were storing water for summer use. It actually just closed off everything. The pumps, the generators were taken out of commission, and we'd do all of our maintenance during that period of time and we'd pass no water.

"The popular sport in the fall, when we cut off the releases, at least in the local area, was to go out with pitchforks and get the catfish and suckers and whatever other fish might be in the channel below Elephant Butte Dam. . . ."

Fish wasn't a concern at that time. There was apparently very few, if any, fish in the Rio Grande by then. The popular sport in the fall, when we cut off the releases, at least in the local area, was to go out with pitchforks and get the catfish and suckers and whatever other fish might be in the channel below Elephant Butte Dam. They'd go out there with their pitchforks and they'd just stab them and put them in gunnysacks and have hundreds of pounds of catfish and whatever other fish might be there.

Caballo Dam Was the Reregulating Dam for Elephant Butte

About ten, eleven miles downstream was Caballo Dam, which was a reregulating dam, which was very typical of the way Reclamation built structures. We had the big storage dams then downstream a reregulating dam. That, of course, always had water in it, and there may or may not have been some releases below that in the Rio Grande River. Generally *not*, except for irrigation purposes.

"We spent most of the *power* end of the operation in transmission line maintenance and radio network maintenance . . . Maintaining the generators, in comparison with the rest of the work, was somewhat secondary. . . ."

We spent most of the *power* end of the operation in transmission line maintenance and radio network maintenance, because we had to have a radio network that went all the way from Albuquerque in the northern part of New Mexico clear down into Texas, to [El Paso] ~~Albuquerque~~, and then over to White Sands. Actually, the site for the first detonating of the atomic bomb was out there not too far from where our transmission lines were. And so that was a big effort that we had at that time. Maintaining the generators, in comparison with the rest of the work, was somewhat secondary. We did have operators there that operated the powerplants, and then during the off season they would do a lot of maintenance work, along with the maintenance crews.

Precipitation in the Area of the Rio Grande Project

Some of the things that were kind of interesting there was the way that the rivers would function–that is, the rivers upstream of the reservoir–because being in a high desert, it was not typical to have long prolonged rainstorms as we have, say, here on the West Coast or in other parts of the country. The rains came in very intense and very localized patterns. And so as you'd be driving along the central part of New Mexico, you'd see off to the west against the mountains there some very, very dark clouds, and you could tell it would be raining very heavily up there, but no rain where the freeway was. And then you'd cross a little bridge, and there would just be a *torrent* of water coming from those mountains that would pass under the freeway and into the main channel of the Rio Grande River and then into the reservoir. And it was very heavy water almost, because it was a very high silt concentration, and that would stay at the bottom of the channel, even once it got into the lake.

"There would be times when that mixture of sand and dirt and water would just

flow right down the bottom of the channel into the reservoir, along the bottom of the reservoir, and into the powerplant, and it would cause us all kinds of problems because of the sand and the grit and everything else going into the turbines. . . ."

There would be times when that mixture of sand and dirt and water would just flow right down the bottom of the channel into the reservoir, along the bottom of the reservoir, and into the powerplant, and it would cause us all kinds of problems because of the sand and the grit and everything else going into the turbines. The noise, and you'd hear a grinding sound as some of that sand and stuff would be ground in the rather small clearances between the turbines, the rotating and the stationary parts of the turbine. There were a few times when we actually had to stop generation and wait for that to somewhat stabilize before we then could open the gates up again and run the water through the turbines.

One of the other things I found very interesting was the cultural aspects of that area. It certainly had a very heavy Spanish history, and our first introduction to a good Spanish or Mexican dinner was when my wife and I went down to a local restaurant and we ordered kind of the house special, which was Mexican food. We thought we were getting a mild version, and as they placed the plates in front of us and we looked down at them, our eyes started to water from the, well, I guess, the toxic vapors coming off of the food because it was so hot. We thought we'd certainly die eating food that was that spicy hot, but actually we learned to like it very much, and it didn't bother us at all once we became accustomed to it. So we enjoyed going to some of the local community potluck dinners, and some of the local churches would have their bazaars and other things. The whole community would participate, and you'd go in and get some real good homemade food, Mexican food, and it was very good.

Always Sought the Line Crews' Recommendations for Restaurants

I would always ask the line crew where good restaurants were, because they would travel up and down the central part of the state and other places and they knew all the back alleys where you could drive dirt roads off the main paved road of some little small town and find literally somebody's house that they had converted into a luncheon . . . establishment for lunches during the daytime. They had maybe four or five tables set up in their dining room or living room or whatever, and people would just stop in. Most of them were salesmen and other people that would know those spots, and they'd just sit in there. They'd have maybe a two- or three-selection menu, and they'd have some *excellent* homemade food in most cases. So that was another very interesting thing. It was very kind of laid back and homey and a very good, easy way of life.

Offices at Elephant Butte Were in the Old Construction Camp

The facilities that we had there at Elephant Butte in the way of offices and so forth was the original construction camp, which is not uncommon at that era of Reclamation. We just kept the construction buildings and used those for the O&M

[operation and maintenance] offices. And so we had *more-than-ample* facilities, because the construction had built some very large buildings and O&M only used a small portion of those.

There Were Adobe Homes in the Construction Camp

And then there was a lot of houses built for the construction people, and they were adobe homes, made out of adobe, local adobe. We found that very fascinating, because of just the way they were built, the thick adobe walls and everything.

". . . New Mexico state parks were coming in and they were going to raze all of those old adobe homes and put in RV and trailer camping sites . . . The interesting part was the difficulty they had in destroying those homes. . . ."

As we were about to leave after being there about two years, they had just completed signing an agreement with the state parks, and the New Mexico state parks were coming in and they were going to raze all of those old adobe homes and put in RV and trailer camping sites, and so they were going to make a state park out of it. So they were in the process of moving the Bureau families out and going in there and bulldozing down those homes. The interesting part of it was that of course they said, "These are old homes. They're not safe anymore. They're not built to standards and modern-day construction specs and everything else." So even though you don't need air-conditioning during the summertime and even though it takes very little heat during the wintertime because of the absolutely wonderful insulating properties of adobe, they said that they were not as safe as they should be so they had to come down.

The interesting part was the difficulty they had in destroying those homes. They had dozers up there and backhoes, and they had a real, real difficult time getting those walls to come down, because they were *so well built*. It was almost like concrete. And I doubt very much that there was any structural problems with those homes at all. But they took them all down except for three cinder-block homes that were left for some of the Reclamation management people, and the rest of them were taken down and then, as I mentioned, turned into park spaces for RVs and others for the state parks.

Peter Hurd at Elephant Butte

One of the interesting things I remember is when Peter Hurd came to paint his painting of Elephant Butte. I knew he was coming, because we'd set up schedules for him and everything. His agenda was that he'd come out there and do maybe a 12["] x 18["] watercolor, and then he'd take that back to his studio and then he would finish the final painting in oils, which would be much larger than that. Having somewhat of a hobby myself in painting, I thought I'd kind of want to see how he did it. So I went down there early one morning, because he wanted to get it as the sun was coming up, and so it was about six, seven o'clock in the morning and he was out there painting.

I was very impressed with the fact that he was a very ordinary-type person, a

very congenial, talkative guy, didn't mind you being there and watching him or anything else. He was dressed in some old Western cowboy boots and worn jeans and an old beat-up hat, and just a magnificent artist. Within two mornings, he had his watercolors finished and then went back and did his oils. He traveled around in kind of a beat-up old RV that he used as his home base. He's just a very pleasant individual to meet, really a far cry from some of the bureaucratic people we get involved in and the political people and so forth, and here was somebody with a tremendous talent and just enjoyed using it.

Storey: When you say a RV, what kind of RV, do you recall?

Capener: Oh, it was probably a 12-, 15-foot RV, a little sleeper-type thing.

Storey: On a pickup truck?

Capener: Yeah, probably on a three-quarter ton. It wasn't very large and it certainly was not a fancy one by any means. You never would have thought he was a famous artist by his demeanor or his mannerisms or anything else. He was just a real personable-type guy. I really enjoyed meeting and talking with him.

Reclamation Began to Negotiate Transfer of Some of Its Transmission Lines to Power Companies

The Bureau then started to negotiate with some of the other power entities around there, which would have been El Paso Power and Light and New Mexico Power and Light, and out to the east there were some other power companies in eastern New Mexico. The idea was that they would negotiate the transfer of some of the transmission lines to the users, and I believe this was probably the first effort on the part of the Bureau to actually divest itself of Federal Reclamation projects of this type, where they were actually going to turn over major transmission systems to non-Federal entities. That was started back in probably '72-, '73, somewhere in there, and portions of it were turned over fairly quickly, and now I understand that the rest of it was just turned over within the last few years. So it's taken twenty *years* to complete that.

Storey: Okay, so when we say transmission system, we're talking canals?

Capener: We're talking electrical high-voltage transmission lines, 115,000-volt transmission lines.

Storey: So that didn't go to Western Area Power Administration?

Capener: This was long before Western Area Power came into being.

Storey: Right. That would have been about '76 or '77, I think, when WAPA appeared. So to whom were we transferring, then?

"We were transferring it to private utility companies, that were basically the *sole*

user of the power. . . .and _most_ of the _power_ on the transmission lines was power that we wheeled for other utilities. In other words, it was not Bureau _power_. . . ."

Capener: We were transferring it to private utility companies, that were basically the *sole user* of the power. We had built a transmission line of, I would seem to recall it was probably about 110 miles of transmission line that went from southern New Mexico to the west, through Deming and up into the mountains in western New Mexico, and it just served one or two utility companies.

At the time that the transmission system was built, it was really the only source of electricity for those people. It was long before any of the development of some of the private or public power systems in El Paso or up in Albuquerque. And so the idea was that we would provide the transmission line, and *most* of the *power* on the transmission lines was power that we wheeled for other utilities. In other words, it was not Bureau *power*. It was power generated by El Paso Electric, which [was] a lot of fossil fuel power that they had from natural gas, or it was generated by other utilities, and then they would just use our transmission lines to move it from one point to the other. So we really didn't have a need for the lines once these other systems had been developed, and there were no Federal Reclamation projects out there, there were no irrigation districts, there were no pumps, there were none of the facilities that we traditionally would associate with a multi-purpose Reclamation facility, where we have large canals and pumping plants and distribution systems and provide power to operate pumps to move the water, as we do here in California. That was not the case back there. The water that was *used* out of this project was primarily *from* the natural channels of the Rio Grande River itself, down the Rio Grande Valley. So the power systems, the Bureau started the ball rolling to divest themselves of those systems.

It was a very interesting period of time. Like I say, it took about two years that we were there. We really enjoyed the high desert, some of the most beautiful scenery that we have experienced has been there in the high desert, with the thunderstorms and the beauty that you see from that. It was kind of a very laid-back type of environment in that there was not the public awareness or public pressures or environmental concerns that we experience today. That was due, I guess, in a combination of factors. Really, the Rio Grande River had not developed any kind of large fishing or other type of environmental use. The Rio Grande River, at least in this part of the country, ofttimes prior to the construction of the dam would go dry anyway, because it was up in the desert. And so environmentally there was very little impact in building Elephant Butte Dam as far as the river was concerned. So it was kind of a laid-back type of operation, and it was very enjoyable to work with, very little need to get involved with people outside of your customers and the various governments that you normally would come in contact with.

Storey: What job did you go to there?

Headed the Power Division at Elephant Butte

Capener: This was head of the Power Division of the project's office. There was a Power

Division, Administrative Division. There was a kind of an Irrigation Division that took care of some of the irrigation facilities in the river, where we did have some turnouts and other things there. It was a small office. It wasn't a very large one.

Storey: How many folks, do you think?

The Power Division at Elephant Butte Had about Thirty Staff

Capener: In the Power Division, we probably had thirty, I would guess, at the most, and that was the transmission line crew, the staff needed to operate the plant, and electrical and mechanical expertise. There was one additional engineer, electrical engineer besides myself, and that basically was the engineering staff that we had.

Storey: Two people?

Capener: Um-hmm, two working engineers. Anything else that we needed in the way of assistance, we would either get from El Paso, from the project office, or out of Amarillo, which was the regional office, Amarillo, Texas. They provided any that we needed. But there was very little that was ever required, unless we went into some kind of new construction.

Storey: So this was not at the project office level?

Capener: It was a "field office."

Storey: Of the project office in El Paso?

Capener: Right.

Storey: So who headed this office? Or did anybody head this office?

Capener: At El Paso?

Storey: At Elephant Butte.

Capener: We had kind of like a "field office manager," and I worked directly for him, and I can't recall his name. I'd have to go see if I couldn't find it in my records or something.

Storey: So there would be two divisions, a division of O&M and a division of, the electrical division that you headed?

Capener: There would be electrical O&M and then there would probably be non-electrical-type O&M, which would be your outside maintenance crews that would take care of the camp, laborers, and building repairmen and so forth that would do that kind of work and do some work on turnouts that would be along the river, where we'd divert the water from the river into some irrigation districts. And then the administrative group. So there were basically three divisions within the field office.

Storey: What kind of grade were you at then?

Promotions over the Years

Capener: I went there as a 12, GS-12.

Storey: This was how many years after you started with Reclamation?

Capener: I started with Reclamation in June of '64, and this was '69, so it was about five years.

Storey: Did you receive a promotion while you were there?

"After a year or two as GS-11, I was putting in for jobs where promotions were involved, because that was really the best way to get ahead in the organization. If you waited for your boss to retire and then took his job, you may only get one or two promotions in your *career* . . ."

Capener: I received a promotion to go there when I left my first rotational assignment in California, because I actually started to work for the Mid-Pacific Region, spending about four years in California. I started out as a GS-5 and went up to a GS-11, and then I got a GS-12 with the transfer to Elephant Butte. That was primarily the reason that I went. After a year or two as GS-11, I was putting in for jobs where promotions were involved, because that was really the best way to get ahead in the organization. If you waited for your boss to retire and then took his job, you may only get one or two promotions in your *career*, once you reached the GS-11, which was kind of the journeyman level for engineers out in the field. But if you were working in a regional office, sometimes the journeyman level for engineers was regarded as a 12, and there was always this sort of a sore point in the engineering area as to why a journeyman engineer in a regional office could have a GS-12 grade and out in the field office only an 11 grade. That issue was debated quite a bit over the time, and that never really changed until recently. And now it's not uncommon to find a GS-12 out in an area office and recognized as a journeyman engineer, because the complexity of the work that is done in the local area or field office *has* increased quite a bit because of a number of different factors.

So I put in for jobs. I remember I put in one for Bismarck, North Dakota, and I'm kind of glad I didn't get that one, because Bismarck is not known for its temperate climate. This, I think, was about the third job that I put in for, and at that time in Reclamation there was, I think there was a lot of opportunities, more so than there has been, say, in the last ten years, because we were still going quite heavy in construction and so there was a lot of demand for construction engineers, and that meant that the construction offices were turning things over to O&M, so the O&M responsibilities were growing. There were just a lot of opportunities, a lot of vacancy notices that were coming out for the GS-11 through about 13. At that grade range, there seemed to be a lot of opportunities.

"I figured that that would be a good opportunity to learn how all of the various Reclamation facilities operate and what some of the issues and problems and

other things might be. . . ."

So, we decided that, since the children were still quite young–we had four boys at this time–that we would, if we were going to have to move to advance in my career, that we would try and do it as rapidly as we could, while the children were young. So even though I really enjoyed the work at Shasta, and I went from a GS-5 to a GS-11 within the four years that I was in the Mid-Pacific Region right out of college, we decided that we would take an unknown, not even hardly knowing where Elephant Butte was, had to go to a map and find it, and knowing *very little* about the project that was down there. It was a promotion and an opportunity to go out and see something different of Reclamation. That was as challenging as anything is to try and learn how Reclamation operated in the West, because it is so different from state to state and from region to region, geographical regions. And so I figured that that would be a good opportunity to learn how all of the various Reclamation facilities operate and what some of the issues and problems and other things might be.

So we did that, and enjoyed the time in New Mexico. The boys, the four younger boys, had a lot of fun there. We lived up kind of on the top of a little knoll overlooking the reservoir and the offices and so forth, and there was actually kind of a little trail from the camp down through the native growth of scrub pine and brush and so forth. You could walk down, actually down to the parking lot for the Bureau offices, and so sometimes my wife and kids would come down there and have lunch with me and so forth. Every once in a while, the kids would come down there by themselves, which didn't bother me very much, but my wife was somewhat concerned about that because there were rattlesnakes, and quite a few rattlesnakes around that country, and she was just petrified of snakes, and still is to this day. And so she was sure that they'd be bitten and eaten up by rattlesnakes if they went unchaperoned through there, but they did anyway. Of course, make a little bit of noise and the snakes aren't going to bother you. They're going to go away. So there were no events. We had an encounter with skunks while we were there, because there was a lot of skunks around. We'd leave the porch light on, and they–

END SIDE 1, TAPE 1. MARCH 25, 1996.
BEGIN SIDE 2, TAPE 1. MARCH 25, 1996.

Capener: Of course, they're nocturnal creatures, and they'd come out at night and clean up the food left over by the cats and dogs, and they would have their little dances around the food. They would kind of contend with each other on who would get to eat it first. So they'd have a hopping on all fours, the little dance that they'd go through as they'd snarl at each other, which is fun to see.

But one day we went away for a few days and left the side door of the garage open, and when we came back, we found that a skunk had gotten in there and had some way got the freezer door open that apparently had been left ajar and had climbed in the upright freezer and pulled down things and tore them apart and just had a great time in the garage just tearing everything up. So when we got there and opened the garage door, the skunk came racing out there and left his little trace behind, and we had fun cleaning that up for weeks and weeks afterwards.

Storey: Oh my, he sprayed.

Capener: Yeah, he sprayed all over. But it was kind of an interesting thing to happen.

Storey: Where was the camp? You moved into the camp, is that right?

Lived in the Government Camp at Elephant Butte

Capener: Yes. The camp was located on the side of the hill that overlooked the old river valley, which then became Elephant Butte Reservoir, and so from the camp, which was probably about, I would guess, ten, fifteen acres of developed area, with some roads and some houses and trails and stuff, from almost any of those homes–and there must have been about twenty houses in there–you could look over the reservoir and the butte, from which Elephant Butte was named, and the Bureau offices and so forth were right there. You couldn't actually see the dam from that point, because the dam was a little further to the north and to the west and out of the line of sight from the government camp. But it was just an absolutely picturesque place to be because of the reservoir and the mountains.

Storey: So it was on the reservoir, looking down on the reservoir?

Capener: Yeah, it was. Just a beautiful place.

Storey: Did they have recreation facilities or anything there?

Capener: There were some recreation facilities. There were boat docks around the offices. Most of the developed recreation was a little further up-reservoir, which would have been north of the offices and to the west. They had access from better roads and they had built some motels and some campgrounds and some docks and so forth along that part of the shoreline. We had occasion to go out there, because it was a gentle shoreline and quite sandy, and so there was a lot of beach available to you for recreation and so forth.

While we were there, one of the boys–not out of our family, but from the community–that was out swimming in the lake and was bit by a rattlesnake in the lake, because they would swim across the water, the rattlesnakes would, and those things were *large*. This was like a four- or five-foot rattlesnake, and it bit him and he lost his leg, had to have it amputated. Well, needless to say, that didn't help my wife and her concern with *our* boys, but it was something that we didn't realize, that snakes actually do swim on water, including rattlesnakes. And so when we would go out there for some kind of recreation on weekends, we would have to be very careful when we got in the water that we weren't disturbing snakes. They were not that common, but it was just the fact that there was a possibility that they would be there. You always had to kind of be aware of that.

It was kind of a struggle at that time to develop any kind of recreation around Elephant Butte because it was so isolated. It was about in the center of the state of New Mexico, and there was not a large population area around there. Albuquerque to

the north was about 150 miles, and then El Paso to the south was about the same distance, and those were your large areas, and the freeway went right past.

So the freeway came through the town, and it was difficult to get people to come in and use the facilities for recreation purposes. It's much better today. They have built up some very decent resorts and lodging accommodations and so forth there. But back twenty-five years ago or so, it was kind of a bare-bones situation, used mostly by the local people.

The Town Changed its Name from Hot Springs to Truth or Consequences

The local town there originally was called Hot Springs, because it did have some hot springs, natural hot springs that people used for rheumatism and so forth. And then if you remember the old radio show, "Truth or Consequences," which was on the radio for a number of years, they had a contest one year and the contestants would have to change the name of their town to Truth or Consequences, and the winner would be, the reward for the one selected would be that they would bring the radio show out to that town each year and do a show from the town. So Hot Springs, New Mexico, competed and actually won the contest, and they changed their name to Truth or Consequences. So now it's Truth or Consequences, New Mexico, and for many, many years they would have that show originate from that town in honor of this promotional event that they did. The show, I don't think, has been on the air for many, many years, but the town still is called Truth or Consequences.

Storey: Was that the local center of civilization for the camp, for the Reclamation camp?

Capener: Yes. There was nothing really at the site, at the dam. You had to go into Truth or Consequences, which is only about four or five miles at the most, so it wasn't very far away. But there were no facilities, stores, or other stuff out there. There were a few little towns along the freeway to the north and the south. Las Cruces was probably the next-largest one to the south, and that's where New Mexico State University is located, and that was just a short distance from El Paso. And then to the north there were a few smaller towns before you got to Albuquerque, but it just was not a very densely populated area.

Storey: So where did you all shop?

Capener: We'd go into Truth or Consequences and do our shopping there.

Storey: It was large enough to have food and clothing and these kinds of things?

Truth or Consequences Was a Town of 3,000 or 4,000 People

Capener: I would imagine it had a town size of maybe 3,000 or 4,000 people. It was just trying to develop as kind of a retirement area, and I remember that they had just opened a new golf course there.

Lee Trevino Helped the Town Open a Golf Course

Lee Trevino was instrumental in assisting them to open this golf course in Truth or Consequences, and Lee Trevino was operating out of El Paso. That's where his headquarters were. He was not a very well-known golfer at that time. But anyway, he was kind of sponsoring that, would try to get tournaments in and so forth, and I decided, well, now that I'm out of college and have a little extra time, I ought to take up golfing. So I went over and bought me a used set of golf clubs, and there were several of us that went golfing on this new golf course.

Well, the only green grass you saw was the greens of the golf course. The fairways were just natural grass, all brown, and the rough was *rough*. I mean, it was gopher holes and sagebrush and rocks and sand and lizards and everything else. It was *really, really* a primitive early stage development of a golf course. I understand now they have a number of golf courses down there, and they are much more successful in having it as kind of a retirement area, because the climate was just really ideal. It was a very high climate, very mild during the wintertime, but not very hot during the summer. So it was really a good climate.

Storey: What was the social life like in the Reclamation camp?

". . . there was kind of a division of people that . . . lived in the community and they had their own contacts within the community. Then there were others that would come in for the jobs. These were generally the more skilled type work, your engineering people, maybe your electricians, your electronic techs, those that required quite a bit of training, because there was no training opportunities there. . . ."

Capener: There was not a lot of parties for the Reclamation group, as such. I guess there was kind of a division of people that were local hires. These were people that lived in the community and they had their own contacts within the community. Then there were others that would come in for the jobs. These were generally the more skilled type work, your engineering people, maybe your electricians, your electronic techs, those that required quite a bit of training, because there was no training opportunities there. There were no apprentice programs, as such. So these were people that would come in from the outside.

The community, I think, was the social outlet, because it was small enough that it did have a *lot* of community activities. It was predominantly a Spanish-type culture, and there was a lot of religious activities there. Just about every week, there would be some kind of a bazaar or a church dinner or something there that the community would participate in.

There wasn't a lot of need, I guess, for Reclamation people to have their own separate social life, separate and apart from the community. We basically became part of the community in that a lot of the people that worked out there were members of the community and they were more than friendly and said, "Come on out to our socials and come on out to this and that and the other," and it was an enjoyable thing to do.

Storey: Where did the kids go to school?

Capener: They went to the schools right there in Truth or Consequences. I had two older boys went to elementary school, and they really felt like minorities, if you will, because they were blond, English and Danish descent, so they were all blond kids. So they really stood out down there with more of the Spanish influence. But there was no problems. There was no barriers. There was no resentments or anything like that. They just had a great time, had some very close friends. Our third son, who at that time was about four and a half, went to a what they call kiddie college, which was kind of a pre-kindergarten. It was really for five-year-olds, but the teacher said, "Well, he's big enough that he can fit in," so he went there for half a day each day. So they enjoyed it. They had a lot of fun.

Storey: How did they get in to school?

Capener: The school bus.

Storey: The school bus came.

Capener: The school bus would come out and pick them up and take them and bring them back in the mid-afternoon.

Storey: What about the camp? Tell me about which house you were assigned and why you were assigned it.

His Position Was Traditionally Assigned to One of the Cinder-block Homes in the Camp

Capener: Well, there were three cinder-block homes, and for some reason I guess they felt that those were the ones that the management ought to have. And so the field office manager had one home, and then I had another one. And then the chief of operations, who actually worked for me, had the other home, and that was kind of on the high ground. And then *surrounding* that were the adobe homes, where the rest of the Bureau people that needed housing would have access to those houses. It was just a matter of what traditionally your position had. Traditionally the house that I lived in was the one that that position was offered. I think had I had more of a choice, I probably would have rather had one of the adobe homes, because I was very curious as to what it was like to live in an adobe home, and I think I would have enjoyed *that*. But it was just a matter of the assignment.

Storey: Um-hmm. How many bedrooms in this house?

Capener: There were three bedrooms, a small kitchen, and a living room, and one bath, as I recall. It was a nicely built home and kept up nice. The three houses were in a row, kind of north and south, and shared one large lawn to the east, so it was kind of a continuous lawn from one yard to the other. And then on the western side was the access roads and garages and so forth where you'd come in. So it was very well situated. We were the only ones that had children. The other two families did not

have children. So we had to be sure that they didn't bother the neighbors, but once we got in there and kind of got settled in, the neighbors were very friendly and didn't mind our kids coming around and knocking on their door or whatever they wanted to do.

Storey: How did the yard work get done?

Capener: We would take care of our own mowing of the lawns and minor stuff like that. Anything that would be more of a detailed nature, if you're going in and, say, replanting or transplanting bushes or doing major work on the roads or something, that was done by the maintenance crew. They did the building repairs if there were any problems with the houses, which we didn't really have any.

Storey: Where did the water supply come from?

Capener: It came from the lake. We had a little pump facility that brought it up from below the dam, so we used the pressure of the reservoir to run through the filtration systems, and then it was pumped to the homes and to the office.

Storey: But you never lived in an adobe?

Capener: No.

Storey: You mentioned the reregulating dam, Caballo, I believe it is.

Capener: Yes.

Storey: What's the purpose of a rereg dam?

What Reregulating Dams Do

Capener: To get maximum revenue from your power generation, you want to generate as much power as you can during the peak periods of the day, which generally are the late afternoon and mid-morning. And so if you can have full generation during those periods of time when the maximum electrical *use* occurs throughout the system, then you can charge more for your power. So that meant that there might be times when, during the mid part of the day and during the night, you'd want to cut back maybe to only one generator or maybe none.

But you can't fluctuate the river like that. You have to have a pretty constant flow of water down the river for the farmers. And so the reregulating reservoir didn't have a powerplant on it, but it had a constant release. It would release a constant amount of flow down the river, and the lake would change. It would go up while we were operating all of our generators during the peak generation time, and then the reregulating reservoir would go down during the nighttime, say, when we would shut down. So that was the purpose of the reregulating.

Storey: Do you remember the project manager? Did you ever meet him?

Capener: I met him once or twice. It seems like his name started with a K, but I can't remember. We were *pretty* much isolated there. I think during the two years I was there, I probably only went down to the regional office for meetings or something maybe once, twice at the most.

Storey: Did you go anywhere else on travel, like Denver, for instance?

Working with Denver and the Region in Amarillo

Capener: I went to Denver a few times, mostly because we were building some substations along the transmission line, and so there was some design work and so forth that we had to coordinate. Most of that was done out of Amarillo.

The Project Office in El Paso Did Not Have an Electrical Division

The project office in El Paso didn't really have an electrical division in it, because the *only* electrical facilities in the whole project were at Elephant Butte. The rest of Rio Grande Project was basically irrigation, and that was down *below* El Paso on other parts of the Rio Grande. And so they kind of deferred any electrical and mechanical work to Amarillo, and so that would be really our contact *point* for any technical guidance, was out of Amarillo. They had a very small office there. They had, I believe, only about two electrical engineers in Amarillo, and between them and the two that we had at Elephant Butte, we would coordinate with them on this project.

The person there in Amarillo, his first name was Howard. I can't recall his last name. But he was a very jovial person and had a bald head, even though he wasn't really an old individual. But he was just a real bubbly type person, and he'd come out a lot. He liked to get out of Amarillo, so he would make the tour three or four times a year.

Storey: This is the regional director?

The Head of the Power Division in Amarillo Liked to Play Jokes

Capener: No, he was head of the Power Division in the region. He would be working under the regional director. He liked to get out in the field to see what was going on.

He kind of liked to play jokes, as well. He had a real good sense of humor. So we were building this substation down around Las Cruces, expanding and upgrading the existing facility, and we were expanding it to the point that they wanted to give this little substation a name now, as we like to have names for facilities so we can say, "Go to Las Cruces Substation," but if you want to give it a name, you give it a name. And so he was going to put a name on the drawing, because that was part of what they were doing. So he put this name on it. It was a Spanish name. I don't recall exactly what it was, but it almost got to the final approval of Denver. Had they signed off that drawing with that name on it, that would have been the name of that substation.

Well, it was the name of a dancer across the border in Mexico. That was the name he put on the drawing as the name of the substation. They caught it in time, and they didn't put it on. I think it started out as a joke, and then as it made the approval levels, the various levels of the organization, then he kind of got a little scared that maybe they would approve it and he didn't know how to back out of it. So he was kind of glad that they decided not to give it a name.

Storey: You mentioned that you would apply for jobs to try and get ahead. How did you approach training?

"Training was geared more towards the non-technical training. In other words, it was people skills and management skills, orientation of policies and programs and that type of training. . . ."

Capener: Training was geared more towards the non-technical training. In other words, it was people skills and management skills, orientation of policies and programs and that type of training. There was a certain amount of training that was kind of a requirement that you had to go through. Training on the new programs that would come out, that would be mandatory that certain people would take this training. And then there would be some optional people-skill type training that would come along. And I always liked to go to the training. It was generally good training, and it was something that you found a use for in your dealings with the people that you supervised.

". . . later in my career I got into the Bureau Management Development Program when I was in Colorado, and that was a much more structured and concentrated type program that took about a year and a half to complete. . . ."

Training was relatively easy to come by if you had an interest in it. All you had to do was say, "I'd like to go to this class." Generally these classes were two, three days at the most, and most of them would be either up in Albuquerque or down in El Paso. Then you'd just get the *approval* of your boss, and then you'd go to the training. So I went to several while I was in New Mexico, and then later in my career I got into the Bureau Management Development Program when I was in Colorado, and that was a much more structured and concentrated type program that took about a year and a half to complete.

Believes Reclamation Should Provide More Technical Training

That's probably one thing that, looking back on, the Bureau was a little remiss in doing. I don't know if they just assumed that once you got out of college, you knew enough of your technical field that you didn't have to have anymore additional training, or if you did, it would be acquired through your coworkers. I think that that's something that the Bureau probably should have paid more attention to and having some kind of technical training and association with some of the universities and so forth, where you could go and actually take maybe a two-week refresher course or concentrated course on certain aspects of your technical field. I think that would have been very helpful. And maybe they do that in, say, Denver, where they

do a lot of design work or something. But out in the field, it was very, very seldom that ever happened, and I think it would have benefitted the Bureau to have done that.

Transfer of Transmission Lines from Reclamation Ownership

Storey: The divestiture of transmission systems, do you know where that came from? Was it something you created? Did it come from the project? Did it come from elsewhere?

Capener: I believe that came from the regional level. Now, whether it started at the Washington level or not I don't know, but I think that our regional people responded to a desire of some of the local utilities that they wanted to have possession of some of those transmission lines, because from the perspective of the utility, why should they pay the Federal Government to wheel energy across the transmission line that was owned by the government, but the energy was not?

"The energy was something that the utility owned. They would buy it . . . and then they would wheel it across, or transmit it across, the Federal transmission lines. . . . So we had the toll road, you might say, and anybody that wanted to haul their wares across the toll bridge had to pay for it. So they felt that the government had no business in being in that kind of a situation . . ."

The energy was something that the utility owned. They would buy it from another utility, and then they would wheel it across, or transmit it across, the Federal transmission lines.

So we had the toll road, you might say, and anybody that wanted to haul their wares across the toll bridge had to pay for it. So they felt that the government had no business in being in that kind of a situation, that since there were no Federal facilities served–and this is mostly the western part of New Mexico–that the Bureau ought to get rid of the transmission lines. Now, on the eastern part, there were some Federal facilities out there. There was a military base out in the eastern end of the transmission line out by White Sands, where we would serve power to the military base. So we had a legitimate need for the transmission line out there to serve Federal power.

But the other places we really didn't, and once we were no longer the prime supplier of power, once the utilities could go buy their energy, their power from other utilities, our role in it really diminished. I think that it was a combination of the utilities really wanting to own their own facilities and the political pressures that were brought to bear either out of region or maybe even at the Washington level that, "Yeah, let's privatize." This was probably the *beginning* of something that we're seeing today in the way of privatizing government facilities.

Storey: How were you involved in all of this?

Privatization of Transmission Lines Involved the Elephant Butte Office Assessing Impacts on Reclamation's Work and Staffing

Capener: We were not directly involved in the negotiations of it. Our involvement came more from how would that impact us. We'd be asked the question such as, if the Bureau were to turn over 150 miles of transmission lines from, say, Las Cruces that run to the west, how would that affect Elephant Butte Project or Elephant Butte office? How many *people* would that displace? How much *work* would that do away with? What are the pros and cons? So we'd have to make those kinds of evaluations. We'd have to say, "Well, it would mean that maybe we'd have to drop the staffing level of our transmission line crew by two people. But on the other hand, that means that we wouldn't have to buy a certain amount of materials and supplies and so forth that we normally use to maintain those transmission lines."

". . . we were asked mostly the practical questions on how would it impact us and our operations . . ."

The economic impact of the revenue we derive from that by wheeling the customer's electricity over the transmission lines, *that* was handled out of the regional office. The economics group would look at that, the contracts group that was responsible to formulate the contracts for those services. So we were asked mostly the practical questions on how would it impact us and our operations, what level could we efficiently operate the rest of the system. If you keep cutting people and cutting people, pretty soon you're at a point where you can't operate even the things that you have left because you don't have enough people. So those were the kinds of questions we were involved in.

Storey: I would imagine that would have caused quite a bit turmoil in the transmission line crews, for instance.

Concerns in the Line Crews

Capener: It was really a lot of concern, because they really were a very coherent, close-knit group of people, because they worked together and they lived together as they were out in the field.

"They were kind of a unique group in Reclamation, the transmission line crews . . . a very close-knit group of people, so they didn't want to see *any* of their staffing reduced. So they would come in with all kinds of arguments and justifications why we should not want to reduce the level of the crews or divest ourselves of the transmission lines. . . ."

They were kind of a unique group in Reclamation, the transmission line crews, because they were kind of known for the type work that they do, which is *hard* manual work, and it's kind of dangerous work, as well. So it's a very close-knit group of people, so they didn't want to see *any* of their staffing reduced. So they would come in with all kinds of arguments and justifications why we should not want to reduce the level of the crews or divest ourselves of the transmission lines.

"It really didn't make any economic sense to keep it all. . . . but certainly there was a lot of that transmission line that the government did not need to have, and

they eventually did get rid of it. . . ."

It really didn't make any economic sense to keep it all. There was a breakpoint that you didn't want to go below that point, but certainly there was a lot of that transmission line that the government did not need to have, and they eventually did get rid of it. They ended up turning the maintenance and operation over to the utility while they were trying to get all the legal things lined up to turn over the ownership, similar to what we did later . . .

END SIDE 2, TAPE 1. MARCH 25, 1996.
BEGIN SIDE 1, TAPE 2. MARCH 25, 1996.

Storey: This is tape two of an interview by Brit Storey with Paul Capener on March 25th, 1996.

We were saying that . . .

While Reclamation Worked to Transfer Ownership of the Transmission Lines, It Turned O&M over to the Utilities

Capener: What we did back in Elephant Butte was similar to what happened years later with the formation of Western Area Power [Administration (WAPA)] ~~Authority~~. Reclamation turned the operation and the maintenance of transmission systems over to WAPA. We basically did the same thing, except we turned it over to a non-Federal entity, a local utility or a local co-op of utilities, and then they would operate and maintain the facilities until such time as the actual title could be transferred to them. It's much easier to turn the operation and maintenance over and say, "We're going to keep the title," because anytime you transfer your Federal facilities and ownership, it involves a whole other level of approval.

Storey: The transmission crews, what did they do?

Design of Transmission Lines

Capener: The transmission lines were of two basic types of construction. One was the old wood pole construction, where they would have various designs of wood poles. You'd have either one single pole or you'd have two poles with a crossarm. And then from the crossarm would be suspended insulators, and from the insulators would be the conductor. You'd have three conductors. And then on *top*, *above* the conductors, from pole to pole would be just a solid-steel wire that would *not* conduct electricity, but that wire was there to intercept any electric strikes that might come down so they would not hit the transmission line, and those wires were then grounded at just about every pole.

Then we had another design which was steel. At that time, most of the design there in New Mexico was wood pole, because it was a fairly temperate climate and wood lasted many, many years, and it was quite a bit more inexpensive to build. But the steel structures, we had some of those, too, and they were much more durable and

didn't require as much maintenance.

Line Crews Checked the Structural Integrity of Wooden Poles and Crossarms and Replaced as Needed

But what they did, most of their work would be going around and checking the integrity of these wood poles, because after so many years, the wood would dry and crack. It would get infested with bugs and woodpeckers and termites and all kinds of things, wood rot, things that would go *inside* the wood and the deterioration would be from the inside out. So just driving by looking at it, you couldn't see that there was anything wrong.

So what they would have to do is go up, and they'd actually take a core sample. They'd take a little drill. It was not like normally the type of drill we have. This would actually take a *plug* out of the wood. So they'd drill into the center of the wood, and then they'd take this plug out of the wood, like a big long pencil would come out. They could then examine the wood to see if it was starting to rot or what have you. And then they would put in a plug in place of the wood that they took out so that the bugs and the weather wouldn't get in there. So they were constantly monitoring that and looking at the crossarms, because the weight of the electrical conductors eventually would cause those crossarms, those wooden crossarms, to start to split and warp and crack.

There was a pretty good set of criteria that was established at what point it was economical to change out a pole or a crossarm. So they spent a lot of their time going out and replacing wooden poles and crossarms and making inspections, and when you figure the hundreds and hundreds of miles of poles that we had, there were just thousands upon thousands of poles and crossarms involved, and so they were kept very busy out doing this kind of work. It would take generally, if you're going to change out a crossarm, it's probably about a three- to four-hour job with the line crew to go out to, once you're at the site, to climb the poles. You then have to take the conductor *off* the existing crossarm and kind of suspend it, because you don't want it to fall onto the ground, and then you have to unbolt the crossarm, the old one, and lower it the ground, bring up a new one, put it on, put the insulators back on the crossarm, and then reconnect the conductor to the insulators.

". . . it was hard work, and it was all climbing. . . ."

And so it was hard work, and it was all climbing.

At that time we had very few bucket trucks, so most of the time they'd climb. They would just put the hooks into their boots, and up the poles they'd go, with their safety strap and hooks. And then they'd have a groundman that would operate from the ground, and they'd have their little canvas buckets that they would have, and they'd hook a little pulley onto the crossarm with a rope down to the groundman, and then any tools or so forth they needed, they'd pull up in these little canvas buckets up and down.

"So they had ground support from the groundman, and then the lineman would be up doing the work on top of the pole. The groundmen were generally linemen who after so many years their knees gave out on them so they couldn't climb anymore. So they then would become groundmen. . . ."

So they had ground support from the groundman, and then the lineman would be up doing the work on top of the pole. The groundmen were generally linemen who after so many years their knees gave out on them so they couldn't climb anymore. So they then would become groundmen. It was very, very hard on knees to climb up poles like that and to stand that way once they were up there.

Damaged Insulators Were Another Item That Required Constant Line Crew Attention

The other thing they would look for would be insulators, damaged insulators.

"People would come along and target practice . . . They'd come up there with their .22s or their .30-30s or .30-ought 6s . . . zero in on your sights and so forth to see if you could shoot those insulators. So we had to constantly patrol that . . ."

People would come along and target practice and like to shoot the insulators. They'd come up there with their .22s or their .30-30s or .30-ought 6s [.30-06s], and especially during deer season, it's good target practice, zero in on your sights and so forth to see if you could shoot those insulators. So we had to constantly patrol that, because if somebody shoots an insulator, it'll chip off one of the skirts off an insulator, and those insulators were probably about two feet in length and were a series of skirted insulators, and so they could start chipping them off.

Well, you can stand one or two chips on there, but if you get too many chips off an insulator, then it loses its insulating property. And then the voltage will break down between the conductor and the pole, and then you'll have a fault, and the line will actually discharge from there, up to the pole, and then down the pole, into the ground, and you trip your line out. So they had to go around and constantly monitor that. If they found an insulator with just one skirt that had been chipped off, generally they'd go and they'd paint it with a Glyptal [™] type paint, which is an insulating paint, and that would be fine, that would retain its properties. But if it was more than that, then they'd generally have to come and change the insulator string out.

Storey: How many folks did we have doing transmission crew work?

Capener: We had two trucks, two transmission line trucks, and there was probably about five on a crew on each truck. So about ten people, and that would be your drivers, your linemen, and your groundmen.

Storey: Were they unionized?

Capener: Oh, yes.

Some Members of Line Crews Belonged to a Union, but That Was Not an Adversarial Situation

Storey: Did that cause you any problems as a manager?

Capener: No, actually it didn't. The unions were really not in an adversary position with us. I think the union was there to ensure that safety concerns were addressed, which the *Bureau* was also very concerned with.

Not *all* members of the crews belonged to the union. As a matter of fact, it wasn't uncommon to find maybe only one-third of a crew actually belonging to the union, because it was not a closed shop. It was the option of the employees whether they joined or didn't join. So that I really don't think that there were any union problems, *per se.* The people generally liked their work and they were anxious to get out and work, and they were not trying to slough off. I mean, they were good, hard-working people, and they enjoyed a good day's work. They took pride in what they did. When you have those kinds of conditions, generally there's not a lot of unrest on the part of the crew.

"I guess our biggest challenge as management was just to be sure that they had what they needed to go out and do their work, to support them, because they knew their job and they knew it very well, and we didn't want to get in the way of their productivity. . . ."

I guess our biggest challenge as management was just to be sure that they had what they needed to go out and do their work, to support them, because they knew their job and they knew it very well, and we didn't want to get in the way of their productivity. We just ensured that the budget was taken care of, that we got the equipment replacements that they needed, the big expenditure items, and we'd often have to go to the mat for some expensive equipment. If we had to spend $15,000 or $20,000 for a piece of equipment, that was sometimes difficult to sell that to the project or to the region for budget purposes, so a lot of times we'd have to kind of go to the mat on things like that.

"'Here, put them on your shoes and climb the pole.' Well, we were smart enough not to do that, because you get up there, you can't get down again, because it's one way to climb up, and it's a whole different procedure to get back down again. So a lot of times they'd kind of want to tease us a little bit . . ."

But by and large, they were very cooperative, and they'd even like to have some of the office people, some of the engineers and others come out there, and they'd even hand us the hooks and say, "Here, put them on your shoes and climb the pole." Well, we were smart enough not to do that, because you get up there, you can't get down again, because it's one way to climb up, and it's a whole different procedure to get back down again. So a lot of times they'd kind of want to tease us a little bit and say, "Here, you put the belt on and the hooks on and climb up the pole for us. We'll let you do that." No, we didn't fall for that, either.

Storey: How were they called out? How did they know where they had to work and all that kind of thing?

Line Crew Work Included Two Basic Categories of Work: Preventive Maintenance and Emergency Situations

Capener: Well, the work was divided into, I guess, about two major categories. We had preventive maintenance schedules, which are planned probably two to three years in advance. That's where you take all of the historical information you have, and this is the result of all of your pole sampling and your inspections of insulators and the age of the equipment and everything else, knowing that you can't correct all of your problems in one year, so you better keep ahead of the game. And so you break it up into a preventive maintenance schedule, where you'll go out and change a certain percentage of the poles that are becoming deteriorated each year, so that you don't wait until all deteriorate and have to go out and do it in one year. So preventive maintenance was a big part of what was planned, and that would take probably about 75 percent of their time, taking care of the preventive maintenance.

Then you had, of course, the unpredictable stuff, the emergency things that would come up, or a pole would go down because of a break of a pole, would break for whatever reason. Maybe it went undetected and it brought it up finally and tipped over, broke off. Or maybe somebody shot an insulator out or maybe a plane crashed into it or something, emergency-type stuff. You'd have two or three of those occur each month, and sometimes more often, depending upon the seasons, and those were the type that required immediate response. You'd know that because the system would have a disturbance on it.

"The operators . . . would sense that there's a fault occurred out on the transmission line, and so somebody would have to go out and see what caused it. . . ."

The operators in the powerplants or the dispatch centers would sense that there's a fault occurred out on the transmission line, and so somebody would have to go out and see what caused it.

". . . we had the ability to measure pretty closely where that [fault] happened . . ."

And so the first thing to do would be to send somebody out to look at the area at which the fault occurred, and we had the ability to measure pretty closely where that [fault] happened, because you could calculate, based upon the fault occurred and other factors and the resistivity properties of the transmission line, you could say, "This fault occurred fifteen miles from point A down the transmission line is where this fault happened, so go out and look at it." And so they'd go out and look at it. It was generally pretty accurate, and they could see maybe a line was hanging there, it had broken loose from the conductors and was hanging there about fifteen feet above the ground, but hanging loose and energized. So you'd have to get a crew out there right away to take care of it. Or maybe a crossarm had broken and was hanging or maybe a pole was in the last stages and ready to fall over or something. So that

would account for about 25 percent of your work would be that, and the other would be preventative maintenance and inspections and stuff.

Storey: A lot of mileage, you indicated. Did you give me a figure earlier?

". . . we had probably 500-, 600 miles of transmission line . . ."

Capener: Well, we had probably 500-, 600 miles of transmission line from Albuquerque all the way down to El Paso, and then out to the east and west.

Storey: So would the transmission line crews look at that every year or was that like every two years, or how did that work?

Capener: Well, the inspections would be ongoing all the time. They'd try to make a visual inspection at least once a year of the entire system, and that's where you just have, say, two people in a pickup, four-wheel-drive pickup, and they'd go around and they'd patrol the line. Some of this went up into the forests and in the timber area, and they'd have to go up and be sure that the trees were not growing up into the transmission line. That was always a risk if you didn't go out and look at it, because some of it went across the Indian reservations and the Indians didn't want you to come out and cut the trees down. But if they kept growing, they'd grow right up into the conductors. So you had to negotiate some way of achieving that before they grew up in there and started a forest fire.

So there was always the patrols, and they would kind of be your eyes and ears as to where you should be looking. And then you'd make the more detailed spot checks of the transmission lines, as well. And then from that information, you'd be planning your summer's work on which sections of the lines that you'd be replacing and working on.

Storey: Who controlled the generating plant at Elephant Butte?

Reclamation Operated the Powerplant at Elephant Butte, but Scheduling of Power Was Done by the Customers

Capener: It was operated by Reclamation right there at Elephant Butte, but the actual scheduling of the power was done by primarily El Paso Natural Gas and the New Mexico Power Company, I guess it was. They had kind of a dispatch center up in Albuquerque. So they would look at the big picture as far as how much energy needed to come into the area, and they'd be importing power from the four corners, the big steam plants up there, or they'd be importing power from some of the large natural gas generators down in Texas. They'd be scheduling on the big picture as far as demand and load and energy sources were concerned, and then they'd factor us into it.

". . . the little small generation that we had at Elephant Butte was relatively insignificant. But we had the transmission line, and so we were a very key player into it. . . ."

But it's like being one drop in a very large bucket, because the little small generation that we had at Elephant Butte was relatively insignificant. But we had the transmission line, and so we were a very key player into it.

Effect on Reclamation of Construction of Private Utility Transmission Systems

But during the time that I was there, the utilities were in the process of building their own transmission systems, at least what we call a *backbone* transmission line from El Paso to Albuquerque, and this would be a large 230,000-volt line, whereas our systems were 115,000 kV. So they were building a larger line, with much more capacity, and so they were providing for the growth of the transmission. So we could see that the future didn't hold a lot for Reclamation there, because we were not in the position to be able to build any significant *new* transmission systems. We just couldn't justify it. The utilities were going to be doing that, and so that meant that over the years we'd be coming less and less a player in the game, and that was just another incentive for us to try and turn that over to the private sector, private utilities. When I say private, some of them were municipal-type public power systems.

Storey: You mentioned that the end of your time there they came in and tore down the adobe buildings and so on. Were they transitioning away from having a Reclamation camp?

Reclamation Was Scaling down Construction Camps While He Worked at Shasta, Elephant Butte, and Palisade

Capener: Yes, they were. This was the time when a lot of focus was on Reclamation camps. There were a number of them around the Bureau, holdovers from construction days. They had some at Shasta, and they were just closing those down as I *left* Shasta for New Mexico. They had put a moratorium on any new move-ins to the government camp at Shasta. When I left Elephant Butte and went up to Idaho, they had a government camp up there, and they were in the process of trying to scale that one down. And the one over at Flaming Gorge, they were in the process–or Glen Canyon, excuse me. At Glen Canyon, they were in the process of trying to incorporate that government camp into a private community.

So it was kind of the tenure of the Bureau at this time to get out of the rental business and not have what a lot of people looked at as subsidized housing for the Bureau employees, although I never did feel that it was subsidized in the sense that the housing that we had generally was–it was adequate, but it was certainly nothing elaborate, although the one there in New Mexico was pretty good. When I went up to Idaho, it was houses that were built to last for maybe fifteen years during the construction, and they were still in use thirty years after the thing was built. So it was not the best of homes.

"The Bureau was just trying to get out of the housing business. . . ."

The Bureau was just trying to get out of the housing business. Where they had somebody like the state parks that were willing to come in and take the land and

develop it into a state park, that was just more incentive to do it.

Storey: So did you have to move into town or something?

Capener: No.

Storey: Yours was one of the three that was left?

Capener: That's right, that was one of the three that was left. The people that lived in the adobe homes, I'd guess about half of those people had already moved into town. Their homes had been demolished, and they were getting ready to demolish the rest of them by the time we left.

Storey: What caused you to leave?

Moving to Palisades, Idaho on a Lateral in Early 1971

Capener: Well, we really enjoyed New Mexico. It wasn't anything as far as the work or the area that was a negative as far as we were concerned.

". . . it was a position of more responsibility. The facilities were *considerably* larger than what we had at Elephant Butte. The generators there at Palisades were–well, they were more what a power engineer would like to be associated with. I mean, it was like going from a Volkswagen up to a Cadillac. . . ."

But when the job at Palisades, Idaho, came up, which was a *lateral* for me, it was still the same grade level, a GS-12, but it was a position of more responsibility. The facilities were *considerably* larger than what we had at Elephant Butte. The generators there at Palisades were–well, they were more what a power engineer would like to be associated with. I mean, it was like going from a Volkswagen up to a Cadillac. You know, you got a bigger one and more of it and more power and all that type of stuff. And so there was just a lot of attraction to get into something that–well, I guess one might characterize it as being more respectable in the *power* arena, because when you talk to people in Power Engineering about Elephant Butte, they think, "Well, he shouldn't be talking power with Elephant Butte. That's just kind of like a little toy." And so it was certainly more attractive that way.

Palisades Was Close to Where He Grew up

And then the other thing was, it was just real close to where I grew up in northern Utah, and so it took us back into the Rocky Mountains and within commuting distance and going back and seeing the old homestead and my family and all that stuff. So it was that and my personal evaluation that it was a more career-enhancing job. The experience was something there that would be of more benefit to me. So we put in our papers and moved to Palisades, Idaho. I think it was January or February.

"It took us four hours to travel thirty miles from Idaho Falls out to the dam

because of the ice in the winter and the blizzard and the snow . . ."

It took us four hours to travel thirty miles from Idaho Falls out to the dam because of the ice in the winter and the blizzard and the snow and everything else.

Storey: This would have been '71?

Capener: Yes, in January of '71.

Storey: Got there and moved into another government camp, I guess?

Reclamation Shrinking the Government Camp at Palisades Dam

Capener: Yes, I moved into another one. When we moved into the government camp, they'd already taken two rows of houses out of the camp that were part of the regional construction during the time Palisades Dam was constructed.

". . . it's a relatively isolated community and there's just not a lot of housing available, and it's very, very difficult . . . They were successful in closing down some homes, but what they were trying to do was to maintain enough of them there that they could still bring in employees, because if they got rid of too many houses, they'd have a very difficult time recruiting people to come up. . . ."

So they had already started to scale down by moving some of the houses out, and then that continued on after we left, although I think they still have government housing there. I don't think they completely did away with it, because it's a relatively isolated community and there's just not a lot of housing available, and it's very, very difficult, at least when we were there, to find any land to build a house on. The land there, the farms have been in the ownership of families for decades and generations, and to ask them to sell you part of their land is like asking them to sell you one of their kids. They just didn't want to do it. Whether it was an acre of rocks or whatever it was, it was their land and they just didn't want to part with it.

They were successful in closing down some homes, but what they were trying to do was to maintain enough of them there that they could still bring in employees, because if they got rid of too many houses, they'd have a very difficult time recruiting people to come up. So to kind of have a little buffer in that philosophy, they rented some of them out to non-Bureau people. We had some people there from state Fish and Game, state of Idaho Fish and Game. The game warden lived there in camp. And we had some, I believe some of them worked for the sheriff, county. I think one of the deputies lived in one of the homes. A schoolteacher lived in one of the homes. So we did try to keep the houses rented and available for two reasons. One is to kind of help the community, because they would have a lot of difficult time getting people to come into the area. There was just no housing there. And the other one was to get a little revenue from the homes and keep them for our own needs if we needed them.

Storey: What was your new job then?

Was in Charge of the Palisades Field Office

Capener: Well, I was in charge of the field office, so I was the number one person there for Palisades Field Office.

"We had a nice, large earth-filled dam and a relatively new facility. . . . three large generators and a nice lake and a switchyard. We didn't have transmission lines . . ."

We had a nice, large earth-filled dam and a relatively new facility. It had just been completed a few years before that. And three large generators and a nice lake and a switchyard. We didn't have transmission lines at that time.

"So it was the idea of getting back into . . . quite a variety of engineering and maintenance-type functions, all associated with the power systems. . . . and that was very interesting mechanically and hydraulically to get involved in that. So it was primarily those factors that got me to leave the nice mild climate of the high desert and go to the ice and snow of the Rocky Mountains. . . ."

So it was the idea of getting back into some good engineering-type work and quite a variety of engineering and maintenance-type functions, all associated with the power systems. It was a switchyard and the generator stations, and we had a large bypass built in there where, if the generators were shut down, we'd bypass the water through some very large valves, and that was very interesting mechanically and hydraulically to get involved in that. So it was primarily those factors that got me to leave the nice mild climate of the high desert and go to the ice and snow of the Rocky Mountains.

Storey: How many folks were in the office?

There Were Fifteen to Twenty People in the Palisades Field Office

Capener: Our office was right in the plant. Let's see, I had a secretary, and then I had two other staff people. One was in charge of the maintenance, and one was in charge of the operations. And then from there on down, we had all the warehousing facilities. So we had a total of about I would guess fifteen to twenty people for the entire office.

Storey: And everybody lived in camp there?

"The area inundated by the reservoir was called Poverty Flats by the natives . . . because nobody could ever get anything to grow there. It was in a narrow canyon, it got very little sunlight, it was cold, a very short growing season, and people who tried to farm it went bankrupt. . . ."

Capener: No. There were a few people that lived in the community, but these were people that we actually hired that were natives to the valley. The area inundated by the reservoir was called Poverty Flats by the natives there before the dam was built. It was called Poverty Flats because nobody could ever get anything to grow there. It was in a

narrow canyon, it got very little sunlight, it was cold, a very short growing season, and people who tried to farm it went bankrupt.

The agriculture around there consisted mostly of winter wheat and cattle and sheep, because there was some range land that they could have for their cattle and their sheep. There wasn't any row cropping, high-cash crops, to speak of. So it was a struggle for the farmers, and the way that most of them made it was to have a lot of land and a large family to provide the labor for it. So they did fairly well. If you were kind of a small landowner, only had 200 or 300 acres, you might have a hard time.

Storey: Did you work with local water groups, water districts?

"This was strictly a power generation facility, and then the water was put in the Snake River, and it wasn't until it got down to around Pocatello and Burley that it was actually taken out for irrigation. The American Falls Dam was the first large storage reservoir for irrigation purposes, and that was 150 miles downstream. . . ."

Capener: Well, we didn't actually have any irrigation from that facility. This was strictly a power generation facility, and then the water was put in the Snake River, and it wasn't until it got down to around Pocatello and Burley that it was actually taken out for irrigation. The American Falls Dam was the first large storage reservoir for irrigation purposes, and that was 150 miles downstream.

". . . we would hold part of the water to release in the summer to replenish the water down in the irrigation reservoirs and to produce generation, electricity, that could offset some of the pumping costs for the farmers down around Burley. . . ."

What we did basically was, we would hold part of the water to release in the summer to replenish the water down in the irrigation reservoirs and to produce generation, electricity, that could offset some of the pumping costs for the farmers down around Burley.

END SIDE 1, TAPE 2. MARCH 25, 1996.
BEGIN SIDE 2, TAPE 2. MARCH 25, 1996.

". . . we did not have any management control over the water out of our office. That all came out of the Burley office. That was our *project* office . . ."

Capener: The Snake River Valley was where all of the good irrigation took place, a lot of potatoes and alfalfa and dairies and things like that. And so we provided the water for that purpose, but we did not have any management control over the water out of our office. That all came out of the Burley office. That was our *project* office was in Burley, and we, again, were a field office, a "power field office" it was referred to.

Storey: So the project office was the Minidoka Project?

Palisades Field Office Was Part of the Minidoka Project

Capener: Yes, it was the Minidoka Project.

Storey: And you were providing supplementary water?

Capener: Yes. We were providing a water supply, a supplemental storage for the water supply for the farmlands down there in the Snake River Valley.

Storey: Did that affect your power production capabilities?

"Our generation was set to maximize revenue on electricity generation, and the fluctuation of the reservoirs downstream was really insignificant . . . [irrigators] would get the water directly from a reservoir or would have small diversion structures in the rivers down below those reservoirs, around American Falls and Burley and Minidoka . . . What we did up at Palisades really didn't have any day-to-day bearing on their operation. . . ."

Capener: No, not really, because we did not have to consider any kind of diversion from the river, so we didn't need a reregulating reservoir. Our generation was set to maximize revenue on electricity generation, and the fluctuation of the reservoirs downstream was really insignificant, because they were very large reservoirs, and where any kind of regulating was necessary, they did it down there. But most of them would get the water directly from a reservoir or would have small diversion structures in the rivers down below those reservoirs, around American Falls and Burley and Minidoka, to where they'd divert. What we did up at Palisades really didn't have any day-to-day bearing on their operation.

Palisades Field Office Planned to Maximize Power Generation by Delivering Scheduled Amounts of Water During Relatively Long Periods of Time, Say Thirty Days

We looked at our operations to get out so much water, say, over a thirty-day period of time. That was kind of our clock we went from. So if we had to move a block of water out during the month of July and August and September, then we'd schedule the power accordingly to *maximize* the power generation, given this much water we want to take out over thirty days.

Storey: You mentioned the– [Interruption in recording]

Capener: The fact that we hired some local people.

Storey: Yeah.

Capener: That was kind of interesting because–is it going again?

Storey: Yeah, we're going.

Hiring Local People to Work for Reclamation

Capener: There were certainly a lot of people there in the valley. The valley was called Swan Valley, and it was a hard place to make a living because of the climate. So there were a lot of people who would really like to work for the government, because it was a good-paying job and they could work winters there and so forth. So we always had quite a long line of people interested in coming to work for us.

". . . the only problem was that they were not technical, like an electrician or a plant mechanic . . . a powerplant operator, and we didn't have an apprenticeship program because we just didn't have the staff to train [people]. So about the only types of jobs that we could offer people were the laborer-type jobs . . ."

But the only problem was that they were not technical, like an electrician or a plant mechanic or something, a powerplant operator, and we didn't have an apprenticeship program because we just didn't have the staff to train [people]. So about the only types of jobs that we could offer people were the laborer-type jobs, and they were generally all filled by local people. So we had a crew of laborers, what we called the maintenance workers, about five or six people, and those all, pretty much without exception, came from the local community. And occasionally we would hire maybe some clerical staff locally and maybe some warehousing staff locally. That was about it. The rest of them would be coming in from other Bureau facilities, or veteran preferences was also a consideration because it's difficult to find a veteran in that community that had that type of technical training that we needed, so again, it kind of limited it down to the laborer/maintenance work type of facility.

Hiring Kirk Rogers as a GS-3 Warehouse Clerk

But an interesting way sometimes we have to get things done, we needed to hire a clerk for our warehouse, a GS-3, which is the entry-level clerk. Of course, we couldn't bring anybody in from the outside, because you're not going to get somebody to move in at a GS-3 salary and then have to pay *rent* to live in government housing and all that stuff, with no possibility, or no reasonable possibility, for advancement, because where do you go from a clerk when there's not that many positions that you can move into.

So we needed to really get somebody from the local area. And so we put out the recruitment, and we got a few people from the local area that put in for it, and *none* of them were really qualified, because one thing they wanted for the clerk series was typing. Well, we didn't need a typist, but being a clerk, it fell into that series where typing was required. So when you had to go to the Civil Service and take a test, you had to take a typing test, and the only typing that we required in that job was maybe typing in some figures on some kind of an inventory sheet or something like that, which you don't need to type 60 words a minute to do that.

So this one guy put in for it. He was a young fellow and had five or six kids already, and he was stacking Pepsi bottles at the local grocery store part time to pick up any work he could. He was a good, energetic guy, had a lot of potential, a lot of

personality to him. So, he was the guy we wanted to bring into the job. So now the idea was, how do we get him certified? So I went with him down to Idaho Falls, where they gave the exam, and he'd practiced and practiced for several weeks, trying to learn how to type. You don't learn that overnight. And so we went into the Civil Service examining office there in Idaho Falls. The gal came out with these little cards and said, "Okay, this fellow is here to take the test?"

I says, "Yes."

So she sent him into the room to take the test, and I says, "By the way–and then she stopped and we talked for a while. I said, "You know, we have real difficult problem in hiring people out in Swan Valley, because there's just not a work force out there, and we can't afford to bring anybody in. And we *really* don't need anybody that knows how to type. That's really not a requirement of the job, even though it's in the clerk series."

She said, "Okay, I get the idea."

So he passed. He still didn't know how to type, but he passed anyway. So he started to work for us. Did very well. He actually moved up and moved out of the area and holds a very responsible job in Reclamation now. I think he's about a GS-14 now, so he's done very well.

Storey: I take it you don't want to name him.

Capener: Nah. Well, I don't know that it makes any difference. It isn't much he can do about it. He actually works in this Mid-Pacific Region now, Kirk Rodgers.[3] He's down in the regional office. He's been a project manager, and he does very well. That's one of the things you kind of look back in your career and say, "Well, I'm glad I found some way to help somebody out that way and also help the Bureau out."

There Were Problems with the Generators at Palisades That Needed Resolution

But aside from that, it was an interesting job technically in that we had some interesting problems with the generators that had to get resolved and get fixed, and it meant kind of going through a process of analyzing what the problems were and getting experts in from the manufacturer. I think they were Allis-Chalmers generators from Denver, and coming up with some kind of a fix for it and then having to implement that fix. So that was kind of a big, like a three-year program to do that, which was interesting.

". . . the insulation in the winding was breaking down, and the electricity was actually discharging from the coil of the generator to the *iron*, but not causing a fault, but causing sparking within the insulation, and that little sparking would eventually eat out the insulation. So it looked like worm holes in the insulation,

3. Kirk Rogers eventually retired from Reclamation 1n 2008 after serving for several years as regional director in the Mid-Pacific Region in Sacramento.

and it eventually would have caused actual in-service fault . . ."

What was happening was that the insulation in the winding was breaking down, and the electricity was actually discharging from the coil of the generator to the *iron*, but not causing a fault, but causing sparking within the insulation, and that little sparking would eventually eat out the insulation. So it looked like worm holes in the insulation, and it eventually would have caused actual in-service fault, which could have caused considerable damage to your generator. So in working with the manufacturer, we found out that certain things had to be done, so that meant we had to disassemble the generator, go in and put side fillers in the iron next to the coils, and paint it with conductive material so that they wouldn't build up a voltage potential between the iron and the insulation.

That was kind of interesting because it involved a lot of innovative-type things that we did in connection with Denver and with Coulee, because Coulee was in our region and they had some electrical engineers up there that had been looking at somewhat similar-type problems and had developed some test instruments of Bureau design and everything, and so we made use of them to come down and help us out a little bit. So we had a lot of fun doing that.

Ice Fishing in the Winter at Palisade

It was always interesting in the wintertime, because it was very, very cold there, and the reservoir froze about two-and-a-half-feet thick of ice every winter. And ice fishing was a sport up there. I never could understand why people would want to go out and sit on top of a gigantic ice cube and freeze themselves to death to try to catch a fish. But it wasn't too bad. You go out there with a tent and build a fire and you can keep warm. It was a lot of fun.

There Were Little Ski Runs in the Area

Skiing was plentiful around the area. There were a lot of little rope tows that the local people had built, and so you could have a fairly good ski run without having to go to any major ski areas. There were some major ski areas there. This was in the Targhee National Forest, and the Teton Mountains–

Storey: That would be eastern Idaho?

Capener: Um-hmm, eastern Idaho. The Teton Mountains were just about fifty miles north of us. We were on that same mountain range. We were right where the Snake River came from Wyoming into Idaho through the *mountain* range, that same mountain range that the Tetons are, and so a good part of the reservoir was in Wyoming.

Storey: What where the faults–what was causing this arcing and what did you finally have to do about it?

Windings Have to Be Held in Place Firmly and the Ones at Palisades Had Some Movement

Capener: Well, it was attributed to several things. The wedges were becoming loose. When you put a generator coil in the iron, it has to be tight. You can't have it moving around, because the starting and the stopping of generators and the loading of the machine–in other words, putting voltage on it and increasing the electrical current through it and so forth–puts a lot of torque, physical torque, on the windings. So you have to have them pretty firmly embedded in there or they will start to move, and if they start to move, then they start to rub against the stationary iron and they rub right through the insulation and they go to ground. And if they ever went to ground, you'd have a *tremendous* discharge of electricity. You could start a fire and you could burn out a good part of your winding and the iron, and you could cause a few million dollars worth of damage. So you want those things in there. You want them *tight*, but they can't be absolutely tight because there has to be some kind of pliability to them. But you don't want a lot of physical movement, where they start to have frictional type movement.

Well, each manufacturer has their own way of doing that, and they're kind of patented processes that the manufacturers have. And they're proprietary information, so they don't always tell us *all* the components of any of the material and that type of stuff. When they get the coil in the iron, then they put a kind of a wedge on the front of the coil that is held in place by the iron of the stator, and that's called a wedge. And so they wedge those things in there tight, and that supposedly then keeps it from moving. Well, for whatever reasons, it didn't work. This particular design that the manufacturer had, it didn't hold. It actually started to have a physical movement in there, because it became loose, and that caused one problem.

There Were Static Discharges Due to the Looseness of the Windings

The other problem was that there was the discharge between the side of the coil and the iron, a little electrical discharge, kind of like you'd see a little blue light or a little blue spark that would kind of dance across the winding and then over into the iron. It was a static discharge. It wasn't a discharge like you would have if you took a bare piece of conductor of copper and held it against a piece of iron to ground, where there would be a big spark and so forth. It was more like if you're walking along, rubbing your feet on the carpet, and then you take your finger and touch the brass ball on the staircase or doorknob or something and you get a little pop, a little static discharge. It was that kind of discharge. But eventually it would cause some deterioration of the winding, so it had to be corrected.

Working with Manufacturers to Correct Problems

We went back to the manufacturer, and, of course, they said, "It's not our problem." But it was their problem. I think that's the first recourse of any of the large companies we dealt with, whether it was Allis-Chalmers or Westinghouse or GE or any of the big makers. The first line of defense was, "It's not our problem." So it takes a little bit of convincing to show them that it was their problem, and once that we accomplished that, then they said, "Yeah, I guess it is our problem." So then they have to go in and fix it at their own expense, because [of] the warranties and so

forth.

So it's not an easy thing to do. You have to disassemble the machine. You have to take the rotor off, out, and everything else, and it's about a two-week job to disassemble it. Then you have to put scaffolding on inside the center part of the generator, which is now vacated because you've pulled all the guts out of it. And then you have to go in and do whatever the fix is, and sometimes it means you have to go in and repack those coils that are in the iron. You don't want to necessarily pull them out, because by pulling them out of the iron, you're going to bend them and cause more damage. So you want to leave them in place, but you want to pack them tighter. So now you have to figure out a way to get some kind of very thin material along the side of the coil, between the coil and the iron, when it's already embedded in the iron, or pump some kind of fluid material back there that would then harden, or a combination of the two, which we ended up doing. We ended up putting in side fillers, wedging them in there as best we could, and then putting the conductive paint, which would then dry and add some rigidity to it, which then would again support the winding there in the iron.

And it worked. We finally got it done, and it seemed to work for quite a few years after that. But now, in the 1990s, I guess they've gone in and are actually replacing the windings, which is not uncommon because they have a useful life, and most generators built back in the fifties and sixties have already been rewound at least once or maybe twice by now. So we extended the life of them a number of years by doing what we did do, and since then they have been uprated, put new windings in them.

Storey: Did we have the same problems on all three units?

Capener: Yes.

Storey: So it was definitely a design flaw.

Capener: Yeah.

Storey: Do you know if Reclamation got anymore of those generators?

Sparking Created Ozone Which Attacks Rubber

Capener: Well, we found that it was a common–we found that the problem existed other places, but not quite as bad. You can have some kind of discharge and be acceptable, because one of the things this discharge does, it creates an electrical spark and that electrical spark generates ozone. That's the way they make ozone is have an electrical spark inside an atmosphere, and it breaks down the oxygen and you get ozone. You could actually smell the ozone when you went in that plant. It had its own peculiar smell.

One of the things ozone does is it deteriorates rubber, and so another way we knew we had a problem is that the maintenance people would go out to get their

rubber boots in the wintertime and they'd fall apart. The rubber had deteriorated because of the high ozone concentration. They'd get their boots, they'd pull them on, and they'd just fall into several different pieces, just rotted away. And so we *knew* it was a problem. We knew it was not something that was acceptable. And so we had to go ahead and get it corrected.

Storey: Who would have been responsible for that? You, on site, or the project manager or the regional office?

Palisades Reported to the Burley Project Office's Power Division, and Eventually the Denver Design Staff Were Called in to Assist

Capener: I had a contact person in the project office in Burley who was head of the Power Division. I reported to him, as did the superintendent over at Minidoka Powerplant, Minidoka Dam, reported to him, as well. So he worked with us, and the problem really soon–well, it didn't take us long to know that that problem was something of a design problem and it had to be handled by our design people in Denver, because they were the only ones that could really talk the design language and the level of expertise with the manufacturers that was necessary to convince them it was their problem, because they had to go through the theoretical calculations and everything else to show them what was happening and why it was happening and analyze the materials that they had put in there to show them that it was not only theoretically possible that these problems were occurring, but the problems were actually occurring.

"We had probably one of the best rotating generator group of people I think anywhere in the country back there in Denver. . . ."

And then they were the ones who had to approve the fix on what the manufacturer proposed as the remedy for the problem. They had to evaluate that from an engineering point of view. We had probably one of the best rotating generator group of people I think anywhere in the country back there in Denver. We had people there that were renowned around the world for their expertise in rotating machines. When we say generators, there's the hydrogenerators, which we refer to as rotating generators. Then there's the steam generators, which are a whole different field. But when it comes to hydrogenerators, our experts there in Denver at that time were among the leading ones in the country. So they were very well respected by the manufacturers, and they could deal with the issues and the problems.

Storey: So they were actually the ones who made the case with the manufacturer?

Capener: Right. We detected the problem. We made the initial tests out in the field. We decided what we could do and what we couldn't do in the way of how we'd get the information, and we developed some test procedures to sample what was going on in the insulation and make the field tests to show from the data that the problem was there, and that supported the people in Denver in their development of the problem to the manufacturers.

Storey: Well, we covered the question I couldn't remember a few moments ago about the newness of the plant and how well it operated. How long were you there?

Capener: I was there about two years.

Storey: So about '71 to '73?

December of 1973 Moved to the Colorado-Big Thompson Project in Colorado for a GS-13

Capener: Yeah. It was December of '73 that I then moved to Colorado, and that was for a promotion. That was for a GS-13.

Storey: Before we talk about that, let's go back to the Rio Grande Project and cover something I forgot to ask you. Right now the water districts on the Rio Grande Project seem to have a very litigious reputation. I'm just wondering if you ran into anything like that while you were down there and if it affected the way you got your work done?

The Elephant Butte field office's work was "pretty independent of the water districts"

Capener: No, we didn't run into any problems with the districts. Our work was pretty independent of the water districts. The water districts from below Elephant Butte down to, say down to El Paso and along the border communities and how they were using the water along the border communities for various purposes and so forth, that was not within our geographical span of control. We concentrated mostly on the physical facilities and the power generation and power transmission.

The water districts, they were lumped together more by contracts. So people under a common contract would be administered, say, out of the El Paso office, and they would have a contract for either at a point of water diversion, to where they'd have a number of districts that would take water from a common point of diversion, or it would be a common water supply or water source, to where they would have a certain contractual entitlement to so much water, and then how that water was taken was kind of the discretion of the district. So there was a lot of different ways those things could be put together, but we had very little contact with the water consumptive or water district end of it.

Storey: Okay. You were saying you got to move to Colorado for a 13.

Colorado-Big Thompson Project Is a Big Project

Capener: Yeah. That was kind of fun. It was in Colorado-Big Thompson Project, which is a *large* project. I mean, that's a trans-Continental Divide, trans-*basin* water system, where they take water from the Colorado watershed and take it through the Continental Divide over into the ~~Colorado,~~ the Big Thompson watershed, which is tributary to the Missouri, I guess it is.

Storey: Yeah, the Platte and the Missouri.

Capener: Platte and the Missouri. So the idea there was to dam up the headwaters of the Colorado River up in the mountains, the Rocky Mountains around Granby, and dig a tunnel through the Continental Divide. And then they came out around Estes Park, Colorado, with that tunnel, and that tunnel then moved the water to the Estes Park area. And then from there it went down the Big Thompson [River] Canyon, and it was *diverted* at a couple of points along the way, to where that water then could be sent north or south for storage reservoirs. And from those storage reservoirs, then it again went down into natural river systems for use by the agricultural communities.

We had pumping plants or powerplants at many points along this *process* of moving water. We actually had some pumping facilities over at Granby, where we would pump water to an elevation where it could then naturally flow through the Continental Divide over to Estes Park, and then as it came through, it went through two powerplants; and then from there, it went down the river and went through two more powerplants. And then we had kind of a completely independent dam at Green Mountain over on the [Blue River] ~~Colorado River~~, tributary to the Colorado River. It was independent of the rest of the system. That was just a large dam and powerplant that was additional water supply and power generation over there.

". . . geographically it was a large area, and we had a lot of transmission line . . . as well as a lot of reservoirs and generators and tunnels and everything. So it was quite a step up in the way of complexity from anyplace else that I'd worked. . . ."

So geographically it was a large area, and we had a lot of transmission line, as well, a lot of transmission line. We took transmission systems in eastern Colorado and over into Nebraska and up close to the Wyoming border, so we had hundreds of miles of transmission line, as well as a lot of reservoirs and generators and tunnels and everything. So it was quite a step up in the way of complexity from anyplace else that I'd worked.

Storey: And you were doing what?

Headed the Electrical Division in the Colorado-Big Thompson Office

Capener: I was head of the Electrical Division, and that office, the Colorado-Big Thompson office, had an Electrical Division and it had a Maintenance Division, which took care of the canals. We had some canals and we had some–I guess it was mostly canals that they took care of. And then they had the administrative people.

Electrical Division Had Four Fairly Large Branches with Sixty to Seventy People

So it was a majority of the people that worked there were in the Electrical Division, because we had a Transmission Branch, we had a Estes Park Branch that took care of what we had over at Estes Park, we had a Flatiron Branch, which was the Flatiron Powerplant and facilities and so forth there, we had an Engineering Branch

that provided engineering and electronic technical service. So we had four fairly large *branches* within the Electrical Division to cover all of the areas that we took care of. So we must have had, I'd guess, maybe sixty to seventy people.

Storey: In your division?

Capener: In my division, yeah. And they were scattered all the way from Green Mountain to Granby to Estes Park to Flatiron to Loveland, and then out to the east we had a substation.

END SIDE 2, TAPE 2. MARCH 25, 1996.
BEGIN SIDE 1, TAPE 3. MARCH 25, 1996.

Storey: This is tape three of an interview by Brit Allan Storey with Paul Capener on March the 25th, 1996.

You were saying you had people clear out to the Nebraska line, virtually.

Capener: Yes. We had a substation located way out close to Nebraska, and we had a person stationed out there.

Storey: How did the issues on this project vary from the other issues, other than in terms of size, that you had dealt with?

The Electrical Division Actually Did Engineering Work

Capener: Well, this is the first place I worked where I actually had control over an engineering division, so we did a lot of our engineering work at that office that [in] other places that had been done at the regional office or a project office. So this *being* a project office, it was done at the project level. We didn't have a lot of engineering work done out of the regional office, which was located in Denver. That was a rather small regional office there.

I guess it was more of interaction with other branches and interaction with other utilities, because this was an area now where we got into an area of Colorado where there were a lot of private and public utilities, electric utilities. This was just the beginning of kind of what resulted in a consolidation of a number of agencies, generating agencies, into a Tristate Power Authority, I think they call themselves now. This was just the beginning of that idea and that consolidation. So I had an opportunity to kind of get a taste for that.

Personnel Issues Became More Important Because of Dispersion of the Staff

The administration of it was kind of different because of the geographical dispersion of everybody around, so I got more into some of the non-technical issues and problems of people getting along with each other, and assuring them that even though we only saw them a couple times during the winter, we still knew where they were. [Laughter]

Storey: Do you have any specific examples?

Capener: Well, some of the things that were kind of unique, I think, to that area was, you find that there are certain groups of people that tend to do things somewhat repetitively, and the transmission line crew is one. They go to the same places all the time. They visit the same motels, the same bars, the same everything, year after year after year. And our electronic technicians were the same way. When they went over into the other side of the Continental Divide over in Colorado to do maintenance work, they'd always stay at the same places. It didn't matter what it was or how it looked, it was where they stayed traditionally for years and years.

I remember going to a place. It was when we were going to Green Mountain, and I can't recall the name of the little town. It was just a *little* small town on the Colorado River that we'd stop at, and there were about three motels and an old hotel there, and we always had to stay at the hotel. Whenever I went, I'd generally go with some of the technicians and so forth, because they had work to do, so it would minimize the travel, and during the wintertime, you didn't want to drive any more vehicles than necessary over there.

I said, "How come we're staying at this place?" It had two or three bathrooms on each floor and they had a TV down in the lobby, and they had an old radiator heat up in the room that sometimes worked and sometimes didn't. In the early 1900s was about when that thing was built.

And they said, "Well, this is where we *always* stay."

You know, you just don't ask those questions. You don't *break* the tradition. We *stay* here because this is where we always stay. We know the people; they know us. We're *family*. We're family, so we have to stay here.

When I went over there without them, I always stayed in a motel, where you had a bathroom in your own complex and had a TV in your room and things like that. So there's that kind of tradition that had been built up.

Dealing with a Rancher Who Wanted to Begin Irrigating Land Bisected by a Transmission Line

The other thing that was kind of interesting was, one day we had a fellow come in, he was a rancher out on the prairie, and we happened to have one of our 230 kV transmission lines going through a few sections of his land out there. And he came in and he said, "I want you to move your transmission lines, because I'm going to put in a sprinkler system, one of these big water wheel-type sprinkler systems. So I want you to move your transmission line over to the section line," which, you know, we'd have to relocate a couple miles of transmission line, which, "Are you kidding? We're not going to do that. Do you know what it *costs* to do that? You're talking about several hundred thousand dollars to move that transmission line. We already have a right to run the transmission line across your land."

He said, "I don't care. I want you to move it. I'll write you out a check. I want to be able to irrigate that, and I don't want to have to move my sprinklers around a transmission line."

We said, "Well, we'll look into it."

So we started to look into it, and we come to find out we *didn't* have the right to easement across his land. When that transmission line was *built*–and this was, again, probably about the 1930s, I would guess, or so–the construction engineer made a field decision when he was out there. He said, "Hey, if we move the transmission line over here, we can get from point A to point B in shorter distance, and it'll make for a better transmission line. So you guys go over and put the transmission line over here." And so they did. They just went over and built it. Of course, at that time it was just open prairie. I don't think it was farmed or anything.

So we never did have a recorded easement or deed or anything else for the use of the land. So that caused an interesting situation. But, legal things being the way they are, if the government has something like that that they do by mistake, why, apparently we have a right to the land after so many years anyway. We don't have to file for it or anything else. So we have by default acquired an easement to it. So needless to say, we took the guy's check and decided we'd move the line for him. [Laughter] So we took care of that.

Flood in the Big Thompson Canyon

The work was pretty much typical of what I'd experienced in other places, except there was just a much larger scale. The one thing that happened while I was there was the big flood down the ~~Colorado~~ Big Thompson Canyon, and that was a spectacular thing, because that occurred over a weekend. I remember going out on Monday to the mouth of canyon where all that flood came through, and you could see bits and pieces of cars. These were like part of an axle or a rim with no tire on it or the head of an engine. I mean, absolutely this flood just *shredded* everything--automobiles, trailers. *Trees* would come through there with no bark on them and no limbs on them and just the wood all splintered up from the erosion and the sandblasting action that was occurring.

"We had a little powerplant right *in* the river. The tailrace of the powerplant was the river. And the gravel that was washed down there covered the whole powerplant. . . ."

We had a little powerplant right *in* the river. The tailrace of the powerplant was the river. And the gravel that was washed down there covered the whole powerplant. I mean, you could walk right over the top of it and didn't even know where it was, because it was now buried, the whole thing. So it had a deposit of maybe twenty feet of gravel and sand and material that just covered up that channel. It was quite a spectacular thing to see to go up and look at what it did. It reminds you of the power that Mother Nature has.

Doing a Bucket Survey to Determine How Much Rain Fell

And then the other thing that was kind of interesting is trying to talk with people that had the responsibility to find out how much rain actually fell. I think these were USGS [United States Geological Survey] people. We were kind of helping them out in getting them to different locations and so forth. I asked, "How can you estimate how much rainfall occurred during this flood?"

They said, "Oh, we make a *bucket* survey."

I said, "What do you mean, a *bucket* survey?"

They said, "Oh, we just go around the area and we look for old buckets or old stumps or *anything* that might have trapped water, and we measure how much water is in there. We use that as a base of how much rainfall we had."

That was a new term to *my* vocabulary, they make a bucket survey. From that, along with some other things, I'm sure, they determined how much rainfall they got over that three- or four-hour period.

There Was Erosion on the Toe of Olympus Dam in Estes Park

We had a lot of erosion on our toe of our dam there at Estes Park [Olympus Dam] we had to fix.

Dealing with Employee Use of Government Equipment for Personal Purposes

I guess the other thing that was kind of interesting, this was kind of a different insight into, I guess, how you have to keep on top of things in these remote locations, because the people tend to think that they own everything. And so we always had to go out to these remote locations and kind of be sure that everything was still there. Not that the people would steal anything. I mean, they were not dishonest that way. But if they needed to dig a post hole, they'd take the government backhoe home and dig a post hole.

Back in that era of Reclamation, it was not uncommon to find that. You don't dare do that nowadays. The government has really tightened up on the use of government equipment for personal reasons. But if you had some little shop work to do that you needed to do, you'd take it to work with you, and after everybody went home, you'd go down to the machine shop and you'd use the government lathe and you'd fix whatever you were doing for a few hours, because that was the thing to do. You know how to run the equipment. That was your job on the clock. And so why not do it after? You weren't hurting anybody. You didn't use any of the government stock or anything. You just used the equipment.

So, it was very difficult to convince people that that no longer was acceptable, that those types of things at one time may have been allowed, but you could not do that now. It was quite a difficult thing for some of the people to accept, and there

were a few of them that kind of got into a little hot water because they were not willing to change and to do that. So there were some reprimands that had to be given and things like that. It was not a popular thing to do, but from a *policy* point of view, you couldn't justify using the public's equipment for personal uses that way.

But other than that, I came, I guess, to appreciate a little more of the difference between how a Federal power system operates and how a public or private power system operates, because we were right in the midst of some public and private utilities. The water district that received our water had their offices just across the street, up the road a little ways, and we used to go over there to hold meetings. It's like walking into the Ritz Hotel when you walk into their offices. I mean, they're first class and their conference room there's big, plush chairs and everything else. We go down to our low-bid office space and low-bid furniture and everything else. It reminds you that the government doesn't do things like the private sector does. We just don't put money in those things.

I think a lot of people that were involved in some of these water districts and power districts and so forth kind of looked down at the Bureau as far as, "You guys are really not with it. You're not up to the state-of-the-art policies or technologies or anything else, because you're just afraid to take that step or spend that money or whatever," because they wanted to do a lot of innovative things that the Bureau said, "No, you can't do it." They wanted to take liberties with contracts and they wanted to consolidate things and they wanted to step in and use government facilities for their own purposes, for power generation. They said, "Well, it's more efficient if we have this type of a contract, power contract," and it might exclude some other people that have equal entitlement to it. So you see the controversy and the power plays, more getting into the political level that I'm sure a lot of people in maybe Denver and Washington level have to deal with all the time.

Storey: Was that because the C-BT was such a big project or because you had risen to a different level in the organization or what?

Water and Power Were Valuable Commodities along the Colorado Front Range

Capener: It's both. It's because I was at now a different level of the organization and also because we were not the only game in town. There was a little bit of that down in New Mexico, but in Colorado it was more so because there was a lot more irrigation around that area, and the *water* was a lot more valuable because the *water* could be sold *off* the land.

If you wanted to go in and buy a section of ground, you could buy the ground and then you could take the water rights of that ground and you could sell it to the city or you could sell it to a utility or you could do something else with it, and then that ground no longer had an entitlement to the water. So there was a lot of that, a lot of speculation, a lot of buying and selling of water, so that people could buy water from some other part of the state or whatever and they could import it in and use it for their own purposes. So there was a lot of wheeling and dealing like that that would go on.

And the same with power, because power along the front range of Colorado was becoming a very valuable commodity because of the *growth* that was taking place. There was a lot of power companies that were trying to kind of consolidate and maybe become competitive with Colorado Public Power. I think that was the one. As a matter of fact, we had some of our engineers that went to work for them, that quit the Bureau and went to work for–

Storey: Public Service Company in Colorado, would it be?

Capener: Well, there was a group called Tristate, which I think were private. Maybe they were a mixture of private and public, but mostly private power companies. *They* were the ones that were forming a coalition. Of course, they were trying to just acquire rights to the power, rights to buy power and then resell it, more than actually generate power, because they were trying to buy it up and then they'd turn around and build transmission lines and resell it. And so the efforts were to try and come up with the best way of getting power from point A to point B and be the most efficient in doing it. Then you could move more energy, and your income stream would be greater, kind of like playing the commodities market. They were more interested in results and moving the commodity than actually making the stuff.

They actually started at that time to try and move in and take over some of the Bureau facilities. It was kind of a *different* thing that was going on in New Mexico, because in New Mexico the Bureau really didn't have any vested interests. In Colorado, [that] ~~it~~ was not the case, because we provided a lot of that electricity to the water districts that used it to pump water with, and it was Bureau water that they were pumping. So we had a vested need in retaining some of those transmission lines, and power capacity, and so forth.

Storey: What about the powerplant [Big Thompson Powerplant] you mentioned that was covered in the Big Thompson flood?

Capener: It was a small, one-unit facility, and we eventually dug it out. *Inside* the building there was no damage. There was water. It got flooded from water, but there was no buildup of silt or anything to speak of. So once we excavated the channel so we could get the water back out of it and dried everything up, dried all the electrical stuff, let the moisture get out of it, you could put it back in operation.

Storey: So we actually did put it back? Do you have any recollection of how long that took?

Capener: No. That happened after I left, but it probably took a year or so to do that. It was a rather small one, so it didn't have a high priority. The number one priority–it washed the siphon out across the canyon that we used to move water, move it up north to Fort Collins, Colorado.

Storey: And up to Horsetooth [Reservoir], is it?

Capener: Yeah, up there. That got washed out, so the big push was to get that back in service so we could get the water moving. We had some damage at Estes Park along the toe

of the dam there that had to be repaired, but that was not a difficult thing to do. Then the diversion structure that we had in the canyon, that diverted the water to Flatiron, that was damaged and had to be repaired, too. But again, it was just a matter of getting some people out there, some contractors, to do some repair work of gates and concrete and so forth. You know, there wasn't anything that was technically difficult to do, and under an emergency, why, you got the funding and everything else to do it, so it worked out pretty good.

Storey: Do you remember who hired you for this job as electrical division chief?

Bob Berling

Capener: Bob Berling.

Storey: B-E-R-L-I-N-G?

Capener: Yes.

Storey: What was he like?

Capener: He was a very well-mannered type person, easy to get along with, good mannerisms, good PR-type person. He very seldom ever asked for any–he asked me how things were going and if I had any problems and things of this nature, but didn't want to get into any of the specifics. He just wanted to know if there were any real problems that were not being taken care of or so forth.

In that respect, he was very easy to work for, because he kind of gave you the responsibility and let you handle it, let you go with it. So we really didn't have any, very little planning sessions in the sense of sitting down and trying to figure out what we're going to do. That was my responsibility. I had interface with him when it came to budget, because he wouldn't always give us the money we needed because he had to make some decisions on that, which is understandable. But he was a easy man to work for.

Storey: What kind of personality, other than easy?

Capener: Well, he dressed very good, very well dressed, and I think he liked to present a good image. He did have some family problems, and he eventually had a divorce by the time we left.

Storey: Did he have an assistant?

Capener: No.

Storey: So you were directly under him, then?

Capener: Right.

Storey: And how long were you there at the C-BT?

Left Colorado in 1976 to Move Back to Shasta as a GS-14 Project Superintendent

Capener: I'd say a couple of years. I went there in '73 and then left in '76, so I was there three years.

Storey: What caused you to leave?

Capener: I got the job at Shasta as project superintendent, which was another promotion. That was one of the things we'd kind of talked about when I first left Shasta, that let's take advantage of transfers if promotions are involved so we can accelerate any enhancements we might get in our career in the way of promotions. So with the exception of the lateral from Elephant Butte to Palisades, everything was for a promotion.

Storey: So this was a 14, then?

Capener: Yes, it was a 14.

Storey: We have been talking almost three hours. Why don't we break for today?

Capener: Okay. This is a good place to stop.

Capener: I'd like to ask you again if you're willing for the information on the tapes and resulting transcripts to be used by researchers?

Capener: Sure.

Storey: Good. Thank you very much.

END SIDE 1, TAPE 3. MARCH 25, 1996.
BEGIN SIDE 1, TAPE 1. MARCH 26, 1996.

Storey: This is Brit Allan Storey, Senior historian of the Bureau of Reclamation, interviewing J. Paul Capener at his home in Redding, California, on March the 26th, 1996, at about nine o'clock in the morning. This is tape one.

The Movie House at Palisades

Let's see, I had written down movie at Palisades.

Capener: Yes. There's three kind of interesting little stories that I might just mention at Palisades. It's a very small rural agricultural community, and it's a long distance from anywhere. The closest town is Idaho Falls, of any consequence, and that's about an hour's drive. And so people looked inwardly for their entertainment and recreation.

They have a movie house there that was built during the construction of the dam to kind of facilitate the influx of construction workers, and during the construction of the dam, they had a pretty good showing of movies, and it was open six days a week. They always closed down on Sunday. It's a reflection of the standards of the community there.

Well, after the construction was over, their audience disappeared, and so they only kept it open on Fridays and Saturdays, and so they would show movies Fridays and Saturdays. They had a nice marquee out in front, and they never bothered to put up what the title of the movie was, because nobody really cared. It was the only movie in *town*, and whatever it was, was fine with them. And so the big activity on Friday night or Saturday was to go to that local theater for a movie, and they sold popcorn. They didn't really heat it too well, so you had to take a coat and kind of bundle up a little bit. They just built a little fire in there, enough to take the chill off the air during the wintertime. If it got too cold, then they'd cancel out. So that was a source of entertainment, and they always had good family-type movies and we'd take the kids, and there'd be maybe thirty or forty people there for the movie. It was the *highlight* of some people's week to go to that little movie theater.

Storey: Go to the movie.

Capener: Get some fresh popcorn and some old candy bars and see a movie. I think they charged like 50 cents or a dollar. It was very, very inexpensive. One of the local ranchers ran the thing. He would go in and run the projector and all that other stuff. If the projector bulb burned out or whatever it was up there that they used, why, everybody just waited for half an hour while he went and found another one or did something to make the thing work again, because they didn't keep a lot of spare parts on hand and all that stuff. So that was kind of interesting.

Brown Family and Hothouse Tomatoes

A couple of other things that were interesting about Palisades was, people were looking for all different ways to supplement their income, because being a marginal agricultural area, unless you had a lot of property and land, you had to find something else to do. I remember one family, their name was Brown, and it was a father and his son. The father was kind of retired and had a little income that way, and they were running a motel. But the motel business there was non-existent during the wintertime and marginal, at best, during the summer. But they had this motel, and they generally kept about one or two units open year-round and the rest was kind of seasonal, based on the traffic.

To supplement that, they raised tomatoes. Now, raising tomatoes in Swan Valley is quite a challenge. And so what they had done is, they built a large wooden *frame*, like a box. I mean, that was big. It was probably a quarter of an acre that they had framed. They went down to one of the old churches in the Idaho Falls area that was remodeling and got an *old coal-burning* furnace and they converted it to oil, and this was to be the source of heat, because they would start planting the tomatoes in the late winter. Their whole idea was that they would have a hothouse and they

would raise the tomatoes and they would beat the market, and so they would have their tomatoes, nice big red tomatoes, out on the market and down into Idaho Falls before the California tomatoes or the competition came there so they'd get premium prices for them.

So they had this old oil furnace, and they would enclose this greenhouse with plastic, with visquine or whatever that they could get, these big rolls of stuff. In about mid-winter they'd go out there and they'd tack all this stuff on, cover it all up, fire the old furnace, and start planting their nursery stock in there.

In order to get fuel for their furnace, they'd go around to *all* of the farms and *all* the service stations and everything else with an old flatbed truck with a 500-gallon tank on the back, and they'd collect *all* the drain oil from the machines and anything they could get, old waste oil from cars and tractors and service stations and everything else, and this is what they would burn. Of course, they had a problem filtering it out, because it had all kinds of junk in there, and it was always a hassle to keep that thing going because of the type of fuel they used. And you could always tell when they were firing it up, because the thing just billowed out the smoke, really a polluting thing.

So anyway, they would fire that up and they would plant their tomatoes, and they would spend day and night almost in there, them and their family. They had a number of children that assisted them on it. And they'd raise those tomatoes. They'd tie strings from the ground up to the beams of their little hothouse, and the tomato vines would crawl up those strings.

Well, since it was enclosed, there was no way to pollinate the tomatoes, so they did it by hand. They'd go around there with their finger or a little brush and they'd spread the pollen from blossom to blossom to pollinate the tomatoes so that they'd get the fruit on them. They did have bugs though, so in order to control the bugs, they had geese. They had a flock of geese that would run around inside this big quarter-of-an-acre hothouse, and the geese would eat up the bugs and the worms and the weeds and anything else they could. Fortunately, the geese didn't like tomatoes, so they didn't bother the plants, but they kept the weeds and the bugs and everything else out of there.

They had absolutely wonderful tomatoes. We used to go down there. We had four little boys, and they were just terrified of these geese, because the geese would want to chase the kids. They wouldn't bother the adults, because we'd kick them, you know, and shoo them away. But it was really quite an experience. They would box up their tomatoes along about March or April, and maybe even into early May, and they would haul them into the markets in Idaho Falls, and then they had kind of a street market out there on the highway, where they met some of the needs of the public. And they did fairly well. I mean, they made a little bit of money out of it. They made expenses and everything else. But it was quite a labor-intensive operation, and it was very *innovative* in the way that they were able to do that, because they built this thing, of course, in a very narrow canyon, and they got maybe three or four hours of sunlight a day and that was all. So it was very interesting.

The other thing that I remembered was in that area, my wife is from Denmark, and she was converted to the Mormon faith while she was over in Denmark by a young missionary from the Palisades area, from Irwin, Idaho, which is kind of one of those little farm towns in that valley. That was back in '49, I guess, that he was out there, and, of course, my wife didn't know anything about where Irwin, Idaho, or Palisades, Idaho, were, and so she didn't pay any attention to it. Then she immigrated to the U.S. and eventually we were married. This young man that was the missionary that was teaching her came back to the States. He was a rather sharp young fellow, and after getting his bachelor's degree at the university, he wanted to go into law school. And so he needed to earn some money for law school, and so he was working on the construction of Palisades Dam and he was killed. He was run over by one of the big belly dumps, backed over him and killed him.

We, a number of years later came, and I was, of course, the superintendent of that field office where that young man was killed. It kind of is interesting how it all ties together. The probability of all of those events happening seems rather remote. Here from a little farming community of a few hundred people, this fellow goes to Denmark and meets my wife and then works on the dam and then is killed during the construction, and then I come back there as the field office manager over that facility. So we had a chance to meet his family, his mother and he had some brothers and sisters, and that was kind of interesting.

Well, that's kind of Palisades, some of the things that we were talking about yesterday.

Storey: It occurred to me after our conversation, after we turned off the tape yesterday, you were talking about the hotel in, I think, maybe Kremmling or Hot Sulphur and how everybody wanted to stay there. And we were talking about the way per diem was done in those days. Could you tell me about the way per diem was done there in the seventies?

Per Diem Policy Changes at Reclamation

Capener: Well, per diem was going through some changes, and I'm not sure why. It seems as though the Bureau or the government, whoever was in charge of this, was changing the per diem policies.

At this particular time, the per diem was given to the individuals on just a lump-sum basis. It wasn't pro-rated out, so much for your lodging, so much for your meals, and so forth, and you didn't need receipts or anything else. If you were out for twenty-four hours out on detail or something, you got like $16.00-, $17.00 *flat*. You don't have to show any receipts for it. So this was kind of an incentive for people to look for the cheapest places to eat and to stay, because if they could get by for, say, $5.00 or $6.00 a day and they were paid $17.00 a day, they made a little extra money on it. So this was one reason I think a lot of them liked to stay in the cheapest places they could find.

Well, ~~one of~~ the most innovative people were the line crew, because they

were on the road a lot and there went out into the plains east of Loveland there in Colorado and also over on the other side of the hill. But they were kind of an innovative group, and they would find some real dumps to stay in, and if they couldn't find anything, they'd sleep in their trucks. They would feel like they were earning themselves some extra spending money and so forth by doing that.

That lasted for a period of time, and then I think the Bureau realized that their people were not really *representing* the government the way they should in the way that they were handling their per diem or something. So then it wasn't too long after that that we went back to a program where you had to have receipts, and at that time then they said, "Well, you have to have receipts for everything. You have to have receipts for your lodging, for your meals, breakfast, lunch, and dinner, and everything." Then they backed off of that, and they changed it again. They went through some kind of streamlining, I guess, or what have you, and then finally they settled on what is essentially what they have today, is that you just need the receipts for your lodging and then you get an allowance for the meals, whether you actually spend that much or not.

Storey: You applied for the project superintendent at Shasta. Was that the only job you had applied for?

Didn't Think He Would Be Selected as Project Superintendent at Shasta

Capener: I think at that time that was the first one I had applied for when I was stationed there in Loveland, Colorado, right. And I didn't really think I had much of a chance of getting it, because I knew some other people that were applying for it that had worked at Shasta. Two of them were my old *bosses* that were very much interested in the job.

When I came out for an interview, Billy Martin was the regional director at that time and Mike Catino was one of the assistant regional directors, and they were the two that interviewed me. Mike Catino then eventually became the regional director after Billy retired. And Paul Olbert [phonetic] was the assistant of administration, assistant regional director of administration. So those three were the ones that I talked with. It was a nice interview, but I really felt that, well, there was Ed Extell [phonetic] and Tom Gambell [phonetic], who were both very capable people and had worked at Shasta. When I was there originally on my first assignment with the Bureau, Tom Gambell was my supervisor and Ed Extell was *his* supervisor.

I was quite surprised when I did receive the position and very grateful for it, because it was really kind of like a dream come true to be a project superintendent of the Shasta office, because it was one of the better-known facilities *in* Reclamation because of the dam, which is one of the *largest* concrete dams. At one time, it was heralded as the second-largest concrete dam in the world. That was back when it was built. It no longer holds that distinction, obviously, with the large facilities that have been built since then. But it was well-known, and it's a beautiful dam. The picture of Shasta Dam is in a lot of literature and trade magazines and so forth. And so it was a very prestigious-type position, very well-known area, and it just seemed to sort of

held everything that an engineer or manager would want to have, a very large facility, a diversity of work and experiences, a large staff for the challenges of management. So we were thrilled when we came back to Shasta as the project manager.

Returned to Shasta as a Drought Developed

We came in '76, the fall of '76, and that was the winter, the winter of '76-77 was the driest winter of record, and that was the time that Shasta reached its historical low level. It had not reached that *low* of an elevation since it was being filled during construction. And so we came at the drought, and, of course, everybody said, "Well, the new project manager brought the drought," since I came along with it, in jest, saying things like that.

Drought Affected Operation of the Facilities at Shasta

But it was an interesting experience to go through, the drought, because it did affect the way we had to operate the facilities. The reservoir got down, I think it was like 240 or '50 feet from full, which was just about the minimum design head for generating electricity at Shasta Dam. So we were concerned that we would not have enough head to properly operate the turbines and the generators. We might have to shut the whole thing down and then just make releases from the flood gates in the face of the dam.

"It was probably in about January where we started to run into some problems of actually starting to suck air from the lake down through the penstocks into the turbines. . . ."

As the winter progressed, in about March, when it was obvious that–well, I guess it wasn't quite that late. It was probably in about January where we started to run into some problems of actually starting to suck air from the lake down through the penstocks into the turbines. So you'd go out onto the lake and you'd see these big whirlpools, like one might experience in a sink or a bathtub as you let the water out. There's a little whirlpool and that little vortex sucks the air. If that air is sucked down into the penstocks and down into the turbines, it can cause physical damage to the turbines and it could cause them to fail, so we obviously did not want that to happen.

"We got large sheets of 4 x 8 plywood and threw it on the lake, out in the lake, on top of those vortexes, like a lid, and then would break up the vortex to where it would not suck the air, and we were able to bring the lake down another two or three feet . . ."

But, we were very reluctant to shut off generation, so we used some very innovative engineering techniques to keep that air from being sucked down in the vortex. We got large sheets of 4 x 8 plywood and threw it on the lake, out in the lake, on top of those vortexes, like a lid, and then would break up the vortex to where it would not suck the air, and we were able to bring the lake down another two or three feet by having those big sheets of plywood out there in the lake to break up the

vortex.

Storey: How big a vortex are we talking about?

Capener: Well, it was probably three feet in diameter at the top, like a big whirlpool, and then a funnel-type shape as it goes down into the lake. It was just a spinning vortex, and it would be sucking down. The funnel portion of it would get longer and longer, and, of course, it was full of air. And eventually it would get so far down into the vortex that that air would *stay* in, and then the air would go down, in the form of large bubbles, down through the penstocks and on to the turbines.

Well, the turbines, when they got to a volume of air that should have been water, it affects the pressures on the turbine, on the waterwheel, and it throws it out of *balance*. That, of course, could cause the thing to wobble and you'd lose your bearings, the guide bearings that hold the thing in vertical alignment, and it could really tear up the machine. So that was not something that we were supposed to do. That was a real dangerous situation. So we were able to, with close monitoring, continue to operate another several feet, drop the lake, by having these big sheets of plywood out there.

Storey: Would it have been a problem in terms of sucking in boats and debris and things?

Capener: No, because this occurs inside the enclosure, the screened from the lake bio trash racks. The intake structure is kind of like a large cylinder with bars as sides, those bars being spaced about eight inches apart, and that keeps the large debris from being pulled into the area where the intakes to the turbines are.

Storey: So these sheets of plywood were being floated inside that enclosure?

Capener: Yes.

Storey: Okay. And they weren't being sucked in.

Capener: No. Thank goodness, they were flat enough that they wouldn't be pulled down into it.

So we got through that period, and then we got a little late winter/early spring rains that brought the lake back up again enough that we could continue with some releases during the spring and summer with recognizing that we could give very little water deliveries to any of the agricultural community.

Storey: This was in '77?

Capener: That would be calendar '77. It was the water year '76-77.

Storey: Tell me what the Shasta superintendent controlled [at] that time.

Shasta Office's Responsibilities at That Time

Capener: We had administrative control of all of the Bureau's facilities north of Red Bluff. Red Bluff was, the diversion facility at Red Bluff was under the Willows office. So we had everything north of Red Bluff, which was Shasta, the Shasta complex, the Keswick complex, and what we call the Trinity River facilities.

Trinity River Project

The Trinity River Project, which was built in the '50s, about fifteen years after the Shasta Dam was built, consisted of Trinity Dam and the powerplant in Lewiston, which is downstream a little ways from Trinity, and then the diversion tunnel through the mountains over to Whiskeytown and powerplants at Whiskeytown Lake and Whiskeytown Dam, and then another tunnel that took the water from Whiskeytown Lake over to another powerplant called Spring Creek and into Keswick Reservoir, which was just downstream from Shasta. So it was bringing Trinity River water, which is from a different river basin, over into the Sacramento River Basin.

It was not a new concept, because it kind of follows the same pattern that was done on the Colorado-Big Thompson, where you're taking water from one watershed and putting it into another watershed. In this situation, it was from the Trinity River watershed over into the Sacramento River watershed, so we were actually taking water *out* of the river that would never return, even with return flows or what have you. So, we were diverting about 90 percent of the water that otherwise would be going down the Trinity River, and historically had gone down the Trinity River, was being diverted over into the Sacramento watershed and the Sacramento River, and this was used to expand the agricultural use down in the Sacramento Valley and the San Joaquin Valley.

In Conjunction with the Trinity River Project New Ag Land Opened up West of the Sacramento River and More Water Diverted Through the Sacramento-San Joaquin Delta

And so in conjunction with that facility, they built additional canals down at Red Bluff and Willows and opened up quite a large amount of land *west* of the Sacramento River in the Sacramento Valley for agriculture, and then they also increased the amount of water that they moved *across* the delta, the San Joaquin/Sacramento Delta at Tracy, and pumped that down into the San Joaquin Valley for use in the large water districts on the western side of the San Joaquin Valley, like Westlands Water District and some of those.

So the idea was one of getting water from another basin and putting it in, and that caused a lot of problems that didn't surface immediately, a lot of environmental problems with the fisheries and so forth, and later there was congressional action taken, and it's *still* a problem that's being resolved as far as how much water can you take from a river basin without causing permanent damage to the ecology of the river. And so the amount of water that was originally intended to be diverted has been *reduced*, and it's still in a state of *flux*. The final amount of water that will be allowed to be diverted over here is still being looked at. There are studies going on

on the Trinity River to try and decide how much water it will actually take to preserve the ecology of that river. Where we used to divert anywhere from 95 percent of the water, now it's more like we're only diverting about 80 percent, and in all probability, it may even be less than that that we'll end up with. This has caused some concern in the Sacramento/San Joaquin Valleys, because this was water that was planned on by the agricultural community for *their* ultimate growth. So the Bureau had gone and built these canal systems and had put water districts on a contract to repay for the conveyance and delivery systems down in the valley, on the promise that the water will be provided to them. Well, the water is *not* being provided to the full extent that they had indicated originally, so some of those districts have gone into debt for repayment, and only maybe 50 or 60 percent of their district is receiving water. The rest is still dryland. So it's putting a burden on them.

Those are issues that are currently being worked out, just to try and resolve how that can be handled in an equitable manner, because I think it's pretty obvious that under the new guidelines and the new philosophies of Reclamation, the ecology and the environment is going to be given–and I think rightfully so–the position that it should have in relationship to the use of the water.

Storey: Now, if I'm understanding this correctly, when you first came back to Shasta, you were not delivering any water to any irrigators?

Capener: We were delivering it, yes, but the delivery system, the diversion and delivery system was handled by *another* field office at Willows, which is about eighty miles south of Redding. So that's where they were actually delivering the water, through the Red Bluff Diversion Dam and the Corning Pumping Plant, and then they had other facilities that pumped directly out of the Sacramento River downstream for them.

But they were delivering water, but *not* the full contractual entitlement that the districts had under contract, partially because the districts had not at that time completed all of their internal distribution facilities within the districts to *provide* the water, so they were still in kind of a growing stage to get full development of the land within their districts. So that was where the rub came in. They were getting some water. They had expectations of getting more water, because their contract indicated they were entitled to more water, and those were the terms that the contracts were signed and water was obligated. And then the problems with the environment came up with the ecology both on the Trinity River and then on the Sacramento River because of the decline of the salmon runs. That entered into the amount of water that should be put *down* the Sacramento River and *not* diverted out for any other purpose, other than to maintain water for the fisheries.

So all those factors came together to kind of throw a wrench in the gears, if you will, on some of these districts that had not yet reached full potential, and so they are experiencing a rather difficult financial situation in some of those. So the price of the water that we charge the districts now–it's a lot higher than I think what either the Bureau or the districts had ever anticipated it would be.

Central Valley Project Improvement Act Added a Surcharge to Water Deliveries for Environmental Projects

With the Central Valley Improvement Act law[4] that was passed a few years ago, there was a surcharge that was put on each acre-foot of water that was delivered to the districts that they had to repay, and that surcharge would be used to fund some of the environmental projects that needed to be done to improve the fisheries. It was something like a $14-15 an acre-foot surcharge on the water that the districts received, and that's a considerable amount.

Some Smaller Districts Opted Not to Renew their Water Contracts Due to Cost

We just finished this last year in renegotiating some of the water contracts. We actually had some of the smaller districts that opted *not* to renew their contracts with Reclamation because they couldn't afford the water. They went back to dryland farming or to wells. So we had two districts up this end of the valley that said, "No, we just can't afford your water anymore."

How the Area Office Concept Introduced under Commissioner Dan Beard Changed Things

As I have explained the [breakdown] ~~breakup~~ between Willows and the Shasta offices, this is the way it existed at the time that I started to work here about twenty years ago. Since that time, the Bureau has gone to an *area office* concept, and now we have–

END OF SIDE 1, TAPE 1. MARCH 26, 1996.
BEGIN SIDE 2, TAPE 1. MARCH 26, 1996.

Storey: You were saying that Shasta and Willows had been combined into the Northern California Area Office?

Capener: Yes. Those two O&M offices were merged to an area office, and I was the area manager at the time of my retirement a couple of months ago. And so I went through this contract renegotiation phase the last two years with the water districts and became *very much* involved in the workings of the water districts since the creation of the area office, which goes back about three-, three and a half years ago, when we started that merger.

They have some real concerns, the water districts do, and the fisheries issues are going to be *very* important in how the Central Valley Project is operated. But there are a *lot* of issues, environmental issues, with the Central Valley Project, that being only one. The Sacramento/San Joaquin Delta is another issue that is politically a very, very hot potato on the *balance* of the ecology in the delta, and *water* is a very *dynamic* issue in California and very political. Most engineers will agree that a peripheral canal would solve a lot of those problems, if you build a canal around the

4. The Central Valley Project Improvement Act of October 30, 1992, Public Law 102-575.

delta so that you didn't have to push water through the delta to get it to the south. You could show on some good engineering designs and so forth that you'd actually be able to take more water south and have more water for the ecology of the delta if you had a conveyance system.

". . . there's a big fear in California that the southern California people are out to take away the northern California water, and it's very, very political, very emotional. There was a referendum put to a vote here a few years ago, should we or should we not build a peripheral canal, and it was soundly defeated, more from the fear aspect of it than from any logic or reason . . ."

But there's a big fear in California that the southern California people are out to take away the northern California water, and it's very, very political, very emotional. There was a referendum put to a vote here a few years ago, should we or should we not build a peripheral canal, and it was soundly defeated, more from the fear aspect of it than from any logic or reason, because the battle cry was, "If they approve it, southern California, being Los Angeles, will take northern California's water, and they'll dry us up like they did Owens Valley."

It's a very, very difficult issue to resolve because of the emotionalism of it. People don't understand the workings enough to vote from an engineering point of view. They say, well, yeah, it makes sense as a good engineering thing, but once the politicians get ahold of it, all bets are off, and they'll do with it what they want. And most of votes in California come from southern California, so the legislature will just vote to send the water down and do this and that. It's very, very controversial.

The Drought in 1976-1977 Saw Elements of the Town of Kennett Exposed as the Lake Elevation Fell

But back to the time that I came, that low level of Shasta Reservoir–it opened up some very interesting things, because we started to see the old town of Kennett, which was located about four miles, five miles upstream of Shasta Dam. Kennett was an old mining town that was built right along the Sacramento River, and it was a fairly good-sized town. It had, I don't know, maybe 10,000-, 15,000 people in it at one time, and smelters and all of that. As the lake went down, we started to see some of the remnants of that town.

We never actually got to see the old buildings that they left, but there was a lot of brick buildings right along the old river channel that were never destroyed, but they were still about 100 feet under water. But we saw the old water supply, an old cistern-type thing that the people of Kennett had constructed on top of a little knoll. They had dug a pit, and then they put a large redwood kind of like a barrel around it, and that's where they got their water. They would either pump it up from the river or rainfall or someway, and that would provide them water during the year, and it held several million gallons of water. And so that thing started to come out of the water as the lake went down, and that was rather interesting to see.

But the most interesting one was the old cemetery. And typical of a lot of

communities, they built the cemetery on top of a hill, and it was high and dry during the low point of the reservoir drawdown. So I went out there, with some of the other employees, to kind of see if there was any kind of concerns that we should have. And it was rather an eerie-type of a feeling, because they relocated the cemetery during the construction phase of it so the graves were all opened, but they never filled them back in. So here was this cemetery that had probably seventy or eighty graves in it, and all of them were opened, with the dirt piled next to the grave. You'd walk through there and look down into the graves. Of course, there was nothing there. They had removed them prior to the construction. But it was kind of an eerie feeling. There was very little sediment[ation] that had taken place, and so the graves were still rather deep. It was one of the drawing cards, I guess, of the low reservoir.

A lot of the old road surface, a lot of the old tunnels that were constructed in the upper ends of the reservoir *along* the original river channel were now visible. People were using a lot of the old roads to launch boats that went down into the canyon. Some of the old smelter sites were again visible. Some of the old ruins of smelters that were built down close to the old river that were in the upper end of the reservoir were now visible.

". . . up in the Pit River arm, they had not cleared all of the timber during the filling process . . . so there were some full-grown pine trees that were still left in the reservoir as it was filled. . . . Well, these trees then came up out of the water, and they were just like ghosts. They were snow white, the trees were, having been down in the dark and so forth, but a lot of them still had needles on them, on the pine. They were just like old ghosts coming up out of the water . . ."

And then up in the Pit River arm, they had not cleared all of the timber during the filling process in the forties when Shasta Lake was filled, and so there were some full-grown pine trees that were still left in the reservoir as it was filled. But they said that's fine, they're 200 feet under water. They'll never cause anybody any problem. Well, these trees then came up out of the water, and they were just like ghosts. They were snow white, the trees were, having been down in the dark and so forth, but a lot of them still had needles on them, on the pine. They were just like old ghosts coming up out of the water, and it was a real eerie feeling to go up there in that arm of the lake, especially in the evening and as the light was kind of playing tricks on you, and here was all these white pine trees. I mean, there were a lot of them. There were hundreds of them up along the hillsides. Then you could drive your boat down through some of them that were still only partially out of the water, and it reminded you of like driving in some of the swampland in Florida, where you see these movies and so forth of going through the cypress jungles of the swampland. And so that was another experience that was rather interesting.

Sturgeon Fishing Was Good While Shasta Lake Was down

There was a lot of good fishing for sturgeon with the lake so low, because there were a number of–well, there were sturgeon that were *trapped* in the lake at the construction of the dam. Sturgeon were naturally occurring fish in the Sacramento River, and still are found in the river, especially down in the Bay area. So when they

built the dam, they trapped some sturgeon up in the lake, and these were very large fish. They get to be fifteen, twenty feet long, and I think the record sturgeon was caught during this period of time, which is about twenty or so, twenty-five feet long.

They fish for sturgeon with a great big hook and half a ham or something like that, or a chicken. They'd put on a whole chicken, they'd put in on the hook, and they'd just throw it over the side of the boat. And they'd fish at night, and the sturgeon is kind of a bottom-feeding scavenger fish, and so it eats carrion and things of this nature. So it was quite interesting.

Storey: Did this cause boating hazards?

The Forest Service, as Manager of the Recreation Area Set out to Identify Boating Hazards

Capener: It really did, because there were a lot of hazards that were coming out of the water that had not been identified, and so the Forest Service, who has the recreational administration of the reservoir, had to provide new charts for people to identify the hazards and new maps were made to show the contour of the land down at those levels, and they put out markers as best they could.

Storey: It's a pretty large lake.

The Forest Service No Longer Identifies Boating Hazards on Shasta Lake

Capener: Very large. Since that time, the Forest Service has changed their policy and they no longer identify the hazards. It's one of those Catch-22 things. If you identify one hazard, you have to identify them *all*. Otherwise, the boater makes the assumption that because one hazard has been identified, if you don't see a hazard buoy, then that means there is no hazard, and so they feel safe in all areas where there is no hazard buoy. And so the Forest Service said they just could not afford to identify all the hazards that come up over the course of a year, so they've given that up. It's just a "boater be warned" type thing when you go on the lake.

Storey: That's interesting. Now, when you first came, before you were consolidated with Willows into the area office, you didn't have any canals or anything like that to deal with–am I thinking correctly?

Before Creation of the Area Office the Only Water Users Shasta Dealt with Were a Few in the Vicinity of Redding

Capener: That's correct.

Storey: That would have been Willows's responsibility.

Capener: Uh-huh. The only water customers we dealt with were the ones in this area and communities *around* Redding who got their water through pressurized systems or pumped it directly from the river. We had three water districts that we served water

to–Bella Vista, and they pump from the Sacramento River, and the Bella Vista Water District was formed as part of the Trinity River Project and they were authorized under *that* legislation; and the Clear Creek Community District, which is located west of the Redding area, and they received water from Whiskeytown through a pressurized line. So they're operating off the hydraulic head of Whiskeytown, so they don't actually have to pump any water.

And then we took over the administration of our water deliveries to the Anderson-Cottonwood Irrigation District, and the Anderson-Cottonwood Irrigation District is a water district that predates Federal involvement in water. They have water rights in the early 1918 or 1910. They have water rights on the Sacramento River. So all we do is supplement their water supply through a contract that we had with them. They *own* and administer all of their own systems.

Storey: How did your management responsibilities evolve over time while you were here at Shasta?

Earlier Years as Project Supervisor at Shasta Were More Technically Oriented and Then Went Through Transfer of Facilities to the Western Area Power Administration

Capener: Well, they started in more of a–I think the early years were more technically oriented, because we were just finishing up the complete integration of the Trinity River system and working out any problems, engineering problems we were having with that. We started an uprate program at Shasta, where we took Shasta Units 1 and 2 and removed the original windings and put in new windings of a new *type* of winding, more of an epoxy-type winding than the all-asphalt/mica windings. The *rest* of the work that we did was pretty much typical of any Reclamation power facility, just more of it. We had transmission facilities and transmission lines, and we were doing a lot of work there.

Then after a few years we went through this separation between the traditional Reclamation power facilities and the marketing/transmission line portion of the power with the creation of Western Area Power [Administration] ~~Authority~~, and that happened probably, it must have been about three years or so, four years after I had come here the second time.[5] They created the Western Area Power [Administration] ~~Authority~~, and so all of the transmission lines and the power marketing went over to that agency, and they took some of our facilities. Not only the transmission lines, they took the switchyard there at Keswick, and all the equipment in that switchyard then was transferred over to Western Area Power [Administration] ~~Authority~~. And then we kept the rest of the facilities. All of our plants and the Shasta switchyard remained under Reclamation's control.

"It was an action that most of the field people . . . the regional office . . . could not understand why we would ever do that. It really did not make any sense to us from the point of view of *improving* either our maintenance or the cost

5. Western Area Power Administration was created in December of 1977.

effectiveness. We looked at it as kind of a step backwards as far as good management was concerned because it right off the bat increased the cost, because the Western Area Power [Administration] ~~Authority~~ had to duplicate facilities. They had to go out and build their own buildings and their own maintenance yards . . ."

That was kind of an interesting thing. It was an action that most of the field people–and I think a lot of people in the regional office, as well–could not understand why we would ever do that. It really did not make any sense to us from the point of view of *improving* either our maintenance or the cost effectiveness. We looked at it as kind of a step backwards as far as good management was concerned because it right off the bat increased the cost, because the Western Area Power [Administration] ~~Authority~~ had to duplicate facilities. They had to go out and build their own buildings and their own maintenance yards and all of that type of stuff, where they used to share it with us. But they chose to be completely independent, and so they invested millions of dollars in this region in making that separation.

I guess from our perspective, we felt that the way to go was to deal only with the power marketing. If you wanted to have better control on how you market your power–and this was kind of the motivation of creating Western, to pattern after BPA–then have an agency that *markets* the power, but [doesn't] necessarily do~~es~~ the operation and the maintenance of the transmission systems. That way you get maximum benefit from any contractual negotiations or things that you can achieve by focusing on marketing Federal power westwide, but don't burden yourself and duplicate a lot of work that the Bureau was currently doing with the transmission system.

User Funding for O&M at Reclamation

Now looking back at it, in retrospect I still think that that's the way they should have done it. But then I also think that there was another alternative that they should have looked at, and that was something that is just now starting to materialize, and that is the *user* funding for operation and maintenance rather than funding through the appropriation process. We have started that here in California with an agreement that was signed where the power customers are going to fund the major O&M expenditures such as uprates, and they have agreed to fund uprating three generators at Shasta to the tune of about $10-, 12 million.

". . . money is going to be funded directly from the power customers, not through the appropriations of Congress. . . . They, in turn, are given some say in how the uprates are performed. They have some involvement in the technical aspects of it in just what is going to be done and how the contracts are going to be formulated, so they feel some ownership that they are doing something that will protect their future source of power. . . ."

That money is going to be funded directly from the power customers, not through the appropriations of Congress. And then they are going to *recover* their investment by the rates that they pay for the Federal power, so it's kind of a bookkeeping thing.

They, in turn, are given some say in how the uprates are performed. They have some involvement in the technical aspects of it in just what is going to be done and how the contracts are going to be formulated, so they feel some ownership that they are doing something that will protect their future source of power. They're willing to fund it. They recover their investment through a reduction of their power rates. We get the money that can then be directly used. It does not have to wait for the appropriations of Congress and the problems we get in with budget reductions and budget cuts and so forth. And I think that concept is something that really should have been looked at–and maybe still could be looked at–for direct funding of the power system by the customer and let them get involved in how the things are done, the operations, the maintenance, and so forth, and cut out a lot of the inefficiencies of the bureaucracy. So maybe that's going to open the door to that in the future.

Storey: I think they did that at Hoover, also.

Capener: Yes, they did. LA, actually they started and did the actual operation of Hoover. The people that were down in the control room operating the powerplants were employees of the city of LA and I think of Phoenix or whoever else was involved in that. They did all the maintenance themselves, the customer did, and the Bureau had *no* involvement. That was too far the other way, because the cities wouldn't put any money into it, and now the Bureau's taken it back to where now *they* are going to fund it and everything, because the Bureau felt that they were letting the equipment deteriorate too far under *complete* control of the customer.

And so what we have here in California is a system where it's really the *Bureau's* determination on what needs to be done and when, but that determination is in connection with input from the customer. If the customer is going to fund it, then they're going to pretty much have to agree that we're doing is right. Otherwise, they're not going to fund it. That does *not* exclude us from going to Congress under the old appropriation method of doing it. We can still do that. But this is a matter to kind of streamline that and get more money and be able to accomplish more work in a timely manner.

So that was something that even now is still talked about as far as the wisdom of breaking apart Reclamation with the formulation of WAPA and taking away the maintenance of some of the facilities, the transmission lines and so forth. So we went through that and made that separation.

Storey: You would lose staff?

Reclamation Lost the Line Crews and Some Communication and Instrumentation Mechanics

Capener: Yes. We lost the transmission crew. We lost about eight people that was our line crew. And then we lost one or two electricians and a couple of communication instrument mechanics, C&I mechanics. They went over to Western. So we did, we lost some of our staff as a result of that.

Storey: Were those direct transfers?

Capener: Well, they were positions that were created and then they were advertised, and what we said to our people was that if there's not any people bidding on them, any of our people bid on those jobs, then we'll have to go through a RIF [reduction in force], because once the facilities are transferred, we do not need people to perform those functions.

Now, the transmission line crew was an exception to that, because they went lock, stock, and barrel to Western. But when it comes down to splitting a crew, taking an electrician or two electricians from *our* crew and transferring them to Western, who do you take? And so it had to be on somewhat of a voluntary nature, and we didn't have any problem. There was people that put in for the transfer because Western would pay them another 5 cents an hour more. The first thing they did was increase the salary so they could draw all the people that they wanted. So they started to pay more.

Storey: But it wasn't a direct transfer?

Capener: Well, it was a transfer. It was not a management-directed transfer. It was a direct transfer as you would have if you put in for a vacancy. Now, we direct transferred all of the facilities. Once we agreed on what those were, we direct transferred those. We direct transferred the transmission line crew, because *all* of them went. Then from there on *down*, it had to be on a volunteer basis.

Storey: Did people go who didn't have to go?

Capener: No. No, the people that went felt that that's what they wanted to do. We had enough people interested in those jobs that we didn't have to twist any arms or we didn't have to threaten anybody with a RIF if they didn't go. So for us it worked out okay.

Storey: So we ended up with a few less people stationed out of Shasta.

Capener: Right.

Storey: How many people were here when you came, roughly?

There Were about 120 Staff at Shasta Before Separation from WAPA and Close to 100 after the Transfer

Capener: There was about 120. That was before the separation from WAPA. And when they left, it took about, oh, fifteen-, sixteen people, so then we got down close to 100.

". . . I think the low point we hit was about 80, because we did go through an attrition and modernization and try to improve our efficiency, so we did scale back and reduced the size of our crews. . . ."

And then from that point on, we went down, I think the low point we hit was about

80, because we did go through an attrition and modernization and try to improve our efficiency, so we did scale back and reduced the size of our crews.

"We automated the Shasta Powerplant, which was one of two *manned* powerplants that we had. We had an operators stationed at Shasta and we had operators stationed at Keswick. . . ."

We went through some automation. We automated the Shasta Powerplant, which was one of two *manned* powerplants that we had. We had an operators stationed at Shasta and we had operators stationed at Keswick. We put in some computer technologies at Shasta that allowed us to operate that plant from Keswick, and so we reduced about twelve operators when we did that. We took care of that through attrition, retirements, and transfers, and things of this nature. We didn't have to RIF anybody. We reduced the size of our, generally the size of our maintenance crews were reduced merely by better management of the work, I guess.

Staffing Was Back up to about 114 in 1996 Because of Implementation of the Area Office Concept

So we got down to about 80 or so, and now we're back up again because of the area office concept. Now we have taken over the employees at Red Bluff and Willows, and I think the staff level now is about 114, but that includes all the staff from the Willows and Red Bluff facilities, the O&M staff.

Storey: What kind of people do you have to have to run a big project like Shasta?

The Staffing Required to Run Shasta

Capener: You've got engineering staff. We have electrical engineers, mechanical engineers, civil engineers. So you have an engineering group. You have an engineering support group, which would be technical support, like technicians, draftsmen, those types of things.

Then you've got your union people, and they're all tied with the operation and maintenance aspect of it. You've got anywhere from the non-skills, such as laborers or janitors or maintenance workers, where no apprenticeship is required for those jobs. Then you get into your apprenticeable trades, and you have your powerplant electrician, which is comparable to a high-voltage electrician out in construction. Then you've got your powerplant mechanics, which is a combination of a mechanic and a machinist and a welder, so they have basically three trades that they have to be skilled at. They have to be skilled journeyman welders, machinists, and then mechanics in the sense of repairing large mechanical equipment.

Then you have the electronic technicians. These are the people that work on computers and sophisticated electronic devices, telecommunications, microwaves, those types of things. And then you've got your operators, who actually operate the equipment from control centers, and so they have to know *how* equipment operates and the proper way of operating the equipment, and they have to be able to know

when equipment is *not* operating properly through either visual or audio observation or through instrumentation that they have access to that they can tell that things are not going right. So those are the–and automotive mechanics that take care of our automotive and heavy equipment fleet. Those are basically union people in the sense that they are represented by IBEW, International Brotherhood of Electrical Workers, which is the only union that we have up in this area. We do not have a GS [General Schedule–referring to the Federal civil service system classification system] union here as they do in some areas.

In addition to that, then you've got an administrative staff that covers your budget and your procurement and your warehousing, personnel functions, your office functions, receptionist, secretaries, typists, computer operators, computer in the sense that these are ADP-type PCs, personal computers, local area network systems that are not tied with the operation of the plants, but are tied with the business end of our operation, and these are GS electronic technicians.

Recently Added an Environmental Group to the Staff

Then we recently have added an environmental group, where this is biologists, ecologists, environmental specialists that we have, and they are very much involved in assuring that we play our part in protecting the environment, concentrated on *mostly* the aquatic environment at the moment, fishery biologists involved in the winter-run salmon and the spring-run salmon, and winter-run being an endangered species at the moment. And our lake–

END OF SIDE 2, TAPE 1. MARCH 26, 1996.
BEGIN SIDE 1, TAPE 2. MARCH 26, 1996.

Storey: This is tape two of an interview by Brit Storey with Paul Capener on March the 26th, 1996.

You were saying that we have aquatic biologists and we're spending a lot of time on lake study now.

Capener: Yes. We have fisheries biologists and some technicians that are conducting a very elaborate limnological study of Shasta Lake, and this is in connection to the new temperature control device being installed there to enable Reclamation to withdraw water from the *bottom* of the lake, from the old original river channel, or any intermediate location from there up to the top of the reservoir, in order to provide regulated cool water to the river for the enhancement and protection of the spawning salmon. So we have a very sophisticated study that we're doing there in connection with the Fish and Wildlife and with our Denver people and other interested people that are kind of involved in the periphery on this thing. So we have those.

There Is a Water Contract Group

And then we have a water contract group that administers the water contracts we have with the irrigation districts. Those people are located in Willows. That's a

staff of about five-, six people down there that take care of that. So we have currently about 115 people, with probably need to request for an additional five or six.

Previous to Area Office Implementation, Willows and the Region Handled Water Contracting

Storey: Was water contracting one of the responsibilities when you came here?

Capener: The water contracting was primarily handled out of Willows and the regional office. As I mentioned, we just had the ones locally up here around Redding. With the creation of the *area* office, not only did we geographically assume those functions, but the idea of the area office was that it would perform more of the functions that had heretofore been performed from the regional office. So not only did we assume the administration of the contracts, water service contracts, but we assumed a lot of the decisionmaking-level work that otherwise had been done in the regional office in relation to those contracts.

Storey: And about the same time, we were feeling a lot of pressure to change the way we did contracting, I believe.

Capener: Yes.

Storey: How did that mix, if I can put it that way, here in the area office?

The Region Wanted to Assure a Certain Amount of Uniformity in Water Contracts

Capener: Well, I guess I'd characterize it as quite a learning experience, because we were given the responsibility to negotiate those contracts, but at the same time, we, we being the region, wanted to be sure that all contracts were fairly similar. So that what we negotiated up here in the terms and conditions of the water delivery and water service was not radically different from what was negotiated down out of Fresno, say, or Tracy, because the water users are a very close-knit community, and obviously if one gets what they deem to be a benefit, then everybody thinks that they are entitled to that same benefit.

". . . we went through kind of a three-stage negotiation process out here. There was a base contract, which was negotiated under the direction of the regional office . . . negotiated with all water districts for *common* language that would be in *all* contracts. . . ."

So we went through kind of a three-stage negotiation process out here. There was a base contract, which was negotiated under the direction of the regional office, with the assistant regional director as the chief negotiator. We, as area managers, were on the negotiating team, and we negotiated with all water districts for *common* language that would be in *all* contracts.

". . . then we in this area would hold a similar, but of a smaller scale session, where we would negotiate for all common localities, that may have different

districts within them, but there was some commonality . . ."

And then once we agreed to that, which took the better part of the summer, then we in this area would hold a similar, but of a smaller scale session, where we would negotiate for all common localities, that may have different districts within them, but there was some commonality, such as they all were served from a common canal or something similar to that. So we then, in turn, would negotiate some additional clauses to this master contract that had been negotiated to cover some general areas in northern California.

". . . there was then a third level of negotiations, which was with the individual districts, to deal with any peculiarities . . ."

And then there was then a third level of negotiations, which was with the individual districts, to deal with any peculiarities that they had that were not covered by these other two levels of contracts.

". . . so it was rather a long, drawn-out, lengthy process, and one of the things that kind of made it even more complex was that we had contracts up here out of our office that expired in the end of December, whereas most of the other contracts expired in like the end of March. . . ."

And so it was rather a long, drawn-out, lengthy process, and one of the things that kind of made it even more complex was that we had contracts up here out of our office that expired in the end of December, whereas most of the other contracts expired in like the end of March. So that meant we had to have our contracts signed in some instances even before they got the master contract finished, and so we were really doing things at the last minute. I remember we had to take over some last-minute revisions over to some of these districts on Christmas Eve because their contracts were expiring at the end of December, and they were not very happy because they felt that they had already agreed to some language and then that language was changed because of this master contract that was being worked on.

Storey: Would you like to stop for a moment?

Capener: Yeah. [Tape recorder turned off.]

Storey: So this contracting process did change quite a bit, I guess.

The Washington Office Said the Local Office Was Responsible for Contract Negotiation but Was Deeply Involved in What Could and Could Not Be Done

Capener: It really did. And the other thing that was unique about it is that there was a lot of Washington involvement, and this was the type of involvement that is interesting because the Commissioner's office would say, "You people out in California have full responsibility and full authority to negotiate these contracts. Just keep us advised of what you're doing."

". . . second-guessing going on that caused us to have to change position, without being able to say, 'We're doing this because Washington wants this policy implemented in the contracts,' because our position was that *we* had that authority to negotiate the contracts, whereas in reality we didn't have the complete authority. . . ."

But then as we would advise them what we were doing, they'd say, "No, you can't do that," or, "We want it done this way." So there was some what we might say second-guessing going on that caused us to have to change position, without being able to say, "We're doing this because Washington wants this policy implemented in the contracts," because our position was that *we* had that authority to negotiate the contracts, whereas in reality we didn't have the complete authority.

There Were New Contracting Initiatives That Commissioner Dan Beard Implemented

There were some new initiatives that the commissioner wanted to see in these contracts, and for the most part these were good initiatives that we agreed with.

Storey: This was Commissioner Beard?

Capener: Yes.

Storey: And was this guidance coming through his activity managers or how?

Capener: It was coming directly from Dan and from some of his staff people. But it always had to come more of a unofficial channel because of the fact that from a negotiating posture you can't say that–there has to be some line drawn on who makes the decisions.

How the Districts Dealt with Negotiating New Contracts

Of course, the districts and the various district managers were empowered to make their decisions, and they would then reflect that through the lawyers that they had hired to represent them. And so there was a group of five or six *lawyers* representing the major of the districts, and *they* would then make a decision and that was it. They wouldn't always unanimously agree, but once they came to some agreement, then that's the position they all took. They kind of thought that that's the way we ought to operate, where we would have four area managers, three area managers I guess it was, and the assistant regional director, and that once we agreed on something and the regional director bought off on it, then *that ought* to be it and we shouldn't have to change it.

And then when things started to change–they knew some of this was coming out of Washington, because they had contacts in Washington, too, and they'd go back to Washington to try and lobby for things and they knew the position of the commissioner and some of his staff, and so they knew where some of this was coming from. So it was very delicate to try and work around that and maintain a

credibility with the water districts that we didn't really *have* a hidden agenda in the sense that we were trying to undermine anything.

"These were . . . difference of opinion or a difference of interpretation . . . so there was some real interesting times in those negotiations where people would get rather anxious and downright upset, you know, when they thought that, *'Why are you changing it again?'* There were some tempers that flared occasionally, but after all was done, everybody felt good about it and they accepted it. . . ."

These were just issues that there was a little difference of opinion or a difference of interpretation about, and they had to be worked out like that. And so there was some real interesting times in those negotiations where people would get rather anxious and downright upset, you know, when they thought that, *"Why are you changing it again?"* There were some tempers that flared occasionally, but after all was done, everybody felt good about it and they accepted it.

The Contracts Were for Three Years

Now what everybody's going to do is see what happens in the next negotiations, because these are only three-year contracts. They were not long-term contracts. And so they're going to be up for renewal in a couple of years, and, of course, we have a new commissioner in Washington and perhaps we'll have a new administration prior to the renegotiations of these interim contracts.

"Reclamation doesn't hold the position in the eyes of the users that they once did . . . the water districts thirty-, forty years ago were completely confident that whatever Reclamation's policies *were*, they were for the benefit of the districts. In other words, we were a one-customer business. . . ."

So it's going to be a process of evolving and a process of establishing positions and trust. Reclamation doesn't hold the position in the eyes of the users that they once did, where the water districts thirty-, forty years ago were completely confident that whatever Reclamation's policies *were*, they were for the benefit of the districts. In other words, we were a one-customer business. Everything we did was for the benefit of the water districts–in the eyes of the district.

"We don't have one group that has that confidence in us. The water districts think that we're selling them out . . . The environmental community thinks that we're only providing additional water for environmental reasons because of legal requirements. . . So they don't fully trust us . . ."

Now it's not viewed that way *at all*. We don't have one group that has that confidence in us. The water districts think that we're selling them out in some respects by using too much water for environmental purposes. The environmental community thinks that we're only providing additional water for environmental reasons because of legal requirements and our heart isn't really in it, and if we had our druthers, we'd druther do it some other way. So they don't fully trust us, and they go back on a lot of the past practices of Reclamation and say, "This is what you

did in the past, and now you see the light and you're going to do it differently?" And they say, "We don't believe you. You're going to have to show us."

". . . it's going to take a period of time to develop that trust, and . . . Reclamation is going to have to have a consistency of their policies when it comes to the environment. The worst thing we could do is go back now and try and renege out of some of those commitments. It would destroy *any* credibility we've built up with the environmental community . . ."

And so it's going to take a period of time to develop that trust, and it's going to mean that Reclamation is going to have to have a consistency of their policies when it comes to the environment. The worst thing we could do is go back now and try and renege out of some of those commitments. It would destroy *any* credibility we've built up with the environmental community, and we are building that credibility up.

". . . we are getting some good *positive* comments back from especially the upper management of the environmental community. Those that were down in the trenches . . . and they saw what was happening to the fish, they're yet to be convinced. They still think that, well, it's all just politics . . ."

It is coming, and we are getting some good *positive* comments back from especially the upper management of the environmental community. Those that were down in the trenches that were out there on the rivers and streams and they saw what was happening to the fish, they're yet to be convinced. They still think that, well, it's all just politics, and one day it'll all go back the way it was. So we do have, I think, a very important role to play in the future to maintain this very delicate balance in water management, because it's going to get more difficult rather than easier in the years to come.

"We feel that what is being done for the ecology with the rivers and the fisheries and so forth is good, and we applaud it. We think it's the *right* thing to do. I think that the whole organization needs to be so in tune, and do it because it's the right thing to do, not do it because it's politically the expedient thing to do. . . ."

What I have found in the people that I deal with at this level is that we say it's about time. We feel that what is being done for the ecology with the rivers and the fisheries and so forth is good, and we applaud it. We think it's the *right* thing to do. I think that the whole organization needs to be so in tune, and do it because it's the right thing to do, not do it because it's politically the expedient thing to do.

Northern California Area Office Has Hired Fishery Biologists and Environmentalists

Up here at our Northern California Area Office, we've hired some very, very competent fishery biologists and environmentalists and so forth that *really* get in and look at the issues, and they can talk with their counterparts with Fish and Wildlife Service and with some of the other environmental groups on a technical basis.

Environmental Issues Need to Be Dealt with on the Local Level Where the Staff Works with the Resource Rather than at a Higher Level Where the Issues Are Theoretical

And *they* are the people that are going to build the bridges, because we are letting them steer their own course and *providing* them the resources, the money and the other things to make the studies, to do what needs to be done, to get out and *talk* and *work* with their counterparts and with the irrigation people and *try* to *meld* all these various interest groups into one common goal, and it can be done on this level. If you try to do it at a higher level, where the people aren't really *dealing* with the physical issues, with the water itself, they're not using the water, they're not getting their feet wet in the water, it's all theoretical stuff, it's always going to be a problem. So I really hope that that continues. This is where we build the strength of the organization, and that type of structure will last, it really will.

Storey: You were talking about negotiating contracts a few moments ago. Do you have any recollection of the *change* in *costs* of water to the contractors?

Changes in Water Charges Due to the New Contracts

Capener: Well, the original contracts were set on a fixed cost, and they were not subject to any substantial change. So they were paying, depending on when those original contracts were actually signed, they were paying anywhere from $2.00 to $4.00 or $5.00 an acre-foot–for water. Now the water is more in the neighborhood of $14.00 an acre-foot, with all the additional costs, and the water is charged or billed as to the use. You have agricultural water and then you have municipal and industrial water. So some of that actually, the M&I [municipal and industrial] water gets up into the $20.00 range per acre-foot, which is more than *double* what it used to be just five years ago.

Storey: And over those three-year contracts, could the price of the water change?

Capener: No, I think that the–they could change in the sense that there's a *variable component* which is tied with the Central Valley [Project] Improvement Act, CVPIA, which is a surcharge that is placed upon the water user to help pay for some of these environmental things. *That* component of that rate can change. As I recall, the other rates–and the operation and maintenance component can change.

The rate given to a water district has several components to it. They have to, for example, *repay* the Bureau's operation and maintenance costs the year after those costs are incurred. So we have, say, this water year we incur so much expenses for water operation and maintenance. That money, then, is recovered the following year in the rate structure, so it can go up or down.

They then have to pay a certain amount of the capital cost, which is the cost of the original construction of the dam and things of this nature, and those costs have to be recovered *prior to* the expiration of the long-term contract, which right now the way the rate structure is put together, there's very little paid against the capital. Most

of the payment of that is going to come towards the end of the long-term contract. Not the three-year interim contract, but once we get through that three-year interim contract, then the intent is they sign a twenty-, twenty-five-year long-term contract.

And then the *surcharge* is put on for the environmental activities. That can vary, too. That's based upon the amount of water that's available to the irrigator, so that given a fixed amount of revenue, if there's less water, then that means that there's more [charge] per acre-foot for the water.

". . . prior to these new contracts . . . the rate that was thought to be adequate didn't anticipate the inflation spiral that we went through, so we weren't even getting enough revenue in to pay our yearly O&M costs, because we were *locked* into a fixed price. . . . Over a long term. . . ."

So, yes, it does change. It is variable. What we were experiencing prior to these new contracts was that the rate that was thought to be adequate didn't anticipate the inflation spiral that we went through, so we weren't even getting enough revenue in to pay our yearly O&M costs, because we were *locked* into a fixed price.

Storey: Over a long term.

Reclamation Is Now Trying to Have the Districts Self-fund O&M Costs

Capener: Over a long term. So now they are variable, and it's *good* in the sense that the water districts now are certainly paying a lot of attention to what our O&M costs are, because they want to keep them down. We have a policy that we are trying to within a year or so negotiate with the water districts to *self-fund* their operation and maintenance costs. Now, *most* of them do their own operation and maintenance. That was started several years back, to where the Bureau employees that used to do the maintenance to the canal no longer did it. We turned the maintenance of the canal over to the districts or their representatives, if they got a number of districts together, and then we just give them the money every year to do the maintenance.

". . . the next step is that *they* provide their own funds for the maintenance and then we take that O&M rate *out of* the overall water rate. . . ."

Now the next step is that *they* provide their own funds for the maintenance and then we take that O&M rate *out of* the overall water rate. So theoretically at least, it doesn't damage them, because they're paying for it anyway one year after the fact, but this would give them the ability to have a better planning process and take better control over the money *and* reduce the overhead costs, because we have a lot of overhead cost that is reflected in those rates, 30 percent overhead in some instances. So *they're expecting* that if we were to do that, that overhead rate would be substantially lower, and that's kind of the carrot out there that is to entice them to take the risk to self-finance, and that's yet to be determined.

Storey: You mentioned that some of the water districts didn't renew.

Two Smaller Districts in the Corning Area Chose Not to Renew Their Water Contracts

Capener: Yes. We had two smaller districts around the Corning area, small in the sense that maybe they only had a few thousand acres. These were districts that just felt that the cost of the water was getting prohibitive in the sense that the crops that they grew, or *wanted* to grow, were not of the cash value to be able to afford that amount of water on them. Now, it depends a lot on what kind of crops you grow. If you grow a lot of olives or tomatoes, high-cash crops, then you can certainly afford more for the water. If your cropping pattern is, say, wheat or alfalfa or something like that, you can't afford to pay $16.00-, $17.00-, $20.00 an acre-foot for water. You just don't have the value of the crop.

So we had two districts that came in to us and said they would not renew. They gave up their water entitlement. I think one of them had about 5,000 acre-feet of water and the other one something less than that, and they gave it up. They said they were going back to their old practices of either dry-land farming or using wells. We told them chances are they'd never get another contract with us, because with the shortage of water that we were experiencing because of shifting some of the water to environmental and fishery purposes, we doubted very much if we'd ever be able to go in and give any new contracts or any new water allocations to *non-existing* contractors, and they chose to take that step.

Some Districts Are Waiting to See How Things Work out Before They Make Long Term Decisions about Water Contracts with Reclamation

There's a lot of them that are kind of on the borderline. They are a kind of wait-and-see type thing to see what happens with the money that is being used for environmental purposes. This surcharge that's placed on the water rate under the Central Valley Project Improvement Act has a term on it, and I forget just how many years that's supposed to be applicable. But after that, supposedly we have invested enough in the restoration or rehabilitation that we're over the hump and we don't need to make another surcharge. Like any charge, they're skeptical and they say, "Yeah, *we bet*. When it comes time to take that surcharge off, you're going to extend it again for another twenty years or ten years or something else." And so some of them are willing to put up with it for the next, I forget, five-, six-, seven years, however long it is, but are very skeptical that if it continues much beyond that, that they would be looking for other sources of water, too.

". . . water issues are *very* dynamic here . . . California is looked at as a very productive agricultural state and can really grow a *lot* of crops, but that's true of only parts of California. Now, down in the San Joaquin Valley, they farm year-round and they grow a lot of row crops and very high-cash crops. Up in the northern part of California, in the Sacramento Valley, the soil's a lot different, and there's not a lot of those types of crops that they can grow up here. So there's a lot of rice and there's a lot of corn and non-row type crops . . . and their growing season is not as long as down in the San Joaquin Valley. . . ."

So the water issues are *very* dynamic here and very much *tied* to the economy, because California is looked at as a very productive agricultural state and can really grow a *lot* of crops, but that's true of only parts of California. Now, down in the San Joaquin Valley, they farm year-round and they grow a lot of row crops and very high-cash crops. Up in the northern part of California, in the Sacramento Valley, the soil's a lot different, and there's not a lot of those types of crops that they can grow up here. So there's a lot of rice and there's a lot of corn and non-row type crops that are grown up here, and their growing season is not as long as down in the San Joaquin Valley.

Storey: Actually, what I was leading up to was, where's the water going?

More Water Is Going down the Trinity River and That Could Reduce Supply in the Central Valley in Dry Years

Capener: Well, the water is going I guess a couple of places. More water is going down the Trinity River and out to the Pacific, and this could be as much as 30,000-, 40,000-, 50,000 acre-feet of water that heretofore was used for ag purposes, would now go down the Trinity River for maintaining the ecology of the Trinity River.

Storey: So those two districts that gave up their water contract are providing, say, less than 10 percent of that? No, about 10 percent of that, 10 to 20 percent of that.

Capener: Well, we look at it all as one *pot* of water. It's not segregated out into the source. It's all one common source.

Storey: These guys are getting a mixture of Trinity and Sacramento River water?

Capener: No, it could be that it's even more than that. That's the determination that will be made by the Secretary of Interior after the studies and everything else are finished, and that's taken off the top. In other words, given a good wet *year*, you'll probably never notice it. Given an average or sub-par year, you would notice it, because that 60,000-, 70,000 goes down the river, and *then* what's left over comes over here.

So if you have a surplus of water, then obviously you're getting more water. If you have a shortage of water, then you may get *not only* that 60,000 or 70,000 that goes down the river, but then in addition you get what doesn't come down naturally, because maybe your *total* water supply for that watershed is only 60 percent of normal. So then you take that that's committed down the river *from* that, and then what's left over comes over here. So it increases the fluctuality or the dependability of the amount of water.

The Sacramento Needs Higher Flows in the Spring to Protect Salmon

There's more water than committed to the Sacramento River, because what we have found in the Sacramento is that if the water in the river is too low, it has a tendency to get too warm in the early spring, when the salmon are spawning, before the heavy releases for irrigation, and you lose a lot of your spawn because the water's too warm. So there has to be a *higher* minimum flow in the Sacramento River,

primarily during the winter and early spring, so that's water that's going to be taken out of storage.

". . . the fluctuation of the river is a completely independent factor from the amount of the flow, base flow on the river. So you have to manage the base flow and you have to manage the fluctuation, and it all takes water. . . ."

For example, in the wintertime we used to reduce Shasta maybe to a release of 4,000 cubic feet per second. That causes problems in the river not only from a lack of volume, but because of fluctuations that occur. We may get a heavy rain, and the river may go from 4,000 up to 12,000 from the side flow, and then it drops back down to 4,000. Well, during the time it's high, you have fish that have spawned or young fish that have come out of the egg, and then you drop the river and they're stranded. And so the fluctuation of the river is a completely independent factor from the amount of the flow, base flow on the river. So you have to manage the base flow and you have to manage the fluctuation, and it all takes water. And so more water is going to have to be dedicated for those purposes, and that is only in the control of the Sacramento River.

Environmental Issues in the Delta of the Sacramento and San Joaquin Rivers

Then you get down to the delta, and that's another issue down there. That's an issue that's not completely resolved, because the ecology of the delta–

END SIDE 1, TAPE 2. MARCH 26, 1996.
BEGIN SIDE 2, TAPE 2. MARCH 26, 1996.

Storey: The ecology of the delta is much more complex than the ecology of the river.

Capener: Right. And so they're still trying to figure out what flows are required in the delta, and not only in *volume*, but in the *pattern* of the flows, because the amount of water that you pump at Tracy and send down into the San Joaquin Valley affects the way the water passes through the delta. And so they are looking very seriously at putting pumping limitations certain times of the year on the pumps, both the state and the Federal pumps at Tracy, so they'll limit how much water you can pump so as not to cause reverse flows in the delta, which confuse the fish. They think they're swimming upstream, and actually they're swimming downstream, because when the pumps go off, the water turns around and flows the other way.

So there's a lot of complexities in there that have to be worked out that are *still* in the process of being refined. So that's going to take water, too, and how much water is yet to be determined, but that's going to impact how much water then ultimately could be pumped south into the San Joaquin Valley. And so what we run into is having the possibility, say, of having water in storage at Shasta, but can't ~~be able to~~ get it across the delta, because of the complexities of the delta, to move it south.

". . . so you may have the *water*, but can't *deliver* the water through the delta. . . ."

And so you may have the *water*, but can't *deliver* the water through the delta.

The other thing we run into is maintaining a flow in the Sacramento River that's more of a *regulated* flow with a higher minimum and less fluctuation, and that means more *water*. And if you run into a dry year, that means that by the time you've determined that it is a dry year, you've already released *water* that otherwise you would have kept in storage for use. So the dependability of the water supply is somewhat impacted that way.

Issues at Red Bluff Diversion Dam

Red Bluff is another problem in that the Red Bluff Diversion Dam, which a number of years ago that dam was operated such that the river gates were closed, which then backed up the water about 30-, 40 feet deep. And then it formed a lake, Lake Red Bluff, and then the water was diverted into the canals by *gravity*, with that head behind Red Bluff Diversion Dam. And that was left down year-round, only raised at the times of floodwaters. And so in the wintertime, if we had floods we'd raise the gates so we could pass large flows down the river.

That blocked, essentially, the salmon from migrating up the river. It cut off a lot of spawning ground for them. So we changed the operation several years ago to where we raise the gates at Red Bluff Diversion Dam in the late fall and kept a free-flowing river until early spring, and then we'd drop the gates. That time period in which the gates were raised has been extended, and so now we don't close the gates until, it seems like it's early April or mid-April when the gates are closed, and they are then raised again about mid-September. And so during that period when the gates are raised, you cannot divert water into the Tehama-Colusa Canal or the Corning Canal.

Well, what that has done is shorten the time by probably thirty to forty-five days the time that water's available in the canal for irrigating. So if you run into a dry spring, where you want to pre-irrigate to raise your crops, pre-irrigate the land then plant, there may be no water in the canal. Or if you run into a late fall where, for whatever reason, the crops require water, there may not be any water in the canal. So that's a real concern and real issue that we're trying to work out now. How do we provide the water to the farmer and how do we keep the gates at the Red Bluff Diversion Dam *open* at the time when we need to keep them open so the salmon can migrate *upstream* and the juvenile salmon can migrate *downstream* to the ocean?

The Bureau is currently *working* on that problem in the sense that we have what we call an experimental pumping plant at Red Bluff, which is in operation now, looking at different types of pumps, Archimedes-type pumps and others, to evaluate whether those pumps can be used without harming fish. And so we are pumping water through these smaller pumps. They pump out maybe 200-, 250 cubic feet per second. And as we pump the water through those pumps, we examine the fish that are going through the pumps and try to determine the mortality rate and everything else. These are supposed to be pumps that are fish friendly, where there should be

very little, if any, mortality, the idea being that if we can find a type of pump that can be used without harming the fish, then we can have a longer period of gates open at Red Bluff and supplement those periods on either end with pumping. So that if we normally had lowered the gates, say, the middle of March and now we're not going to lower the gates until the middle of April, there's thirty days there that we've taken water out of the canal. So the idea is, we'll then pump the water into the canal.

Storey: But if you're pumping the fish, aren't they ending up in the canal where they're not–

Capener: No. We pump into a diversion system, a screen system that screens the fish before they actually start down the canal, and that screens them back into the river.

Storey: Oh, okay.

Capener: If they're not harmed by the pumping process, then there's very little difficulty in getting them back to the river. If they come in two pieces–

Storey: Then that's a problem.

Capener: That's a problem, because it's one fish, but the fish is in two pieces. There's not much you can do with it. Most of the pumps on the Sacramento River are the type that, when the fish go through them, they come out like hamburger, and there are a lot of pumps on the Sacramento River that are by all kinds of water users that are not Federal water users.

". . . the majority of the water taken out of the Sacramento River is by riparian water rights holders, who were pumping water long before the Bureau came . . ."

California Fish and Game Is Working with Non-federal Pumpers to Protect Salmon on the Sacramento River

As a matter of fact, the majority of the water taken out of the Sacramento River is by riparian water rights holders, who were pumping water long before the Bureau came, and they're using all kinds of pumps, large and small, and now they're coming under scrutiny as well from the state of California Fish and Game and others that are trying to get *them* to convert to different types of pumps or screen, put in different screens and so forth.

We had a situation right here in Redding with the Anderson-Cottonwood Irrigation District that has a pump station on the Sacramento River. They would pump water into the Churn [phonetic] Creek area, and it was just full of little fish, little salmon. Being rather a small agricultural district, they said they couldn't afford to screen it. They didn't have any screens. Fish and Game took them to court and threatened them with, I don't know, a million-dollar lawsuit or damage suit or something else and finally got them to screen their pumps in turn for withdrawing the penalty. And they did screen their pumps, and consequently there are tens of thousands of little salmon now that don't get pumped into the canal. They go downstream and get pumped into somebody else's canal. And so it's a *major* task for

the state of California to go through the hundreds and hundreds of pumps, large and small, *all the way down* the river and all the way through the delta that are taking water from the Sacramento, San Joaquin, and the delta.

"We're trying to play our part as one of the large water managers, but there are a lot of other players in there too that eventually are going to have to kind of fall in line. . . ."

We're trying to play our part as one of the large water managers, but there are a lot of other players in there too that eventually are going to have to kind of fall in line. But like many of them, they can't afford it. They're small groups, and they say, "We just can't afford it." So the Bureau is trying to help in the sense that we have some grant money we make available, and then what we're doing at Red Bluff in this pilot or experimental pumping plant certainly has potential to benefit all users along the Sacramento, because if we can find a design of a pump that's fish friendly, that doesn't kill the fish, then there's a lot of people that can use that and save a lot of fish.

Farmers and Districts Are Threatened by Reclamation's New Approach to Environmental Issues Which Results in More Water Flowing to the Ocean

So all of these factors, one of the resolution of all of these is, keep more water in the river, keep more *flow* in the river, and that all relates to water, and that's water that just goes out to the ocean. So the farmer feels threatened in the sense that they view Reclamation as no longer their ally that will fight their battles for them. Rather, they view Reclamation as kind of somewhat deserting them in the sense that Reclamation is taking more of a pro-environmental position to dedicate more resources to the fisheries and water engineering expertise and so forth, and that's a departure from past policies that Reclamation has had. And so they're in the process of re-establishing their position with Reclamation and trying to identify what that level of trust is, and it's going to take several years to get things in somewhat of a status quo again.

Storey: We had talked about the specialties earlier that it takes to run the Northern California Area Office. Were there noticeable changes in the specialties other than the line folks, the transmission line folks, that changed when Western Area Power Administration took over the transmission lines or at any other time during your tenure?

Capener: There wasn't any change of specialties when Western took over, because they basically used the same types of people that we had. They just now work for Western.

Storey: But that would be the transmission line folks.

Capener: Right. And then we pretty much had our staff intact, with very little changes, other than the numbers of people.

Staffing Changes over Time at the Northern California Area Office

I think that what I saw as far as affecting the staffing was more of a policy decisions in the administrative end by the Bureau when they centralized personnel, for example.

Personnel Functions Moved from Shasta to the Region

We used to have our own personnel officer, staffing specialists at our office here at Shasta, and we could direct hire GS-11 and all hourly people. We issued the advertisement, we screened them, we made the selection, and I would sign off on it up through GS-11, and then we'd just send the final documents down to the region.

When they consolidated personnel, they took all that away from us, and all of our recruitment then had to go through Sacramento. So we lost the position on that, plus a lot of delay was incurred in the processing. We felt that that was certainly not to our benefit. We saw that as just one more thing that added additional workload to us because of the paperwork involved, processing involved, loss of control over your own end product, and we've never seen the wisdom in that. I don't think any area office or field office would argue with that.

Administrative Officer Changes

Another interesting thing is that any administrative officer position was downgraded from a 12 to an 11, and this was not directly tied to anything other than just a review by the Civil Service Commission at that time. They said, "Well, administrative officers are too highly graded in these outlying offices. They should be 11s rather than 12s." And so as we lost the incumbents, those positions were filled at the 11 level, and I thought that that was very inappropriate because of the responsibilities those positions have. Within the last five or six years, they put them back up to 12s, because it was evident that those are very valuable positions, with a lot of responsibility, and especially in the area of budgets and office administration and so forth. That was kind of a setback for us because it really lowered the expertise level and recruitment abilities that we have to recruit for those levels of positions.

Power Operation and Maintenance Management System (POMMS)

Centralization, in general, has really not benefitted, I don't think, the area office. Over the years, as we centralized more and more into the region or into Denver or someplace else, it seems like it really acts against productivity at the area office. We find that it takes much, much longer to do things. We don't think that the product is as good as what we felt we could have done. I guess an example would be the POMMS Program. That was the Power Operation and Maintenance Management System that started up about twenty years ago.

Storey: P-O-M-M-S?

Capener: Yes.

Storey: Yeah.

Capener: When that first started, it really was widely endorsed by the field offices as a way of better managing your maintenance activities, tracking your costs and tracking your labor hours used for maintenance of various pieces of equipment and so forth. We all had some way of doing that. We all had our own individual programs, which were manual. We had maintenance sheets and we had several filing cabinets full of documentation sheets and so forth that tracked all this.

The idea was, computerize it all and then let's have a program that will make a lot of the decisions for you and be able to chart stuff and graph things for you and give you printouts and summary sheets and everything else, and have it all on computer. Well, that sounded like a good program, and we kind of really thought, "Hey, this is great." And then things started to happen. Rather than going out and taking advantage of what was out in the marketplace–and there were a number of programs out there–the Bureau decided we'd build our own. And so it started out with stage one, stage two, and stage three, and so forth. Well, they got the first few stages completed and we had implemented them and we were doing them, but the thing that it lacked was the final management decision documents that allowed us to look at what we were doing and decide where efficiencies could be attained and so forth. They took care of gathering the data and documenting stuff, so we had that, but it didn't put it in the format the manager could use.

Well, that program finally just kind of, the Bureau gave up on it and said, "We've gone down the wrong trail. We've invested all this money and everything else, and it's not going to work." So they gave it up, and now they're in the process of going out for a *commercial* software package that might do the same thing, even though that's still somewhat up in the air.

For the Bureau to undertake something like that is good, but I think that it would have been better had they left some of that up to the individual offices to develop and work, *without* requiring any kind of standardization Bureauwide, but let each one, at least some of the major ones, develop what they could, and then once they had it developed, they could then share it with other offices, and they might be able to tailor it down. Now, Coulee did somewhat that. They were large enough that they had their *own* program, and they *did not* adopt the POMMS Program. They kept their program independent of what the Bureau was doing. Consequently, they came out okay. We were doing all of the developmental work on it, and when the thing finally petered out, we were left holding the bag, you might say.

But there was a lot of effort, at least among some of us at that time, to try and hold control at the local level, but the decisions were made, "No, it'll be Bureau-wide." I think that's one of the things that maybe, in looking back, I would think was a mistake on the part of the Bureau was to try and centralize too many things. It was kind of almost like a mistrust of the decision-making process at the local levels, and I think that the Bureau may have been better served had more authority in some of these areas been given to the area or the project offices to develop and implement and test their own programs and then share with others, rather than trying to develop it at

the Denver level or Washington level and then impose it on the areas.

So we went through that with personnel. We went through that with our maintenance management system. Our budget system had always kind of been that way, and now they're going opposite on the budget. They're trying to delegate more of that out to the area offices to formulate and manipulate and manage their own budgets, and the regional [role] will just be one to *consolidate* and play a *minor* role in the budget formulation process. So there's an example of it going the other way, from centralized now to delegating down into the area office to do.

I look back and see a lot of lost energy on the part of area office staff and people and *frustration* in dealing with some of these administrative levels. Whereas had they made the administrative arm of the organization as strong as they did the *engineering* or the *maintenance* arm, I think the organization would have been better served and I think the area offices would have reached a much higher level of independence and competency than what they did under the split system, where we basically did our own maintenance, with very little supervision or whatever, and did a very good job. But the administrative end of it, there was always people looking over your shoulder and imposing programs and so forth.

Storey: I take it that the environmental movement caused some change in specializations. You already talked about that some, I think.

Changing Staffing Patterns and Environmental Staff

Capener: It did. You know, five-, six years ago, there was probably only one or two biologists, fishery biologists, in the region, and they were down in the regional office. It was very difficult to convince people that it was something that you needed at the area office. I remember about five-, six years ago trying to hire a fishery biologist to speak up for Reclamation in northern California, because we were getting beat to death by Fish and Game and Fish and Wildlife Service on what was happening in the rivers, and we didn't have anybody up here that could really address those issues, because we didn't have that type of expertise.

". . . we were a little late getting started on that, but once we *did*, then I think we moved rather rapidly . . ."

I think we were a little late getting started on that, but once we *did*, then I think we moved rather rapidly, because then we *did* establish what I think is a very strong division here in the northern California office with the fishery biologist down at Red Bluff and three of them up at Shasta, with two environmentalists, and then some technical support help. And we've given them the equipment they needed. We've given them the best computers and software and other stuff so that they could get involved in studies and issue papers and present things to their counterparts in Fish and Game and Fish and Wildlife that were very critical.

"That's gone a long way to change the focus from one of adversary against Reclamation to one of more cooperation at the grassroots level, because the

people now are working with people in their own area and they're sharing the problems, they're sharing the data, they're sharing the experiences, and they're building that level of trust and confidence. . . ."

That's gone a long way to change the focus from one of adversary against Reclamation to one of more cooperation at the grassroots level, because the people now are working with people in their own area and they're sharing the problems, they're sharing the data, they're sharing the experiences, and they're building that level of trust and confidence. I think that's certainly the way to go, and I think the direction we're taking in the future supports that, because the plans are to have those expertise at the area office level and make *that* the point of contact for issues dealing with, say, the Sacramento River fisheries or endangered species in our neck of the woods. I think that's a very, very positive thing for the Bureau.

Storey: It was the area office that wanted this?

Capener: I know that we did. I tried to get somebody of that expertise up here about five years ago. You know, it's hard to break new ground and get new positions, because everybody's under the budget crunch and everybody's under the staffing crunch and all that type of stuff, so you very seldom get it the first time you ask. You have to keep asking and asking and asking.

Mid-Pacific Region Operates Differently than the Other Regions Because its Primary Responsibility Is the Central Valley Project with its Several Offices

I think our region is operated differently than other regions, because we have one project, the Central Valley Project, and most other regions, each project is operated independent of other projects. So you have your Colorado-Big Thompson Project or you have your Fryingpan-Arkansas Project, and they're operated independent. At least that's the way they kind of grew up that way.

We have the Central Valley Project, but it was never operated independent as a project. It was always *broken up* into segments. So we had the *Shasta* office, we had the *Willows* office, we had the *Folsom* office, we had the *Tracy* office, we had the *Fresno* office, *all part* of the Central Valley Project. And so in order to give the proper oversight and coordination, all of that was handled out of the region, but it was *handled* out of the region out of the various *divisions* within the region. So you had your *400* Division, your *Water Management* Division, you had your *Power* Division, you had your 200 Division for your construction, and so then you had a coordination problem among the divisions in the region. And so then that went to like an assistant RD [regional director] to try and coordinate all that. So it was a very difficult program to manage and to coordinate because of the complexity and the diversity that it took. It basically took all of California. I'm not sure there was a better way of doing it at that time, but it was set up a lot different than most other regions and most other offices.

Storey: Let's see, I think we're getting about to a breakpoint. We've been talking almost a full two hours. We can pick back up after lunch. Thank you. [Tape recorder turned

off.]

END SIDE 2, TAPE 2. MARCH 26, 1996.
BEGIN SIDE 1, TAPE 3. MARCH 26, 1996.

Storey: This is Brit Storey, resuming my interview with Paul Capener, on March the 26th, 1996, at about one o'clock in the afternoon. This is tape three.

Dealing with Issues Arising from Shasta's First Female Operator

Capener: The non-traditional type positions that are filled by–in our particular case, it's more with females than it is with minorities, and we've had some interesting experiences with that at Shasta.

It goes back to about a few years after I got there. Our first experience with it was with a control operator. This was a female operator that put in for a vacancy. She came from Coulee, and she was already a journeyman operator.

"It was interesting, the reaction of the work force, because at that time we didn't have any female in the maintenance-type activities. . . ."

It was interesting, the reaction of the work force, because at that time we didn't have any female in the maintenance-type activities. Electricians, mechanics, any of the journeyman trades, or even the non-journeyman trades, we didn't have any females at all, and those were the highest-paying jobs we have. We didn't have a lot of *desire* on the part of any applicants for those positions, because there were very few people that qualified, because generally they'd be advertised as journeyman positions. And so there were little, if any, people qualified.

". . . the reaction of the people, they just thought the world was going to come to an end, the people on the crews and so forth. . . ."

And then we got this operator from Coulee, so we actually selected her and she came down and worked for us for a year. But the reaction of the people, they just thought the world was going to come to an end, the people on the crews and so forth.

What will we do?

What do you do with an operator?

What will happen if she has to work by herself at night, or somebody else at night, on night shift?

Well, what do you mean, what will happen? She'll just do her job.

What about the rest rooms? The plants that we have, the non-manned plants like over at Trinity or Carr or Spring Creek Powerplants, they just have *a* rest room. What are you going to do when there's just one rest room and she has to go over

there?

"All these issues that were very much vocalized on the part of the crews, I think put up merely a facade of an attitude on a *minority* of the journeyman that those crafts should not be invaded by the females. . . ."

All these issues that were very much vocalized on the part of the crews, I think put up merely a facade of an attitude on a *minority* of the journeyman that those crafts should not be invaded by the females. And so they used these as kind of test balloons or static or flak or whatever you want to call it to try and confuse the issue and try and get people turned *away* from pursuing those courses. And again, it was just a very minor *vocal minority* that were involved in that. Most of the people, when you went around and talked with them, they could care less. As long as somebody was qualified and does their job, that's fine. They didn't really care. But there was always a few people that became excited over those kinds of things.

Well anyway, she came to us from Coulee and did a very good job. Only stayed about a year, and then she transferred into Denver and worked there for Western in the training school that they have in Denver, operator training school. We kind of lost track of her after that, but I assume she did pretty good.

Issues That Arose in Selecting a Woman for an Apprenticeship for Plant Mechanic

And then a few years after that, we had an apprenticeship come open for a plant mechanic, and we decided that we would make a real effort to open that up to some of the minority groups. About the only one that fell in that category was women, because we already have ethnic minority on the job, people from different cultural backgrounds. And so we really made an effort to try to circulate that around, and we did have an applicant, a female applicant.

Then we ran into some very interesting problems in the way of selecting her, because there was a perception that you select the individual best *qualified* for the job *without consideration* of what the job really is. And by that I mean, we were recruiting for an entry-level apprentice and we would have people apply for that job that had quite a bit of experience in trades or work or whatever that was of a semi-journeyman skill level. We'd have people that were, for example, helpers, maybe a machinist helper or a plant mechanic helper, or a maintenance worker that was familiar with operating equipment such as backhoes and graders and things like this, and people that knew their way around powerplants. They were familiar with what a powerplant was and basically understood how generators work and so forth. But they were not journeymen.

So we made a selection, and we selected this woman. We had a lot of people that thought, "Well, all he's trying to do is disregard the better-qualified male applicants," and we had quite a argument with, again, this minority vocal group that we're not recruiting for a mid-journeyman level or somebody that only needs one year of a four-year apprenticeship. We were recruiting for *entry* level, and *entry* level

means that you don't need to have much more than a strong desire to do the job. And there was very minimal physical requirements, as well.

So she came to work for us, and unfortunately she didn't work out too good. She lasted about three years, and then she resigned, I think in part because it was just not really what she wanted, and she never felt accepted by *all* of the people there on the crews, but nothing that we could point out as any kind of discrimination or anything. So she left and went on to something else.

Selected a Woman for an Apprentice Operator Slot

We then had, a few years later we had an opening for an operator, so we advertised for an apprentice operator, and we had several female applicants for that. We made a selection of somebody that was somewhat in the technical school. It wasn't *exactly* related, but it was of a technical nature. She worked out at the air base in Sacramento as a technician, and so she did have some technical abilities.

I think of all the trades, probably the operator's was the hardest one to crack as far as having acceptance of a female journeyman. So she went through the apprenticeship, and we had a little rough time here and there with her, because there were some people that did get out of line and we had to issue some letters of reprimand and so forth. It was kind of a rocky road for us to do it, but she completed it successfully. We had to extend her apprenticeship program a bit because she didn't complete it in the four years, but that's not anything to become *alarmed* about. The four-year apprenticeship program is kind of a guideline. If it takes somebody a little longer to do that, that's fine, too. And I think she did very well. She was able to hold down the job and functioned in it, and worked for us for several years as an operator. Then she got a promotion and went on down to Sacramento as the hydro system controller, where she is today.

It was kind of an interesting experience to see how people react to some of the non-traditional stuff that we do when they feel it's an invasion of their little domain. It was okay to have a female *administrative* officer, because when I went to Shasta, we had male administrative officer. Then when he retired, we had another male administrative officer. Then after that, we had a female one. Well, that was okay. A female administrative officer is no big deal.

But when it came to the traditional–and I'm not sure if unionized is the right word to say, but it was basically those crafts represented by the union–there seemed to be problems, although the union had no objections to it. They were very much in support of what we were doing, because being the IBEW, we were kind of the last ones on the wagon, because they already had many female electricians and operators and so forth with PG&E [Pacific Gas and Electric] and SMUD [Sacramento Municipal Utility District] and other utilities, so they recognized it as a very doable thing.

But for our facility up there, that was about the first time, among the few firsts, I guess, in Reclamation to really break the ice and get in there and try to make

that program work, and it's something that needs to be continued, because they do prove that they can do the work as well as anybody. I kind of thought that was an interesting thing. At least it was interesting for me and challenging at times to keep that thing together.

Storey: Did you actually select these women or did other people select them?

Capener: I did.

Storey: And would you normally have selected for those positions?

". . . the apprenticeship program that we have is a regionwide apprenticeship program, and . . . the apprentices that we put through the apprenticeship *can* be assigned anywhere in the region. They don't necessarily *have* to remain at Shasta . . ."

Capener: The way that we had it set up, we had a committee that would screen and make recommendations to me of, say, the top two or three, and then I would make the final selection, because the apprenticeship program that we have is a regionwide apprenticeship program, and it's set up that the apprentices that we put through the apprenticeship *can* be assigned anywhere in the region. They don't necessarily *have* to remain at Shasta, although traditionally I think most of them do.

But when the program was set up and the way that it was written, the intent was that if you wanted to have like three apprentices at Shasta, electricians or something, with the idea that when they turn out, one of them may go to Tracy or one of them may go to Folsom, and that's the way you'd set it up and that's the way you'd do it. So it was set that it wasn't the *foreman* of the crew that would make a selection, nor was it the apprenticeship *committee* at the local level that would make it, but it was the project manager. Now, I'm sure I had an option, if I wanted to, to have other people make the selection. Other apprenticeships that we have had, probably the foreman had a lot to say about the selection process. When selecting these particular apprentices, certainly the foreman had some comments to make, as well, as did the apprenticeship committee, but the final decision was mine.

Storey: But that was the normal procedure, too.

Capener: Yeah, it was normal, but there were times when it was more or less just rubber-stamped. If the committee or the foreman wanted a certain person, then that's basically what happened. But I think on these, we made it very clear that we're going to go by the book on it, because I kind of had this feeling that if we left it to the foremen, we may have a long wait before we got a female into some of those programs, because they were very susceptible to the pressures of the crew. If the crew made a few comments, "Well, we can't work with this person," or that or the other, then that's going to have some sway, perhaps, on the foreman.

Storey: Was this an internal initiative or was it brought in from the outside or what?

". . . it was pretty much our internal initiative. It was just something that I thought it was time that we did. It was going on in the industry, and there were very few in the Bureau, so it wasn't like you could transfer journeymen operators or electricians or whatever. So we wanted to concentrate on the apprenticeship program . . ."

Capener: No, it was pretty much our internal initiative. It was just something that I thought it was time that we did. It was going on in the industry, and there were very few in the Bureau, so it wasn't like you could transfer journeymen operators or electricians or whatever. So we wanted to concentrate on the apprenticeship program to try and do that. And it's still kind of an initiative that we're working on up there, although the number of apprentices that we've had over the last several years has really been diminished, because we have a very stable work force and haven't had a lot of turnover and haven't had a need to recruit at the apprenticeship level, partially because of the downsizing of everything else in the Federal Government and the efforts we try to make to try to relocate displaced employees. With crafts like electricians or plant mechanics, there's other Bureau people to recruit from, *or* from the military from the bases, because they have very similar type positions. Over the past, we've picked up some of the people from military bases, and they worked out very well. But with the base closures in California that have been going on, it really kind of flooded the market in some of those areas.

Storey: Yeah, in the last few years.

Capener: Um-hmm.

Storey: Did you tend to have local people up there, what the Park Service would call "homesteaders," people who took the job because it was in their back yard, and that's where they wanted to be, and they wanted to be there forever type thing?

"Most of the journeymen jobs that we recruit for were not local people. We just didn't have a lot of qualified local people for the journeymen positions, as well as most of the professional jobs, the engineering jobs. . . ."

Capener: Most of the journeymen jobs that we recruit for were not local people. We just didn't have a lot of qualified local people for the journeymen positions, as well as most of the professional jobs, the engineering jobs.

"The local people that we *did* recruit were of the non-journeyman level and the lower GS level, and we did get local people. . . ."

The local people that we *did* recruit were of the non-journeyman level and the lower GS level, and we did get local people. We would bring people in as laborers or maintenance workers many times from the local community, or they would come to us from other Federal agencies in the area, Park Service, and Forest Service. The GS positions, we *generally* would end up getting the local register and recruit from that register, which would be basically the Redding/Red Bluff area, and there was always ample people there to meet our needs.

Storey: Over those twenty years while you were at Shasta, did you have any personnel problems?

Personnel Issues That Arose, Including Terminations

Capener: Well, we had–yes, we did have some problems with personnel. These were of a disciplinary nature. We had people that just couldn't get along, and then we had people that had other *problems* outside of the job that affected them emotionally and mentally. And so we eventually had to terminate a few of those people. They just wouldn't respond to the counseling and other stuff offered by the Bureau because their problems *were not* based on the *work* or their association with co-workers. They were marital problems or family problems or some problems *off* the job, or drinking problems or drug problems or things like this, and they would not respond to the corrective measures, so we had to terminate them.

Sometimes it was really rather, I won't say dangerous, but we did get some *threats* from some of these people that they would retaliate against us or they would take violent action against us if we did this, and they had their rifle with them all the time and they'd find a place somewhere where they could get even, those types of things. And we'd call up the local police or the FBI. There's nothing they can do based on that kind of evidence, and they'd say, "Hey, you can't press charges on anything like that." They'd go around to the individual and say, "This has been reported," but they couldn't make any kind of arrest. They'd just kind of try to put a little bit of fear in them, telling them that they *knew* that this person had done this or said this. And sometimes they didn't have a lot of foresight, because they'd put it in writing, as well as verbal, the individual. So there were a few times when that became an issue with us, behavioral problems or problems with people not being *able* to do their job. We had a few people that couldn't do the job that they were assigned. They just didn't have the *abilities* to do the job, and we generally found another position for them if they wanted to stay to work for us. We would make some adjustments, and generally it meant a lower grade for them. But in the long run it was better for everyone, and they were appreciative of that. But by and large, it's been relatively a pleasant experience as far as the people were concerned. There's a variety of different personalities, but they all got along pretty good with each other.

Storey: You had division chiefs, is that right?

Capener: Yes.

Storey: Three? Am I recalling this conversation?

Divisions in the Shasta Office

Capener: Well, initially when I first got there, we had one, two, three, four, five, probably about five division chiefs. We had the Administrative Division, Engineering Division, Operations Division, Maintenance Division. Maybe it was only four, about four major divisions, and that varied depending upon how we were organized. We tried a few different approaches to things, like combining the operation and

maintenance under one. We tried that for a while. That didn't work out too good, so we went back to the other way of doing it.

Now, when I left, we had a different type of organization, because we went to this flattening approach on the president's new initiative to streamline decisionmaking. Our charge was that there was to be no more than two layers of supervision between the worker and the regional director, so if I'm one layer of supervision, then I had one layer under me, and then that was it. And so that meant that there was one, and in some cases two, layers of supervision that had to be done away with. We started this program about four years ago, because the *time*table for it was to have it all completed by the end of this calendar year, '96.

Began to Replace Foremen with Self-directed Work Groups

So we started mapping out a program on how that would be accomplished and looked at alternatives and so forth, but it was basically there'd be one layer of management under me, and then we may have self-directed work groups, teams and so forth, that would be the group that would actually take the place of the first-line manager, these self-directed work groups, and then they would report to their level of supervision. And then we were kind of forced into it a little prematurely with these buyout incentives, because a couple of years ago when that thing started out, the early-out buyout, we had all of our foremen take advantage of it. We had four foremen that left us, all at the same time, and our option was that we would not replace them with permanent positions.

The Powerplant Operators Were the First Self-directed Work Team

Some of the crews were ready to go into the self-directed work group concept and some were not, so what we did was on an interim basis, and that's basically the way it still is out there. We have an agreement with the IBEW to work this way up through the end of this calendar year, which would be a two-year trial period. The powerplant operators went into a self-directed work team. They were the first to do it. And we eliminated two layers of management by doing that. They had a foreman, and then there was the division chief of operations. Both those positions were abolished.

So we set that up where they'd work directly under me, and operators it's probably a unique situation that they can do that, because there's only about eight or nine operators and they work different shifts, so you don't have more than about three or four people *on* the day shift at any given time. And then the back shifts, you have one to two people on, swing and graveyard. So you don't have a large group of people to deal with at any given time, and their work is very structured. And so it lends itself to this concept, *if* the people can get along, and the people *were not noted* for their ability to get along with each other, the operators. They were always having internal strifes with each other, a lot of petty things and jealousies and everything else. Sometimes a foreman or the division chief would come in there just tearing his hair out, why these people keep picking at each other all the time. So it was kind of risky. We didn't know how that would work. But we tried it, and we just sat down

with them and explained the situation and said, "The options are, we can put another foreman in here, or we can have a self-directed work team." Well, there wasn't anybody on that crew that had any kind of majority support to be a foreman. I think what they did is, they just thought about it and said, "Well, maybe we ought to try this self-directed work team, because it's better than having anybody else in there."

Storey: It's better than having "Joe" there.

Capener: Yeah. It was better than having anyone else.

Storey: Not that I know anybody in this group.

Capener: So they did it, and the chief union steward was one of the backers of this thing. He was really high on it. And it was really remarkable how well they started to get along. They sat down in regular meetings to work out their problems and make assignments and self-disciplining. They really overcame a lot of this petty bickering that went on. That doesn't mean that they didn't like each other any better. It means they just learned how to put that aside when it comes to getting the job done. And so I think that they really surprised a lot of people with how well they did that.

Now there's some of the other crews that want to follow suit, and they want to get into the same kind of situation. When I left, [we] were in the process of setting that up. There was the electricians and the communication instrument mechanics or the electronic technicians, both of those crews wanted to get into self-directed work. The plant mechanics were still a little undecided. They were going still with the temporary foreman on three-month rotation intervals while they were trying to decide what and how they wanted to get into it.

So I think that demonstrates that that type of an organization will work. It just shifts the burden a lot, because the supervision and administrative responsibilities that were normally handled by maybe two layers of management or supervision now are handled by one, and it really puts a burden on that individual. They're really working a great deal more than they were in the past.

Storey: When you say that the controllers are very structured, I have the image that they're in the control room for the powerplants, and basically they're being told when to turn it on and when to turn it off and all that kind of thing. Is that the correct image?

Capener: Well, they are. They're not only in the powerplant in the control room, they do get out and they do make their rounds to the other plants and so forth. They're not *always* told what to do. Anytime there's a change of generation schedule, that order comes from Sacramento. They are *told* when to change water releases or when to change generation schedules, so they don't have to make those decisions.

But everything else, they pretty much have to do. They have to make the decisions, but there is a very *structured* way of making those decisions. We have what we call a S-O-P, which is Standard Operating Procedures, for all of our equipment in all of our powerplants, which gives you a very rigid step-by-step

process to follow anytime you're doing anything like starting or stopping a generator or placing a clearance on a piece of equipment or doing any kind of troubleshooting that an operator might get involved in. So of all of the crews, they are governed by, you might say, a very detailed instruction book; whereas many of the others, like an electrician, if something goes wrong with a piece of equipment and they have no idea what it is, they've got to go into a lot of troubleshooting, and to them it's a lot more, "Well, it's just trial and error. This is my judgment on what's wrong." Somebody else has a little different idea what the problem might be, and they have to work through that.

". . . operators don't get into repairing equipment. They basically are the ones who know how to *operate a* piece of equipment or *multiple* pieces of equipment together and the sequence of operations . . ."

The operators don't get into repairing equipment. They basically are the ones who know how to *operate a* piece of equipment or *multiple* pieces of equipment together and the sequence of operations and when certain pieces of equipment can or cannot be operated in conjunction with other systems, other circumstances going on in the plant. So in that respect, they are very structured, and their assignments are very easy and lend themselves to quantifying and delegating, so they have, for example, one set of duties that would go around and make the plant inspections, and it's very detailed on what that is. And so that particular duty could be rotated among the operators, and so you can structure the assignments, you can structure the work fairly easily. And so that part of the job was the easy part. The difficult thing was, would they be able to get along, would they be able to reach a consensus or agreement or things?

Storey: You mentioned buyouts and losing four foremen at once. What other effects did buyouts have on you here in Shasta? This would have been in the last couple of years, I guess.

Capener: Well, I lost two division chiefs, three division chiefs, actually, and that was at a time when–it was [while we were] going through this delayering process. So that the question was, do we fill or how do we restructure? So when the Water and Lands Division chief retired, we restructured those duties–

END SIDE 1, TAPE 3. MARCH 26, 1996.
BEGIN SIDE 2, TAPE 3. MARCH 26, 1996.

Storey: You were saying that you restructured when the lands and water chief retired.

Capener: Yeah, water and lands chief retired. We basically took those duties and merged them with the engineering functions that was part of our Operation and Maintenance Division.

It ended up that we cut down the number of divisions in the organization as we lost some of these division chiefs. We went into, if you could kind of visualize a pyramid, where maybe you've got ten different organizations at the base, and then

you come up a level and maybe you've got four or five, and then two and then one. What we were doing is, we flattened the organization. We spread out the number of groups at the bottom level with fewer in between, and so we started to eliminate that second and that third layer of management, which meant that there would be *more* groups at the very base.

So we ended up doing that. We ended up with an Engineering and a Technical Services Division, which then reported directly to me, and there were no other supervisors in that group. And then in maintenance, instead of having a foreman electrician and then a maintenance chief and then myself, we basically had the work group, which is regarded as a *non*-supervisory function, and then we had a maintenance supervisor, and then myself. So we had the two layers of management.

The administrative officer left, and we did have to fill that position. That is one still that has not reached that two level of supervision yet. It's still in the process of being worked through.

Storey: Back when this reorganization started, the catch phrase was that "Reclamation has to do more with less." How did that work out here at Shasta?

Capener: Well, I don't think that that phrase is very popular, because there were different ways of interpreting what that meant. We had always been kind of under the assumption that we had to do more with less *money* and that we had to do more with less people, which meant that when we said more, we defined that has *more* of the critical work with your people, so that interpreted into, some of the *non-critical* work, it just fell through the cracks, you just didn't do it. So there were some functions and services and so forth that we'd no longer perform, but we'd basically still have the same organizational structure.

Reorganization and Flattening of the Organization Meant Some Promotion Potential Disappeared

When the delayering came, then that had a whole different connotation. That means there's going to be certain levels of *hierarchy* in the organization that wouldn't exist anymore, and that took away the *promotional* potential of some of the people, especially like the non-professionals. If you're an electrician, then your *goal* was to stay on the crew long enough that maybe you could make *foreman*, because that was a pretty good raise for you. So then you'd make foreman electrician, and you hope that if you did your job well and kept out of trouble and waited long enough that your turn would come. All you had to do was be in there three years to get your high three, and you really left with a good retirement.

When we started talking about these self-directed work teams, the next level over that *probably* would not be a journeyman position. It probably would be an engineering position that would give the work direction and the technical review. It wasn't easy. It still isn't easy for some of those people to accept, because it does cut out some promotional potential for them. I'm not sure the engineers, who were a branch level, branch chief, they still have mixed feelings about it, because they're the

ones that got caught in the middle. They still have to basically do the work they did before, plus assume a lot of the work that the foreman did, and then the balance of that work would then be delegated down to these self-directed work teams. So *they're* the ones who really felt the *brunt* of the change of the organization as far as workload was concerned. And then secondary to them would be the crews themselves, who then would have some additional responsibilities in the management of a crew.

So that's something that's still kind of working through, and it's going to take several years, I think, for that to really solidify. I think the success of that is going to rest upon how well those teams can function together as a self-directed team, and it's going to take several years to really develop the maturity and experience level in those teams to make a final conclusion on how effective it's going to be.

Storey: Unions is an area that affects Reclamation in some of the larger projects, like yours. What kind of relations did we have with the unions up here?

Relations with Unions at Shasta

Capener: We have IBEW, which represented the employees probably from somewhere around the mid-fifties. Prior to that time, they had several unions. They had IBEW, and then they had a machinist's union and they had a pipefitter's union. They had several different blue-collar unions, similar to what they have up at Coulee now. And then *they* consolidated, and we consolidated some of the jobs and responsibilities, and then they were all represented by IBEW.

I can remember when I first came out of college for my three-year, four-year stance here at Shasta that we were doing some work out in the switchyard, and it involved electricians, plant mechanics, and pipefitters, three different crews, because the electricians would do the electrical work, and then when it came time to do a pipe, depending upon what was in that pipe, they either had to go get a plant mechanic or a pipefitter. And so if the pipe had *oil* in it, they had to go get the pipefitter to unhook the *pipe*. I remember one day sitting there for about an hour. The whole crew was stopped, and everybody was just sitting around waiting for one guy to come out from the plant, drove up in his car, took his wrench out, in five minutes unhooked the pipe, got back in his car and left, and the rest of those people could go back to work. It was just a *real* glaring lesson on inefficiency. I could have gone over and undid the pipe, as could any person, because it wasn't a difficult job at all. It was just that it was somebody else's jurisdiction.

So we didn't have any trouble in merging those crafts together, like pipefitter and plant mechanic. There is still a work jurisdiction. Electricians do *not* do plant mechanic work and plant mechanics do *not* do operators work and so forth. The crews have their own work assignments, own jurisdictions, and if they want to get ornery about something, they'll really push the issue. They'll say, "Well, this electrician is doing electronic technician's work." And there are provisions in the agreement that allows for incidental work, and generally everybody just closes their eye to incidental work. If an electrician is going to go work on a motor, if it happens

to be a pump connected to it, then they just disconnect the *pump*, which *pumps* are the jurisdiction of the plant mechanics, and nobody says anything about it. But if they want to get ornery about it, maybe they'd push the issue. So that's one way they have of kind of rattling management if they want to.

"I think the problems we run into with them center mostly around wages, because the working conditions are as good as what is out there in the IBEW market. . . ."

But we went through that consolidation of many unions into the IBEW, and the IBEW has been relatively good to work with. I think the problems we run into with them center mostly around wages, because the working conditions are as good as what is out there in the IBEW market. Our conditions are judged against PG&E and Sacramento Municipal Utilities, SMUD, the city of Redding, and others that are in the same business. You know, we have as good of equipment or better, and our working conditions are the same. So those are not the issues. It's wages. And we come into wages in the sense that IBEW's position is that the wages paid by the Bureau to their membership ought to be very close to what is paid by PG&E, a private utility, or SMUD, a municipal utility, and so we've kind of worked up a guideline, which is taking the *average* of the utilities and playing around with figures and so forth.

". . . we run into situations where there's a freeze on government pay increases . . . So then the next year, when we *can* give pay raises, they want to make it up, so they want to have *more* than what their counterparts are earning in order to make up the deficit that they didn't get the prior year. . . ."

But then we run into situations where there's a freeze on government pay increases, so we have to go to the IBEW and say, "Well, this year we can't give any raises, because the president has frozen all of the wages." Well, they don't believe that, so it takes some time to go back and read the law and all that stuff, and sure enough, they can't get it. So then the next year, when we *can* give pay raises, they want to make it up, so they want to have *more* than what their counterparts are earning in order to make up the deficit that they didn't get the prior year. Well, you do that, then they expect that to be the base in the following year and the third year and the fourth year. They always expect to be the same amount ahead of everybody else.

". . . .we have problems with it, too, internally because there's quite a disparity in the wages paid to those represented by IBEW and those that are under the GS pay scale. . . ."

So those are really where the issues center around with them, and then we have problems with it, too, internally because there's quite a disparity in the wages paid to those represented by IBEW and those that are under the GS pay scale. We have people that are probably *more valuable* to the organization and work *harder* and *longer* than, say, an electrician and earn half as much, and yet their value to the organization is double that of an electrician. But they just happen to be GS-11s or something and their series of grade won't allow for anything else, and there's no way

we can do anything about it. So we have people supervising the wage board or the hourly people that make less than they do–some of our engineers. We had a branch chief engineer, a GS-12, that was earning a couple dollars *less* than the people that they would supervise.

Well, there's a *provision* in the regulations to allow you to increase that GS salary up to 5 percent or 3 percent *above* the people they supervise, but it's not something that you can *carry* with you wherever you go. If you were to transfer out, then your salary would drop back down. So we ended up with GS-12s earning the equivalent of GS-13s Step 8 or 9 wages, and then we had GS-13s earning the equivalent of GS-14 Step 3 or 4 or 5. And we had some of the *hourly* people earning the equivalent of a GS-14 Step 5, and area manager was a GS-14.

And so it really threw things out of balance, and there was no way of bringing any *equity* into that, because on the one hand you had the whole Civil Service regulations and all of that stuff to fight, and on the other hand you had the union and an agreement that you had with them that there was *no chance in the world* that you'd ever get them to make concessions where we would end up paying their people less than their counterparts out in the private sector. The union would always come to us and say, "You know, that's your *own fault*. PG&E doesn't have that problem. If they have engineers working there, they just pay their engineers more. Or if they have other people that are salary people, that are non-union people working there, they just pay them more. That's what you ought to do as a Bureau. Your solution is very simple. Just pay them more money."

And they don't buy this fact that, "But the regulations say we can't do that."

They say, "That's too bad. That's your problem, not ours."

And so that's a disparity that is somewhat, I guess, touchy at times, because you have a graduate engineer that goes out there and works with a C&I [communication and instrumentation] mechanic, and the engineer knows more about it than the C&I mechanic and solves some of their problems for them, and yet the C&I mechanic is earning $4.00 an hour more than the engineer is. Yet he's the one that has to go out and solve the problems for them. But I don't know how that system is ever going to get fixed. It probably never will.

Storey: You mentioned that you sat for an hour waiting for this person to come and unhook the pipe. You didn't try and unhook the pipe?

Capener: No. You just didn't do things like that, and anybody that did, especially if they were management, there was a grievance filed. I remember one case, one of our engineers, there was a problem with the elevator out in the dam. It wasn't working. It would stop at a wrong floor or something. So one of the engineers happened to be in the area, and he knew the circuits very well and could read the drawings. He went up there and he pushed the relay on the panel that activated the electronics to bring that elevator to the proper floor, so he just went out and pushed the relay. Well, the union immediately filed a grievance that that cannot be done by anyone other than an

electrician. It cannot be done by an engineer.

There are times when we can fight those things and say, "Well, this was an emergency," or "This was just incidental," or what have you, but the bottom line is, if they wanted to take it to arbitration or something, they'd probably have a good case, although I'm not sure an arbitrator would hold up their position based on one occurrence. But a *pattern* of that type of stuff, an arbitrator would *probably* certainly support the union. So you have to be very careful not to establish a pattern of stepping across that line on a regular basis, and you generally have a working relationship with the union where they'll allow some of that to happen and not worry about it.

But if they get into a situation where they have a chip on their shoulder and they feel like maybe they're not getting their fair share of whatever, then they'll start to be very picky about that stuff, and pretty soon you'll get calls every day or something from the chief steward saying, "This guy's out here doing wage board work or hourly work. We're going to file a grievance."

We'd talk him out of it, and then we'd go back to our people and say, "Hands off. The union's up in arms and so forth, so *don't* cross over the line." Let them calm down a little bit. Just find out what the problem is and see if we can't get that resolved, and generally there's some other issue or problem that's causing them to do that.

Storey: How did you learn all this stuff?

Capener: Well, I guess the most direct way is you just sit down and talk to them about it. You talk to the people that are not on the front line dealing with the problem. You talk with the people up the line, in this case maybe the chief steward, who has to be the interface with the union and management. They're not dummies. They're out there to do what they think is workable. And so they will be very free about telling us what the real problem is and what they sense is the inequities between the agreement and what actually management was trying to do.

You have to talk to your key contact people on both sides and find out really what the issues are out there, and then sit down with the people. Generally, if you come down and say, "Well, okay, we're not going to do this again, and we'll talk to the guy and tell him hands off and all that stuff," it'll resolve it.

And then there is some internal pressure within the union. For example, an electrician may very well have the desire one day to become a C&I mechanic and be able to deal with the electronic end of things. It's a dollar and a half-, two dollar an hour raise for him. So they want to *know* more about the electronic end of it. And so those that have that desire, sometimes they'll take some electronic night courses out at the college or correspondence courses or something, and they want to do some hands-on work. We can come in and say, "Absolutely not. You can't do that. It's not in your jurisdiction, and we won't allow you to do it." Or we can take the line that says, "Well, we'll let you do a little of that, and you let us do a little of this.

We'll trade off, and you benefit and we benefit and everything will be fine." So you can play those angles, as well.

There are some people that want to position themselves to make their jobs more interesting. So it's very dynamic, and it kind of changes with the wind of things going on in Washington and how threatened the union feels as an institution. At one time years ago, they felt that the government was out to do away with all unions, and they were very paranoid about anything that would encroach upon their jurisdictions. That hasn't been the case for many years. I think they've recognized that their role has been accepted, and they do play a valuable role in getting the work done and looking out for the interests of the employees as far as working conditions and safety and those type of things are concerned.

Storey: Let me ask that question a little differently, since I didn't do it well. How did you know, back when you first came to Shasta, that you shouldn't try and disconnect that pipe?

Capener: Well, all you have to do is say–I can't remember the exact circumstances, but I probably either was told beforehand, "Don't even think about picking up a screwdriver or a wrench or anything like that, because if you do, somebody's going to jump all over you," or I may have suggested something to the effect that, "If we have to wait that long, why don't you undo the pipe, Mr. Electrician?" and was told in no uncertain terms that "that is not our job and we do not do that." They were very quick to let you know that.

And then I don't know, sometime around there I probably did witness those types of things where other jobs people had to wait for the proper journeyman to come and do things, and so you recognized the *pattern* of things and the proper *protocol* as far as the work in the trades are concerned.

Storey: But you don't remember any particular instances beyond that one?

Capener: No.

Storey: Okay, good. Hydro, of course, is one of the major features of Shasta, I presume.

Capener: Yes.

Storey: Since you've been Project Manager, have there been major upgrades?

Uprating Hydropower Units in the Northern California Area Office

Capener: Yes. All the generators have been rewound at least once and some of them twice, and some are going on to their third winding.

Storey: You mean *during* your tenure?

Capener: Well, during the time that I started to work for the Bureau. Back when I first came to

Shasta right out of college, I happened to be working on an uprate that was going on at *that* time with one of the generators. That was taking the *original* generator winding out-of-service, that was installed during the construction, and replacing it with one of basically the same properties.

And then I left, and then when I came back again as project superintendent, we were *then* taking *that* winding out of service and replacing it with a *new* winding of a different type of properties, a new epoxy winding. And so we started replacing the two units at Shasta, and this was their second overhaul, and then that was the year that I came we were actually starting to do that. And then from *that* point on, we went through and replaced *all* the windings in *all* of the other machines, three at Keswick, two at Spring Creek, two at Carr, two at Trinity, and then *back* to Shasta and replaced *one* additional unit at Shasta. And *now* we have a contract for the last three at Shasta to replace them. This, for them, will be their third winding.

Storey: So this is almost ~~since~~ routine maintenance?

Capener: The windings are expected to last anywhere from twenty to fifty years, the original windings, and the reason for the spread is the way the machines are operated.

At Keswick the Windings Were Expected to Last about Fifty Years

At Keswick, for example, those windings are expected to last about fifty years, which they did–pretty much fifty years. That plant is a base-load plant. You set the release on it, and that's governed by the amount of water that you want to put in the river, so you want the river to be constant. And so whatever their water release is, you accommodate the generation to that release, and you don't change it. You operate that way day after day, week after week, until there's a change in the river. Then you may go up or down, and then you operate *that* way for a long period of time. So the changes are very few. Certainly only a few times a week or maybe a few times a month that you'd actually change the loading on it.

What happens when you change the loading on it, it changes the heating of the winding, and as the heating changes, the winding expands or contracts. That expansion and contraction of the winding impacts the life of the winding, because the more that thing moves through heat cycles, the more *brittle* that insulation eventually will become, and then it's subject to failure.

Now, at Shasta, because that is more of a peaking plant, you release the water to meet peak generation, and you do that two or three times a day. So at nighttime, you may have *no* generation out of Shasta, so you're not releasing any water out of Shasta. The after-bay of Shasta is Keswick Reservoir, so Keswick Lake is going down because Keswick has constant load. And then you put all the units on at, say, about seven o'clock in the morning. When the load starts to go up from, say, seven to ten, and you have *all* units on, and then, of course, Keswick Lake just really jumps up. It cycles maybe six, seven, eight ten feet a day, and so it really comes up. And then you slack off maybe only half the plant capacity at Shasta for noon, and then you peak it up again for the afternoon peak, and then you drop back down to lower–zero

load at night.

At Shasta the Windings Might Last Ten to Fifteen Years

So each of those machines is *subjected* to this *cycling* of anywhere from zero to 100 percent load several times during the day, and that type of action of heating and stress and so forth on the winding is what shortens the life of the winding. So at Shasta plant, we figure maybe ten or fifteen years. The one down at Keswick, maybe fifty years, and this is the old regional asphalt/mica winding. Now the industry has come out with an *epoxy*-type winding, and they came out with this about twenty years ago. It's a much stronger winding and not as susceptible to this cycling, and they're expected to have a lot longer life than the old original type windings. And so *all* of the machines up at Shasta now, I think, have the epoxy winding in them, and the three of them at Shasta will be going in for their second epoxy winding. It's been probably about twenty years-, twenty-two- or three years since–well, maybe not that long. Maybe about fifteen years since their other epoxy winding was put in.

So it's kind of a projected thing. We make tests on the windings. Every two or three years, we have certain electrical tests that we can make that gives us some indication of the integrity of the insulation, and over a period of time, based upon those test results, you get a curve that would, say, starts to go down in the curve, which is a reflection of the properties of the winding are deteriorating. And then you can project that to a point on a time base where you know you need to replace the winding. It's something that you can foresee, and you can plan for replacement of the winding three or four years or five years ahead of time, which you need to do because of the budgeting problems.

Storey: And when you uprate, you're changing something?

Capener: When you uprate the generator, you're changing the amount of electricity that that generator is producing, and the *amount* of electricity is reflected in the *current*, the *amperage*, coming out of a machine, because the voltage basically stays the same. And the more *amps* you have going through there, the *hotter* the winding gets. It's like an iron that's used on your clothes. It has a resistive-type element in there that heats up because of the amount of current that is pushed through that. It's similar to what happens when you increase the amount of current in a winding. Maybe I can say that another way. If you have 500 amps going through a winding, it may go up 15 degrees. If you then have *1,000* amps going through that winding, it will go up twice as much in the temperature of the winding, and those windings will get up to–

END SIDE 2, TAPE 3. MARCH 26, 1996.
BEGIN SIDE 1, TAPE 4. MARCH 26, 1996.

Storey: This is tape four of an interview by Brit Storey with Paul Capener on March the 26th, 1996.

You were saying that the windings and the armatures might rise to several hundred degrees.

Capener: Yes. So we have mechanisms to cool the windings through air flow, air circulating through the generator and radiators, similar to what you have in a car, where you run cold water through the radiators. Then you run the air through the veins of the radiator and it cools the air down. The air then is recirculated into the machine, so that you're constantly trying to get rid of the heat that's generated by the winding.

As iron heats, it expands, and so as it expands, it stresses the insulation. Then it contracts and expands and contracts, and it's that movement of the iron and of the copper that stresses the insulation and eventually causes it to deteriorate. And once the insulation starts to deteriorate, then it's susceptible to electrical failure, because it loses some of its insulating properties, and then you can actually have a dead short from the copper of the generator to the iron of the housing. That happens occasionally, and when you do, of course, you have an in-service fault, and then your generator is out of service. You have to go in and hope that you can repair it.

Storey: But what changes when you up–is it upgrade, uprate?

Capener: When you uprate the generator, you have the same physical dimensions as far as the *iron* that holds the coils, the copper coils, but because of a new insulating material, an epoxy, you're able to change the dimensions of the insulation around the copper. So what it amounts to is, you're able to put more copper in the winding, and thereby the more copper you have, the higher *capacity* the generator has to generate electricity. And the more *copper* you have, then that means the less *insulation* you have around that copper, but because the epoxy is a better insulator, you don't *need* as much thickness of insulation, and so that's where the savings comes. Instead of having to have like an inch of insulation around the wire, you can get by with *half* an inch and still have the same insulating properties, because instead of using an old type of material, you're using a new epoxy type of material.

So that's what the uprate does for you, and because you then have larger copper in there, that means your machine, where it used to only be able to generate like 60 megawatts, can now generate 100 or 150 megawatts. That's assuming other factors would allow that, like your turbine's big enough to provide the extra horsepower to run the generator to produce that amount of electricity and other things being equal. Then you can uprate the machine.

Because of the way Shasta was *designed* to produce electricity over quite a difference of head, from full reservoir down to a reservoir that maybe is where the water drops 100 feet, the turbines were oversized, so that even when your lake was down 50 or 75 feet, your turbine was big enough to give you full generator capacity. So that meant when the lake was completely full, you had *extra* capacity in your turbine. So that certainly is conducive to uprating the generator, because now your turbine is maybe 120 or 130 percent more than it needs to be in rating, so that gives you extra horsepower to be able to operate a larger generator.

The *physical* dimensions, the exterior physical dimensions of the generator doesn't change. The only things that change are some of the electrical properties, the electrical dimensions. The thickness of the copper and the windings change. They

get bigger and the insulation around them gets smaller, but the overall dimension of the winding doesn't change. It's just a trade-off, more copper, less insulation. There are other things that have to be taken into consideration, but those are the main things.

Storey: Those are the physical characteristics. Are there any other things that need to be *routinely* maintained in a generator or in a turbine?

Turbines Have to Be Inspected and Repaired on a Cycle of One to Three Years

Capener: Each year we have to go in and inspect the turbines, because they are susceptible to what we call cavitation. It again is based upon the operating conditions, but what happens is that on a cycle of one to three years, you have to go in and repair the turbines. These are areas of the turbine that are accessible with the turbine in place, because the turbine has access doors where you can actually go into the side of the turbine–crawl inside it in the big waterwheel. Those parts of the turbine that *are* in need of repair can be repaired in place, and the repair essentially is to replace the steel in the turbine that was lost during operation, during the cavitation operation. That means you'd go in and you'd grind away some of the damaged steel and you replace it by welding new steel in its place, and then you grind it back down to a smooth contour.

Cavitation in Turbines

Well, the question comes up, how do you lose steel in a turbine? It's a property referred to as cavitation, where you have high-velocity water under pressure that passes over a curved plate, and the turbine is curved. As that water is passing over there, the velocity changes and the pressure changes of the water, and it actually changes to where the pressure goes from high to low pressure. What it does, as it gets to a *high* pressure, it'll actually cause *voids* in the water stream, and those voids would be a vacuum actually of air. So what it does is, it pulls the oxygen out of the water, and you have an air pocket in there that is a partial vacuum, and that vacuum actually acts on the metal to pull the molecules of steel out of the metal. This is almost an instantaneous thing. And then the vacuum collapses as the water passes a different location, and it gives you a sound not unlike gravel. If you're down listening to the water go through the turbine, you'd swear it's got gravel in it, because it's a rock noise sound, a rackety sound, like somebody's got a big barrel of gravel and they're just sloshing it around, so it's like rocks going through it.

Well, that's the expansion and the collapsing of the water and the forming of a vacuum and then the collapsing of that vacuum, and that has a tendency, based upon the design of the turbine, to actually pull the molecules of steel out. And so it looks like a very fine sponge when you get in there. The steel has little worm holes in it, and it's spongy. It looks kind of like a volcanic rock or something that is full of little tunnels about the size of a needle or something, spongy. You have to cut all that spongy stuff out and then replace it with some steel, which is a welding and a grinding operation.

Based upon the design of the machine and so forth, that has to be done about every three to four years for each generator, and it's work that takes anywhere from two to three weeks per unit. So we have it set up, all the machines up there set up on a schedule so we know which year you have to take a certain unit down for turbine repair and maintenance.

Repair and Maintenance on Equipment

The rest of the repair and maintenance we do on equipment is like changing oil, lubricants and insulating oil, and checking clearances and replacing gaskets and things of this nature to prevent leaks and just being sure everything operates properly, and making adjustments on some of the more intricate pieces of equipment, like on the governor and so forth. So a maintenance period on a generator would be what we call a minor maintenance, which means you may have the machine out for ten days, to a major maintenance, where it may be out for a month and a half.

Storey: And would rewinding be major maintenance?

". . . we look at rewinds as more than a maintenance. We look at that as extraordinary maintenance or just an uprate . . ."

Capener: Well, we look at rewinds as more than a maintenance. We look at that as extraordinary maintenance or just an uprate, because you have to completely disassemble the generator, and you're talking about having the thing out of service for six to nine months, based upon the extent of the upgrade. But you have to take all the internal parts apart and have to take the rotor out and the turbine generally comes out, not that it *has* to for the electrical upgrades, but it's a good opportunity to take it out and do some other things, mechanical maintenance. But you take everything out and put it out on the generator floor, and you have a big *hole* in there. You could actually look down and see the river, the water from the river. Then you put a little artificial floor of wood over the hole so that you have a platform from which to work, and then you strip all of the winding out of the iron, all the electrical winding out.

Sometimes you have to replace the whole stator iron, and those are long, thin sheets of steel, maybe a sixteenth of an inch thick, maybe a foot and a half long, with little fingers sticking out of them. When they're all stacked one on top of each other, those fingers become a *slot* in which you place the electrical winding. And that's quite a job to take all that apart and restack them.

That's all done by contract. When we let a contract for an upgrade, we generally do the disassembly of the generator, and the manufacturer comes in and takes the stator apart, if that's needed, and replaces it, puts in the new iron, puts in the new winding *in* the iron, does any other modifications. If the rotor needs to be modified in any way, that's all then part of the contract. And then we reassemble the machine and run the final check-out on it.

Storey: What about the other maintenance work you've been talking about? Who does that?

Capener: We do that ourselves with our people. The plant mechanics and electricians and our communication instrument mechanic people do the maintenance. The regular scheduled maintenance, we do that all ourselves. So we may have a crew working over at Trinity for anywhere from a week to two months, depending upon what type of maintenance is required, and they commute from Keswick over there. We generally go on ten-hour days, four days a week, so we cut down lost travel time when they're working over there for us.

Storey: What we've been talking about for the last few minutes is sort of the physical part of the hydro production. I'm also interested in the sort of social/political part of the hydro production and what affects that, what effects social factors and political factors have on the hydro production at Shasta.

". . . at one time Shasta played a very important part in hydro production. Shortly after it was built, it was probably the largest single source of generation in northern California, and we actually controlled the frequency of the system. The 60-cycle frequency of electricity . . ."

Capener: Well, at one time Shasta played a very important part in hydro production. Shortly after it was built, it was probably the largest single source of generation in northern California, and we actually controlled the frequency of the system. The 60-cycle frequency of electricity was controlled by Shasta units, so if there was a lot of load on the system, we would have to increase our generation so that the frequency would stay at 60 cycles. So we were very important in that regard, and we had a lot of direct communications with PG&E and all of the north state power systems and entities in order to be sure that that frequency was held. And so we had very high stringent requirements to be sure all of our machines were available, in *top* condition, and if they went down for any reason, we had to have them back up in service within one hour, and a lot of operating conditions like that were placed upon us.

Current Operation of Reclamation's Water and Hydropower System

Now, in today's market, we are a very, very small part of the total generation. Much of the generation is *imported* from Oregon, Washington, the Northwest. Transmission networks tie everything together. A lot of *large* steam plants and fossil fuel and nuclear plants have been built that produce *many more* times the energy that Shasta does. So we no longer play that type of a role.

Our concern with the generation has really taken somewhat of a secondary role, and our generation is more determined by our *water* release than anything. And so first we decide how much water is to be released and what the release pattern should be, and that is either to meet the irrigation need for the water or the environmental need for the water. And then we determine–"we" being the Bureau–determine how much water is to be released and what that release will look like in the way of time and magnitude, and *then* we give that information to Western Area Power [Administration] ~~Authority~~, who then turns around and in consultation with [unclear], we'll work out a generation schedule. And then we'll get back the information on how we're going to operate our machines at Shasta or Trinity or

wherever. They'll give us then a generation schedule, and then we will release the water under that schedule.

Now, we're able to do that because, first of all, we can make a *constant* release out of Keswick for a constant river, so then we fluctuate Shasta. And the other flexibility we have is that we can make pretty much a constant release out of Trinity through Carr, through Spring Creek, into Keswick, and down the Sacramento River, and we can use Whiskeytown Lake as kind of the reregulating reservoir. So we can let water out of Trinity and out of Carr and out of Spring Creek on a cyclic pattern, as well, so we can take advantage of peak power or base power, the *controlling* reservoirs being Keswick on the Sacramento and Lewiston on the Trinity River, so that we have *constant* flow down the river, but *variable* flow out of the other powerplants.

So *that's* the benefit that we have, and we can sell that flexibility to the utilities. So there is definitely a market advantage in being able to go to the utilities and say, "We can cover your peak loads during these particular hours for this many megawatts. Instead of you having to carry another fossil fuel generator on line to cover those peaks, we can do it for you." And there's a *tremendous difference* between a *hydro* generator and a *fossil* fuel generator. We can start a hydro generator in a matter of two or three minutes or less. Just go up there, you turn the valve, open the turbines, the turbine starts going. As soon as it comes up to speed, you put it on line. In an emergency, you can do that within a matter of a minute, minute and a half. You can go from completely *dead* to full generation. Normally under conditions, you may take four or five minutes to get up there.

Now, if you had a steam plant and all of a sudden you had to cover a peak load for steam, you'd have to start firing up the turbines, the steam turbines on that thing, two or three days before that time. That means you *have* to keep that thing up to *full* steam, full *pressure, not* being able to turn the generators because there's no need for it until tomorrow afternoon at three o'clock. And so it's a very inefficient way of doing it. So the way they like to *operate* is that the steam plants, the fossil fuel plants, will cover the base load, and then as the load *peaks* during the day, that peaking will be covered by hydropower, so then we can start and stop the generators over a shorter period of time.

So *that's* the way that we *optimize* the power generation between all the utilities and between hydro and fossil fuel, and that type of arrangement, those types of arrangements are a matter of contract and a matter of day-to-day discussions between Western Area Power [Administration] and PG&E and SMUD and some of the other big generating entities, and they have good working relations where they say, "Okay, we'll cover the generation today, and you cover it tomorrow," and, you know, things like that, so that everybody tries to be a good neighbor and be sure that the base generation is covered. But still, if people have to take a machine out for maintenance, there's no penalties involved. They just work it around to where they can accommodate it.

Storey: What about environmental issues and their effects on hydro-generation at Shasta?

Capener: Maybe we could just take a pause for a minute.

Storey: Okay. [Tape recorder turned off.]

The environmental issues.

Environmental Issues and Their Effects on Reclamation's Hydropower Generation

Capener: The environmental issues probably play a greater role in our generation than any other factor, and they affect everything from the lake level to the releases into the river for use by the irrigators and for other purposes.

Let me start by talking about the impact on the lake levels. The lake level fluctuates anywhere from 70 to 100 feet per year at Shasta and a comparable amount over at Trinity. The problems you run into with a fluctuating reservoir level is that at certain times of the year there are species of fish that want to spawn, and they spawn maybe a few feet under the water level in the shallows and the banks around the reservoir. If the reservoir continues to drop, then those spawning areas are exposed and dry up, and of course the fish do not hatch out.

So we have a consideration there to try and operate the reservoir somewhat in a stabilizing condition during periods of time when the fish may be spawning in the reservoir, and there are times when that is a consideration and we may have to shift our water releases from one reservoir into another reservoir. For example, if the fish are spawning over in Trinity, then we don't want to bring a lot of water from Trinity and drop the reservoir, so we may bring more water out of Shasta or out of Folsom or some other source. Of course, the problem you run into is that they all spawn at the same time. Then you've got a real problem because you can't manage them all the same way.

So there's that tradeoff, and what you try and do is, if there is a conflict of *need* that way, you try to rotate the impact so that you don't consistently draw one reservoir down year after year after year and end up decimating the fishery in that reservoir. So if they take it this year, you try to spare them the next year, and then rotate it that way.

Then we have the requirements of the river, and the river has three basic requirements. One is flow, magnitude of flow, a certain minimum flow in the river that provides good spawning, not too much, not too little. If there's too much water in the reservoir, the current's too fast and it impacts the spawning. If the river's too shallow, then there's not enough water cover over the spawning beds to give the protection that is needed. So the *amount* of water is one consideration.

The fluctuation is another. You don't want the river to fluctuate beyond a certain tolerable amount during the spawning period and during the time when the fish are coming out of the gravel, because their ability to swim to deep water is somewhat limited. So if you have a good *spawn* and you have a certain river elevation, and then you *lower* that elevation, you may leave pools of water high and

dry, with fish in them that eventually will die because the water warms up, or you may trap fish some other way such that you lose part of your hatch.

So you've got the amount of the water, the flow of the water, and then you've got the fluctuation, and then the third consideration is temperature. If the water is too warm, then the fish will die, the eggs will die. Anything above about 56 degrees when the eggs are in the egg stage or in the early hatch stage, it's almost 100 percent mortality, between 56 and 59 degrees Fahrenheit.

So those are the considerations that you have to work with. Of course, the other thing is, those requirements apply to a stretch of river below Shasta of about thirty-five miles–all the way from Shasta down to Red Bluff. And so it's not enough to provide ideal conditions four miles downstream from Shasta at, let's say, the city of Redding. You've got to provide that down to Cottonwood and you've got to provide it down further and further and further. All the way down to Red Bluff is ideal, but from a *practical* point of view it's very difficult to achieve that, because to provide a temperature of, say, 55 degrees at Red Bluff means that you either have got to have a temperature of maybe 50 or 48 degrees at Redding, because of the natural warming of the river, or you've got to have a considerably higher *flow* in the river, because the higher the flow in the river, the better the river is able to retain that cold temperature. The less the flow, the quicker the river warms up as it goes down the valley.

So each of those considerations has a direct impact on generation. The amount of water obviously does, because if you have to maintain a higher minimum flow, let's say. We used to have a minimum flow of about 3,000 cfs below Shasta. Now it's up to around 5,000 is what our minimum *winter* flow is. And then if we have a flood situation, then, of course, that's a whole different story.

Well, if you're releasing 5,000 cfs at a time when you only *need* to release 3,000 cfs because of other considerations–for example, you're trying to *add* water to the reservoir for summer use, but you can't add it at the rate that you want because you're releasing 5,000 out of the reservoir instead of 3,000, then your reservoir is going to be at a *lower* level coming into the water season than it otherwise would have been. So that's going to impact the amount of water you have for use during the summer and also the amount of electricity you can generate during the summer, and the summer is a very *high* electrical *use* time. And so if you're going to maximize your generation, you want to have a lot of power available during the summertime, where you can have it out on the market to sell it and so forth. So the more water you put down in the wintertime, you run the risk of not having that available for generation during the summer and for consumptive use of the water during the summer.

Then the fluctuations is another aspect of it, because if you have a release, again let's say 5,000 at Keswick, and all of a sudden there's a problem with the power and they want to increase the power generation to cover an outage, say, by PG&E, a line goes down or something and they want us to increase the generation, it limits our ability to do so. If we were to increase the releases out of Keswick, say

from 5,000 [cfs] up to 7,000 or 8,000 to cover that *emergency*, then we've got a problem on how do we get the river back down to 5,000, because during the time it's up to 7,000, the fish are finding new spawning grounds, they're spawning in what will become maybe a area that will be left dry when we drop back to 5,000, *Or* you may even have mature fish that would be trapped, because as the river goes down it creates pools in the bank and so forth, and if you don't bring the river down at a rather slow rate, you could trap fish, which would then die.

So we have an agreement with Fish and Game that we would adhere to a certain *rate* of increase and rate of *decrease* out of Keswick so that we only would lower the river in incremental amounts of maybe anywhere from 250 to 500 cubic feet per second every two to three hours. And so what that means is that we may end up being not very efficient if we were to increase the releases out of Keswick to meet a power demand, and then after that power demand had passed by, then it would maybe take us a day or two to get *back* down to our minimum release, at which time that energy we were generating may not be very valuable.

So we don't like to fluctuate the river, so then our alternative is, well, let's fluctuate Shasta, then. Let's take the water out of Shasta and leave it in Keswick and try and just fluctuate [Shasta] ~~Keswick~~ Lake. We have a little more flexibility in doing that, and we can meet short-term problems fairly easy that way. If we have an outage that requires a very high generation for two or three hours, we generally can increase the generation out of Shasta for three hours and then back off and maybe close down for the rest of the day, because we've added more water to Keswick Reservoir and then it'll take long for that water to drain back down again–down the Sacramento River. So we have more flexibility in the system if we use our *primary* plants, like Trinity or Shasta, or even Spring Creek and Carr to a lesser degree, to meet those demands. I guess the big–

END SIDE 1, TAPE 4. MARCH 26, 1996.
BEGIN SIDE 2, TAPE 4. MARCH 26, 1996.

Capener: The biggest impact is the *amount* of water we have to commit and the timing of that water, and what we found is that we have to keep the river *higher* in the spring and *higher* in the fall of the year in order to maintain the temperatures for the fish that are spawning. This may occur at times when the generation is really not needed, and so then we just have surplus generation that has to be dumped on the market. We don't get the revenue from it that we otherwise may have received. And it means that there's water that's being used at that time that will not be available to be used at other times during the year.

One Major Issue Is Maintaining Cool Temperatures in the Sacramento River During Winter-run and Spring-run Salmon Spawning

Of course, that's all geared around the temperature of the river, and that's really the single-most important factor that we deal with is maintaining cool temperature in the Sacramento River to preserve and enhance the spawning of the winter-run and the spring-run salmon. Those problems are problems that are being

worked on from other angles, and hopefully we'll have a more efficient way of dealing with them.

Reclamation's Temperature Control Device on Shasta Dam

One of the things we're doing is putting in this temperature control device. That's a $60 million project that is being *retrofitted* to the Shasta Dam. What it is is like a big ten-story steel building that's going to be constructed on *top* of the lake, and as it's being constructed, it's going to be lowered down to cover the intakes out to the powerplant. So you're going to end up with this big steel *framework* comparable to a ten-story building, *all* under the water, that will extend from the bottom of the reservoir up a couple hundred feet, and it will have the ability to open louvers at different locations, different elevations. The importance of *that* is that the water in the lake stratifies. The cold water settles to the *bottom* and the warm water stays at the *top*, and then there's a transition zone in the middle, and the temperature of the lake at the bottom it may be 45 degrees and at the surface it may be 85 degrees, so it's quite a temperature change. So if we're releasing water from up towards the *surface* of the reservoir, it's going to be warm water during the summer.

In the past the Powerplant at Shasta Was Shut down and the Lower Floodgates Are Opened to Provide the Cooler Water Needed by the Salmon

This problem we've been dealing with for a number of years, and the way we got around it in the past was, we shut the powerplant down completely and we went over to the lower floodgates in the dam and opened the floodgates, which are very close to the *bottom* of the dam, right in the river channel. All the water was released through the floodgates, and *no* generation was occurring. We would actually shut the plant down for two months in July and August, maybe even into September, because if we took the water through the turbines, it would be too warm.

Storey: Because it was coming out at a higher level?

Capener: It was coming out at a higher level. We had no way of selectively withdrawing it from any other level.

So this device will allow us to pull all the water through the generators and take it either from the bottom of the reservoir when we need the real, real cold water or at times taking it from the surface, or close to the surface of the reservoir, when we maybe need warmer water, because there are times when the *warm* water will actually *enhance* the growth of the mature fish and won't impact the spawning because of the spawning cycle, and may even benefit in enhancing the germination time of seeds that the farmers are planting. If the temperature of the irrigation water were a few degrees warmer, it would speed up the seed germination of their fields. So there's some considerations there that need to be looked at.

This project is well under way and is scheduled to be completed at the end of this calendar year, and that means that we'd be able to run all the water through the generators that we release for this purpose.

Storey: What kind of revenues have we lost because of releasing without using the generating capability?

Reclamation Has Lost Substantial Revenue over the Years

Capener: Since we've bypassed, we've probably lost close to $40 million.

Storey: That would be since when?

Capener: The last five years–five-, six years.

Storey: So that would be for a couple of months?

Capener: Each of those years.

Storey: A good-size chunk of money.

Capener: One year, I forget which one it was, maybe about three or four years ago, we figured we lost $10 million that year in foregone energy.

". . . Western has to make up that energy by purchasing it from the Northwest, so it depends somewhat on what the market price for the energy is. But they have contracts they have to meet, so the only way they can do it is to buy and import the energy. . . ."

> What happens is, Western has to make up that energy by purchasing it from the Northwest, so it depends somewhat on what the market price for the energy is. But they have contracts they have to meet, so the only way they can do it is to buy and import the energy. And then, of course, that's passed on to the rate customers, and they don't like that at all. So everybody benefits by putting this retrofit onto Shasta Dam, and the power customers are paying a sizable share of that cost, too. They're not footing the whole bill, but they're paying, I forget, $10 or $20 million of it.

Storey: So where does the rest of the money come from?

Capener: Some of it comes from the surcharge that's put on the water itself.

Storey: Because of CVPIA?

Capener: Right. And the state of California is supposed to pay 25 percent.

Storey: It's an ambitious project.

Designing the Temperature Control Device Required Consulting with Firms That Do a Lot of Ocean Work

Capener: It's a one of a kind. It's something that had never been done. And so as we were

putting together the design concepts, it was really a trip to find who do you ask questions of, who do you go to ask what happens when you put something 200 or 300 feet under the water and how do you do it and how do you build it. Nobody knew.

We ended up going to some of these international firms that do a lot of ocean construction, oil wells and so forth, where they do put things at a considerable depth. We used a lot of consulting firms, not to design, but to look at our designs and give us comment about them and peer reviews and things of this nature, and we made a number of changes in the design over the life of the design. What we thought would work initially wouldn't, and we changed the basic concept several times. The last change we made was for earthquake. Originally we had the structure rigidly anchored to the concrete of the dam, and then the question came up, what happens if we have an earthquake of magnitude 7 or 8 or whatever? What would happen to this device? Well, it would just pull itself loose and fall to the bottom of the reservoir. Well, that's not very desirable, so let's hinge it. And so now it's pivoted so that if you do have a major earthquake, that thing can actually oscillate independently of the dam so that it can absorb that energy without tearing loose from the anchorage to Shasta Dam.

Storey: Where did this come from? What caused this project to happen?

Capener: Well, it was a problem somewhat identified back in the forties. There was some comments made during the initial design of Shasta Dam that it was said, "You may have a temperature problem in the river. At low lake elevations, with an intake 100 feet above the river bottom, you may run into some warm water down the river." That wasn't really given a lot of credence or weight by the people that were making judgments at that time. They thought, "So what?" The biology of the river was not known as well as it is now.

". . . it was well into the sixties before we started to sense any kind of a problem, and those problems surfaced when we had dry years, and the lake went down more than usual. . . . At the same time, we were having more demand for the water, because the irrigation districts were developing their lands more in the mid-sixties to the mid-seventies . . ."

It went along pretty good, because we had an abundance of water, we had some very wet water years. So, it was well into the sixties before we started to sense any kind of a problem, and those problems surfaced when we had dry years, and the lake went down more than usual. It went down maybe 100 to 150 feet at the end of the season and didn't recoup the next year. And so the water we were releasing in, say, July and August, instead of coming from the upper 20 feet of the reservoir, was coming from maybe 60, 70 feet down, which was considerably warmer water. Then those problems started to surface.

At the same time, we were having more demand for the water, because the irrigation districts were developing their lands more in the mid-sixties to the mid-seventies, so the demand for irrigation water increased. That meant that the *range* of drawdown increased, as well, so we ended the years lower than we had in previous

years.

". . . all these factors kind of came together in a series of dry years in the seventies and early eighties, when we found that the water . . . by the time they got down to the spawning beds of the winter-run salmon, it was fatal to the salmon. . . ."

So all these factors kind of came together in a series of dry years in the seventies and early eighties, when we found that the water we were releasing in July and August, because of low lake levels, was coming out of the intermediate zone or the upper zone of the reservoir at temperatures that were in the low fifties to mid-fifty range, and by the time they got down to the spawning beds of the winter-run salmon, it was fatal to the salmon. Some years there was a 100 percent kill.

". . . so our operation then was dictated by Fish and Wildlife Service, who . . . had the authority under the Endangered Species Act to require that of us . . ."

That was reflected on the amount of salmon returning, and this issue then started to explode in the sense that, hey, we have a run of fish that might be in danger, because at one time we used to have hundreds of *thousands* of winter-run salmon returning. Now it was to the tens of thousands and then to the thousands, and then even below that. Some years we had 500 fish come back. And so our operation then was dictated by Fish and Wildlife Service, who basically said, "You will maintain certain temperatures in the river, and we don't care how you do it. Let it out of the bottom of the dam, whatever you want to do." But they had the authority under the Endangered Species Act to require that of us, which we did.

At the same time, we were trying to find other ways of operating to minimize the loss of water and the loss of generation, but it became apparent that *nothing* would really work. You're just skirting around the problem. The only way you could really deal with it is to get that water from the bottom of the reservoir, and we started the design of the temperature device.

Storey: Was that a project office initiative, or a regional initiative, or a Washington initiative, or what?

CH_2M Hill Proposed a Floating Curtain to Lower Water Temperatures in the Sacramento River

Capener: It's interesting that back in '76, when we had the real drawdown, the maximum drawdown with Shasta, of course there was a lot of warm water at that time, and CH_2M Hill, a local engineering firm, came out with a suggestion, "Why not float a curtain out on the reservoir and drop it down maybe 50 feet. (This is a curtain that would float.) And that way you could pull the water from at least 50 feet lower than otherwise it would be coming from."

Well, that was the beginning of it. We looked at that, and there was not enough long-term benefit to do that. It was kind of a day late and a dollar short in

that concept. But it got the ball rolling *thinking* about it, and I think everybody started thinking about it. We did, the region did, the environmental community did, CH_2M Hill started thinking about it, and Denver started thinking about it.

Well, in '77 we had a *maximum* water year, and so the problem went away in one year. It stayed away for a few years, then it came back. And then as it came back, then we started looking at it and saying, "Okay, we've got to do something about this." Well, *nobody* in this region could design, or even had a concept of what to put in there, because there was just *nothing* comparable.

Storey: Now, this floating curtain, is that something like I saw in the signs up at Whiskeytown the other day?

A Floating Curtain Was Used at Whiskeytown

Capener: Right. That concept was used at Whiskeytown because that's a much shallower reservoir and it's used for a separate purpose.

That floating curtain at Whiskeytown is something this office did. We designed it and built it and installed it, and the purpose of those curtains is to force the cold water that comes from Trinity, it hits that curtain when it comes into Whiskeytown and forces it *down* to the bottom of the reservoir, and then it's carried along the bottom of the reservoir, because cold water is heavier so it *stays* down there. And then at the *opposite* end of the reservoir, we have another curtain at the point where we pull the water out of Whiskeytown and bring it over to Spring Creek Powerplant into the Sacramento Basin, and the purpose of that is to force the water to be *pulled* from the lower part of the reservoir rather than the surface of the reservoir.

So at the one end we push the water *down* to the lower depths of the reservoir, where it stays, and then at the other end of the reservoir we *pull* it off of that comparable *low* elevation. So it *eliminates* the mixing effect that otherwise would occur, because normally that water would come into Whiskeytown and be mixed with the surface water, and the surface water would be cooler, but you would lose a lot of your cold water in the process. So this curtain minimizes any mixing, and the *amount* of cold water in the reservoir is increased, and it's easier to pull it out.

Storey: And it's working?

Capener: And it's working, yes. We figure it has an impact of anywhere from 2 to 3 to 4 degrees on the temperature of the water–that much colder.

Storey: Now, why wouldn't that work at Shasta?

Capener: Because of the depth. We're talking about a curtain at Whiskeytown that the upper one is about a 20-foot curtain and down at the other end it's about a 80-foot curtain, and at Shasta you need something that's more like 300 feet. And those are depths that you can't maintain, you can't do maintenance on it. If something goes wrong, you can't get down there to fix it.

And the other problem is, if you had that concept at Shasta, you'd be pulling the water off the bottom all the time, which you don't want to do. There are times when it's okay to get the surface water, and there are times when maybe that's the water that you want to have. When there's nothing in the river that would be harmed, then you'd want to take some of that warmer water and preserve the cold water for other times of the year. So that means you'd have to have some way of going between the bottom and the top or some intermediate, so you have to have a *selective* withdrawal.

At Whiskeytown, it's not selective. It's either/or. Either you're taking it from the bottom or you're not. If you don't want to take it from the bottom, you raise the curtains up. In Shasta, you want to have the option to take it from various levels.

So it was designed by our Denver people, and they used a number of private engineering firms to double-check their design. Then it was put out to bid, and we got what we think is a good favorable bid on it, even though it was going to cost $60 million, and it's well under way. Hopefully it will be in operation the end of the year.

Storey: It's been in construction now for about a year?

Capener: Yeah, just about a year.

Storey: It's a *big* piece of hardware on the face of the dam there.

Capener: Yes. They had to go in and do a lot of preparatory work at the dam. They had to make a lot of anchor holes in the dam, and these anchor holes are anywhere from 3 to 6 inches in diameter. So they went in with a core drill, and they took these great big long cores out of the dam. It's like taking the lead out of a lead pencil. You take the lead out and leave the hole. So they went in there with these core drills and pulled the concrete out and left a nice hole, and then they could put the anchor bolts in there and then pack it in with a concrete epoxy-type stuff to anchor the bolt into the dam. And then, of course, that transfers the forces and the weight and so forth into the dam. So there was a lot of that that was done initially.

There were a lot of core samples that were just put out there in a big box and it says, "Take one," and the people would come up and they'd take a piece of Shasta Dam, a little 6-inch piece or a foot-long piece or whatever. There's probably people all over this area that's got a piece of Shasta Dam, a little nice, smooth cylindrical piece of concrete. And you can polish that up a little bit with some sandpaper or something and then you put some varnish on it, and it really brings out the grain of the rock and everything. It really looks nice. People make paperweights out of it and a lot of other stuff.

So there were a lot of interesting design innovations in that project.

Storey: Yeah. Let's see. Let's try one more question for the day and then finish tomorrow, maybe. You came in '76, in January I think you said. Of course, July Teton failed.

Capener: I came in the fall of ‘76.

Storey: Oh, you did?

Capener: Yeah.

Storey: It must have been another job you moved to in January. So you were still at Colorado-Big Thompson when Teton failed, is that right?

Capener: Yes, that’s right.

Storey: How did people react, and what was your reaction when you heard about the failure?

Failure of Teton Dam

Capener: I guess the initial reaction was, you just couldn’t believe that it failed. And then when it was apparent that it did fail, you thought that it was built wrong, there was something in the construction that was not done right. You just couldn’t believe that it was not properly engineered or the Bureau didn’t do their homework in the geology and all the other stuff.

As People Realized Reclamation Was at Least Partially to Blame, it Was Demoralizing

And so as it began to become apparent that the Bureau at least was partially at fault with that thing for not having a good enough geology map of the thing and let some of the filling all the fissures and other tunnels and everything else that was in there, it was really demoralizing. It was something that was difficult to accept. The Bureau had such a great reputation for building things and meeting challenges and building it better than anybody else could that it kind of showed that we were vulnerable. We just aren’t perfect.

I met the construction engineer over there that did that, and, of course, it was just terrible for him. He was just beside himself to live with the fact that that happened, even though he’s not directly responsible, necessarily. But we saw the videos and the tapes and everything else that were shown of the flood and the impact of it down the river canyons and what it did to the area down there in Idaho.

It was very difficult. You take it very personal. It’s almost like a family, you know. You feel it’s a loss of the family to have something like that happen.

Storey: Do you remember any specific stories, or incidents, I should say?

Capener: I don’t have any direct information. What I remember was the result of seeing some of the films that were taken.

Storey: I meant incidents where people reacted to the news or something like that.

Capener: Well, it think there were two types of reactions. There was reaction from maybe the people that were otherwise critical of the Bureau for other reasons, say they kind of said, "Well, you guys are not as good as you think you are," that type of thing. I remember some of that happening, but not a great deal.

But the other thing was just the reaction from your coworkers and people that were involved, maybe new people over there in that region, and just the feel of gloom and the feel of loss and the feel of this can't be real–that something like this happened. There was a lot of very, very sad faces for a long time after that, and that just seemed to take the wind out of the sail of a lot of people, even though they were not directly associated with it. It was the fact that it was Bureau and our reputation was severely tarnished as a result of it. Then if you knew somebody over there, that made it even worse.

Storey: There were a number of initiatives taken as a result of Teton. Do you recall any of those affecting you here at Shasta, or even at C-BT while you were there?

Activities Caused by the Failure of Teton

Capener: I think I remember more here at Shasta, because I think those started to develop in the latter part of '76, those initiatives. One, of course, was the, "Let's look at the geology," and so the geology of the area was looked at and the earthquake safety was looked at again. The hydrology was looked at, what was the maximum hydrology of your watershed. That was tied in with what happened at Teton and somewhat what happened at Colorado-Big Thompson with the flood that they had there because of a storm up the canyon that surpassed the hydrologist's estimate.

So we did a lot of examination. We checked all of our monitoring sites that we have on our dams. We monitor the flow of the seepage and so forth at the dams, the concrete and the earthen dams. We have places in there that we can see if there's any seepage occurring. There is always some seepage. That's to be expected. But it's not anything to worry about unless certain things change on it. So we went back and checked our records on that and went out and intensified our efforts to be sure that everything was covered and all the instrumentation was properly calibrated and everybody was doing it the way that they were supposed to do in taking the readings and making the observations.

It was pretty intensive there for probably a year or so while this investigation was going on and people were looking at it, and then I think the spinoff after that was not only looking at the geology, but looking at all of the safety assumptions that were made, which primarily were geology and earthquake and hydrology. So those were all examined. That was done mostly out of Denver, and I think our change of safety of dams criteria is a reflection of that, as well, because I know that they did change the hydraulic assumptions of Shasta. Now the maximum probable flood due to a rainstorm into Shasta Reservoir is higher than it was prior to '76, and so that changed the way we fill the reservoir. It wasn't a result *entirely* of that Teton event, but that certainly *added* to making the decision favoring more of the safety aspect than the water conservation aspect of it.

Storey: Well, I appreciate it. It's been a little over two hours again. I'd like to ask you whether or not you're willing for the information on these cassette tapes and the resulting transcripts to be used by researchers.

Capener: Yes, certainly can.

Storey: Good. Thank you very much.

END SIDE 2, TAPE 4. MARCH 26, 1996.
BEGIN SIDE 1, TAPE 1. MARCH 27, 1996.

Storey: This is Brit Allan Storey, senior historian of the Bureau of Reclamation, interviewing J. Paul Capener on March the 27th, 1996, at about nine o'clock in the morning at his home in Redding, California. This is tape one.

Yesterday you mentioned that you'd had to dismiss some folks. There's a myth or a reality, I don't know which, in the Federal Government that you can *never* get rid of anybody. Would you mind commenting on that and the kinds of issues that you had to confront?

Issues Surrounding Terminating Staff

Capener: Well, I think that there is, there definitely is that myth. It's not that you can't get rid of somebody, it's that the process is so *exact* and *detailed* and the documentation has to be *so* thorough, that it *frustrates* a lot of people to try and do that. You have got to have written documentation and you have to show that you have confronted the people and given them the opportunity to change; an opportunity to send them to rehab; an opportunity to do a lot of other stuff, and they've denied it; and you've given them counsel; and you've gone through a progression of starting with notification of the behavioral problems and then the efforts to assess and to help in any number of different ways; and that the problems still continue.

Then after taking a series of ever-increasing steps in the sense of penalties, you may start with a letter of reprimand. You may have a one- or two-day suspension; and then you may have a five- or six-day suspension; and then you may have a notice of proposed removal; and then giving them an opportunity to respond to that. Part of the negotiation in these types of things is, well, they will agree to correct their behavior. So you work up a *document* of *performance* that they agree to, and then if they kind of fall off the wagon, if I can use that term, in the sense that they don't *honor* the terms of that document, then you can *dismiss* them without any kind of recourse on their part. Now, that's one way you can do it. If they choose not to sign that document, then obviously you could still dismiss them. But then they have appeal rights and hearing rights.

I guess what a lot of people fear is that somewhere in this process many people will cry "discrimination." Even though in *most* cases it's *not* a factor in the performance, it seems to scare a lot of managers away from taking action, because they have seen people use the discrimination avenues to harass and to get even with

people. So they claim discrimination, and then it's incumbent on the manager to prove there wasn't. And unless you've been keeping very, very good records and written records that have been documented and others who attested to and it's almost like a legal proof, then you really can't support some of your efforts that you may want to remove people. It's very, very cumbersome–very difficult.

"If a person really has a performance problem, generally the first few steps will correct that, if they're willing to correct it. . . ."

If a person really has a performance problem, generally the first few steps will correct that, if they're willing to correct it. If you give them an opportunity to change their behavior, an opportunity to maybe either be retrained or counseling or drug rehab or whatever might be appropriate, if they're willing to work with you, generally you can make productive employees out of them. You may have to give them a different job if technically they can't do their other jobs. But then you run into people that don't want to. They have no desire to change their behavior, but they try to convince you that they will, but they just bite their tongue a lot, you might say. So you go on for weeks or months, and then they revert right back to their old methods.

". . . the other thing that's a problem is that a lot of the co-workers do not want to become involved in it, and sometimes you have to rely on co-workers to substantiate things that are going on, because much of the information comes to the manager like second- and third-hand. . . ."

Then the other thing that's a problem is that a lot of the co-workers do not want to become involved in it, and sometimes you have to rely on co-workers to substantiate things that are going on, because much of the information comes to the manager like second- and third-hand. So you go back to the co-workers and a lot of them just don't want to get involved. They've seen people that have and have been *included* in the discrimination complaints, and they don't want anything to do with it. So that's what I've found is one of the very difficult things, is getting the co-workers to 'fess up to what the individual was actually doing, was actually doing wrong.

Storey: Could you give me some examples without using any names?

Some Staff Make Threats Against Managers and Others

Capener: Well, this particular individual would say threatening things against management such as, "Well, I'm going to get even by carrying a rifle around in my truck. One day I'm going to go up on the side of the hill and I'm going to take this guy out." Actually, in that particular case we called in the sheriff or the FBI and they said, "Well, there's nothing we can do about it. That's just talk until you shoot somebody, you know. You can't prove anything."

But they would to go over and talk to the guy anyway, try to scare him into doing something. But he would say that to the co-workers, and then you'd go to those co-workers and say, "I heard that So-and-so said this." And they'd say, "Well, maybe he did or maybe not. I can't quite recall exactly what he did, and I really don't

want to get involved in it." Because they were somewhat afraid that he might have some recourse on them as well.

There are times when that particular employee would actually come unglued in the sense of losing his temper and kind of fly into a rage and wouldn't hurt anybody, but certainly lost control of his ability to perform and to function properly. But people were very hesitant to come forth and say this guy is on drugs or he has some kind of a mental problem or something, because they'd say, "I don't want this guy to lose his job. I don't want him to be out on the street. He's got a family and everything else." So they feel maybe a sense of guilt if they're a party to causing this individual to lose his job.

It takes quite a bit of this type of behavior, at least in my experience, before the people realize that, hey, that's the thing that has to be done, because it's detrimental to the entire organization and it affects co-workers and other people. And then once they realize that, then they're willing to be more cooperative and you're able to do something. But it's a long, drawn-out process that takes sometimes several years of documentation and efforts to rehab and letters of counsel and everything else.

Storey: What about somebody who wasn't performing their job? Any examples you can think of?

Sometimes Employees Are Mismatched with the Job

Capener: We had an individual that she was not performing well. It was just a mismatch as far as not being able to grasp the particular duties that she was assigned. It wasn't something that she was trying to do. It wasn't that she didn't want to try. It just didn't *work* for her. And those are the kinds of things you *really* want to work with. So we did and we worked with her and counseled her and sent her to some kind of training to explore interests and so forth. We ended up just reassigning her to a different job, and that worked out pretty good.

Sometimes There Are Drug Problems

We had another person who could not perform, and she would not admit to that. This was a drug problem. She was on drugs. She was very sharp in that she would be able to hide it, and she had all kinds of excuses and reasons. She'd come to work kind of all blurry-eyed, and her co-workers would recognize that and say, "What's wrong?" "Oh, it's my diabetes acting up," or, "It's a bad night at this." Or flu or, you know, something like that. Always had excuses, but when it came down to it, it was evident what she was doing.

We finally had enough documentation to confront her with it, and she went to a rehab and said, well, she was cured. About a year later, she was back doing the same thing. So then what happened was that we again had to start all over with the documentation. A lot of that is subjective, when you say I observed a behavior, this person could not concentrate. Well, what does concentration mean, you know? It

takes her longer to do her work because her mind's not functioning properly. Well, some people are fast, some people are slow. It's very difficult to *quantify* at what point she is not a productive employee because of the drug use.

So we finally got to the point of having a letter that was prepared and we gave her the option. She could sign the letter which said she would stay off the drugs and that she would perform her work, and if she ever fell back on, she could be dismissed without any rights on her part. Or, if she would not sign the letter, we'd pursue with the other course of dismissal and then she'd have to go through the appeal and kind of like hearings and all that stuff. And she signed the document. As far as I know, so far she's still working. So sometimes that's enough to convince them.

It's very difficult and it's very hard for some people to admit that they do have a problem. And the co-workers are just, almost without exception, the initial reaction of the co-workers is, "Well, I don't want to get involved." Unless you've got first-hand observation, first-hand knowledge, it's very, very difficult for a supervisor to do anything.

Storey: One of the things I'm interested in is how managers spend their time. How would you characterize the kinds of responsibilities you had as the supervisor at Shasta?

"Most of my time was spent in issues that had very little to do with the actual work, the maintenance, the operation, that type of thing . . . issues with water districts or the environmental groups or with counties or with local governments . . . and dealing with restoring fisheries on a creek, let's say, or water contracting . . ."

Capener: Most of my time was spent in issues that had very little to do with the actual work, the maintenance, the operation, that type of thing that was performed. Most of my involvement were with issues that were issues with water districts or the environmental groups or with counties or with local governments and so forth in regards to what types of policies we should have and dealing with restoring fisheries on a creek, let's say, or water contracting, delivery of contracts and are they being adhered to by the water districts. I spent a great deal of time doing that.

Budget Formulation and Management Took a Lot of Time

Budget was another thing that certainly occupied a lot of time, because we had to formulate our own budgets and everything else. Most of the work we tried to have at the crew level, the lowest level of organization, and management would formulate their individual budgets.

"There was a merging operation . . . more requirements than we had money. . . . then we had to sit down . . . reducing the budget prior to submitting it into the region. And then after . . . it comes back to us and we have to even reduce it further. . . ."

There was a merging operation we went through as the common issues were pulled

together under the same budget. Obviously there was more requirements than we had money. And so after we got all that done, then we had to sit down and decide, well, who gets what, and where we're going to make the cuts and what are the consequences of reducing the budget prior to submitting it into the region. And then after it goes through an additional process, it comes back to us and we have to even reduce it further.

"A lot of public involvement, meeting with organizations, speaking at clubs, entertaining people that come, in a sense that we have a *lot* of people from around the world to visit the Shasta Dam. There's certain courtesy visits that I would make with them and so forth. There was correspondence that you had to deal with . . ."

So that becomes quite a sizeable workload to work with the people and scale that down. A lot of public involvement, meeting with organizations, speaking at clubs, entertaining people that come, in a sense that we have a *lot* of people from around the world to visit the Shasta Dam. There's certain courtesy visits that I would make with them and so forth. There was correspondence that you had to deal with and be sure it was appropriate for us to reply to. That was a rather minor workload. Most of the correspondence went directly down to the people that had the functional responsibilities for those programs.

A Lot of Time Was Spent Visiting with People and Encouraging Them and Supporting Their Efforts

Then there was a lot of going around and just visiting the workforce and visiting the various people and listening to them, giving them encouragement, trying to keep them motivated, emphasizing the important parts of what their work is, especially when you get in to people that are doing the nuts and bolts on the environmental work and water contracting and so forth. They could get discouraged at times because of the *barriers* that they always run into when they're talking to our customers, because obviously our customers don't want to give up water or they want *more* water or they want us to do things differently. Some of them can be rather forceful in their efforts to try and convince us to do things differently. So the employees need some reinforcement that, you know, they stick to the policies and that they do what they can and they work in a professional manner. They've just got to hang in there. Sometimes they wrestle with problems for months and months and months before we finally get them resolved, and it can be discouraging for them. So it's important that they know that others are appreciative of what they're doing and that what they are doing is right and proper.

Storey: What about travel? Did you travel a lot?

"I was generally traveling two or three days a week, either to Sacramento or maybe to Denver or maybe just down to some of our offices down in Willows or Red Bluff. . . ."

Capener: Yes, I did. I seemed to be going to a lot of meetings. I was generally traveling two

or three days a week, either to Sacramento or maybe to Denver or maybe just down to some of our offices down in Willows or Red Bluff. But I did have a lot of travel.

Storey: How about interaction with other managers in Reclamation, and did it change over time while you were superintendent and area manager?

Interactions with Other Managers in Reclamation

Capener: It did change. We tend to make contacts with other people in our career, because we have something in common somewhere back in the past. Either we worked in the same office or we were on the same committee or we shared a common problem. And so you tend to meet people and know them and kind of keep in touch over the years, so that you know the manager up at Grand Coulee, and you know people over at Hungry Horse, you know people down at Hoover Dam. You call them up, chat with them, keep up that friendship.

In the Late 1980s Reclamation Began to Hold Quarterly Managers' Meetings

Then here about, I guess it started maybe seven or eight years ago, there seemed to be more of an effort to *pull* Reclamation's management people together. So we started with what amounted to quarterly management meetings where *all* of the area supervisors, or prior to areas it was the program managers or project managers, different names, but all get together for two or three days and try and identify and resolve common issues and common problems. This was at the commissioner's level. The commissioner would be there and some of his assistants and deputies and generally the regional directors and some of the key policy people. That was very helpful. That pulled us together in a sense of understanding common problems and common goals and sharing experiences on how and what we had been doing.

How Communicating with Other Reclamation Employees on the LAN Has Changed Communication in Reclamation

Then with the advent of the computer system, the LAN [Local Area Network] system, you can get on the computer and you can send messages to all or a few area managers. You just call up the index, if you will, and say, okay, this is a little note I have, and send it out to all the area managers, whether it's, "Hey, we're going to have an opening here for an engineer. Any of you guys out there got a good, aggressive engineer that may be interested in a lateral to Shasta?" Or something of that nature. And you just send it all out. So there's this type of communications. Or, "We have a very interesting problem. We lost a chunk of concrete out of the face of the dam. Anybody have any similar experiences?" So you can send that out on the computer and get messages back saying, "No, you better take better care of your dam. Sounds to me like it's falling apart."

So you'd go through that. It's very helpful and it tends to keep a certain level of camaraderie among the area managers and program managers. I think that's good. I think that's very helpful. I think that really has done a lot to solidify the policy and

ensure that it's being applied as fair and equally among regions as possible. It's a lot more effective than the old way of going through the chain of command, through the regional people and then the regional people through Denver or through Washington. It cuts out a lot of that.

Storey: Do you remember who the commissioner was who initiated this or under whom it was initiated?

Dennis Underwood Started the Quarterly Meetings

Capener: Seems like [Dennis] Underwood started it.

Storey: And you'd get together and do what, follow an agenda?

Capener: We'd have an agenda.

Storey: It would be free-form?

University of Colorado Law School Used to Educate Managers

Capener: It evolved into kind of a format. We'd spend maybe a day on legal issues. We got the University of Colorado at Boulder involved. They have a law school there and a very good water rights and water usage and so forth school. So we studied the water laws. You know, a lot of people get to be area managers, and their legal background is very minimal, and unless they get into a real problem where they're forced into learning or studying it, they may not understand the concepts of western water, how it evolved and all of the idiosyncracies of it. So the effort was to try and educate at a rather high level using some *very* talented people from the professional arena to do that.

Managers Meetings Also Went on Field Trips of Various Types

We then would have a field trip to where we would go out and we would see projects. They weren't always Reclamation projects. Sometimes they were conservation projects or environmental projects, with the effort to try and get in contact with some of our sister agencies or to help us in changing direction of our policies and so forth. So I remember we went out to Nebraska here about a year ago to the sanctuary for the cranes out there on the Platte River, and went out there in the blinds and observed the cranes and all that stuff at six o'clock in the morning. It was cold. But it opened the doors to you to understand other people's problems and so forth, and then you had a peer group that you could discuss it with. Then we dealt a lot with policy issues and what could we do in the way of trying to meet our financial obligations with a revenue shortage from Congress. It varied just about every time you went there. But I think it was very well structured and very well put together, and I think it was very beneficial. It was.

Storey: That would be quarterly for two or three days?

Capener: Yes. Generally you went one day and then you spent two full days, then left either the night of the second full day or the next morning, depending upon your flight arrangements, how far you had to travel.

Storey: Was this a decisionmaking body or more a discussion body?

The Commissioners Influenced the Meetings

Capener: It was both. Sometimes we would just do discussions and sometimes we would make recommendations and sometimes we would suggest policies, and occasionally they would ask for a decision, although I think most of those decision-type things were always subject to the commissioner's review and what he wanted to do and so forth. Policy decisions were still held by the commissioner, by Washington, and the regional directors. But I think the effort was to try and educate and develop to the point where maybe that could happen.

Issues Related to Changes in Commissioner

But the drawback to it was you changed leadership. You'd just get one commissioner broken in and educated to really what goes on in Reclamation and you get them converted, and then they move out and somebody else comes in and they come in with their agenda and it takes a little while to melt that in with reality, and then you have a productive time, and then they're gone.

Storey: Did the commissioners vary in the way they used this meeting?

Capener: I think they varied only in the personalities of the commissioners. I think once it got established, they pretty much held to that format, and the commissioners would put things on the agenda that they wanted to bring before the group. That was a variable on what the issues would be that we discussed. Just the dynamics would vary based upon the personality of the commissioner and the people he brought with him. But the basic format, as far as the educational aspects of it and then the on-site visits aspects of it and those things, pretty much stayed the same.

Storey: Did you ever attend a meeting with Dale Duvall like that?

Capener: I don't think so. I don't think that really got under way when Dale was ~~under~~ there. I don't recall that it was.

Storey: You know, Shasta's sort of one of the big ones. I know, for instance, that Commissioner [Eluid] Martinez was here recently. Was it typical that every commissioner would come and visit Shasta, by chance?

Capener: I think it was more dependent upon the issues. It was not something that they would come merely to pay a courtesy visit or to look at. A lot of their staff would come. Very often they'd send their staff along with congressional staffs from Interior committees and so forth would come out and spend a couple of days going through the facilities and we'd take them on a tour and so forth. That was quite common.

It seemed within the last two or three commissioners they started to come out more because of the shift of some of our programs. We got into more of a human resources program. Then that brought more of them out because they wanted to come out on site. So they came out and presented some awards to people for efforts in human resources, and the commissioner would come out and do that for them. Margaret Sibley would come out, and people who had some of those responsibilities.

"It's very interesting, the reaction of the rank and file when somebody at the commissioner's level would come out, because a commissioner is an untouchable, you know, in the eyes of a lot of the people. Here you have a clerk or an electrician or somebody that, boy, if they even got to see a regional director once or twice a year, they'd feel kind of privileged. And here somebody from Washington, the commissioner is coming out . . ."

It's very interesting, the reaction of the rank and file when somebody at the commissioner's level would come out, because a commissioner is an untouchable, you know, in the eyes of a lot of the people. Here you have a clerk or an electrician or somebody that, boy, if they even got to see a regional director once or twice a year, they'd feel kind of privileged. And here somebody from Washington, the commissioner is coming out, so they really wouldn't know what to do and how to act or anything else.

So a lot of it was just kind of, okay, let's get in a situation where we can drop the barriers, where people can learn that the commissioner is just a person with certain responsibilities and certain ideas. But he's not out here to point his finger at how you're doing your work, or he's not out here to try to get information to take back and use against you, or anything like that. He's there to meet you. He's not going to get involved in the work that you're doing, because he hasn't got time to tell you how to do your work. That's delegated to other people. So you don't have to have any fear of saying, "Okay, commissioner, this is what I do and this is how I do it," and think he's going to criticize you for it and say, "Well, gee, if I was doing that, I would do it differently." Commissioners don't know those things. They're not smart in everything. A lot of them don't even know how a generator works and how a powerplant works or anything else. They're pretty–

END SIDE 1, TAPE 1. MARCH 27, 1996.
BEGIN SIDE 2, TAPE 1. MARCH 27, 1996.

Storey: You were saying that–

Capener: So after a few visits by some of the people like commissioners–and Margaret Sibley was a good one to do that. She just had a personality about her that broke down a lot of barriers. Then the people, you could just see them kind of loosening up and being more themselves. And then you started to get afraid, "Well, gee, maybe they're going to air all their dirty laundry out in front of the commissioner." (laughter) Which the commissioner doesn't want to hear anyway. He doesn't want to hear your foreman doesn't give you the right tools or your truck's got a broken window in it and nobody will fix it. You know, then you start worrying about, "Well, gee, maybe

they'll get too friendly," which, you know, didn't really happen. But it was very helpful in that it solidified in the minds of the rank and file a belonging to Reclamation. They saw the big man, they talked with him, they related to him, and it just pulled everything together that they were Reclamation, more so than a regional director could do. It's just something that was extremely beneficial.

Storey: Gives them more of an idea of what's going on, I suspect.

Capener: Yes.

Storey: Maybe a little understanding.

Capener: It's just the feeling that here's somebody that cares. A lot of times the rank and file look at a commissioner as just a political front man and he's coming in to do certain political things and he's going and he doesn't really *care* about Reclamation. It's just a prestigious job, a political payoff or whatever else. So when they see some of the personal interest that they have in what they're doing and in them as individuals, then it brings the whole thing together. It's a practice I hope continues.

Storey: We've been talking about the commissioners. Who was the first commissioner you ever met, do you recall?

Capener: Well, I am not sure I do recall. I know I went back to Washington when Duvall was back there and participated in the Bureau's Engineer of the Year Program. I was the regional representative, the regional nomination for Bureau Engineer of the Year. So I went back there for the luncheon and met with the commissioner. Let's see, who were some of the others?

Storey: Well, Ellis Armstrong would have been commissioner just before you were appointed to this job.

Capener: I met Ellis in other meetings but didn't really have any what I would say working contact with him, where you sat down and really tried to discuss issues and so forth. But I think since Commissioner Duvall, I probably had the opportunity to talk with each of them. We've not had any real politically controversial issues here that we've had to deal with, with, say, the commissioner and Congress or congressional people or anything like that. We've mostly been able to work those through. If there *was* an issue, it was more CVP-wide than it was localized to us.

Storey: Of course, when you started work, I guess Floyd Dominy would have been Commissioner.

Capener: Yes, he was.

Storey: How did people react to Floyd Dominy? I know you told me yesterday that you'd never met him.

Floyd Dominy

Capener: The comments that I've heard about Commissioner Dominy ranged from that of a person that could really get things done–built the E&R Center building and was instrumental in getting a lot of favorable considerations from the Congress–that he was well connected to the Congress, so he was valuable that way. As far as a *person* was concerned, most people didn't look at him as somebody that they would want to pattern their life after, as far as his personal habits and so forth. But he was an *effective* commissioner in the sense of his ability to work with the congressional aspects of our jobs.

Ellis Armstrong

Storey: What about Ellis Armstrong? How did people view him?

Capener: Well, Ellis came on as somebody that was there to kind of fill in time, fill in the gap. I'm not sure why I sense that, but that was the recollection I have that Ellis was appointed more to show that, you know, the commissioner could be–it seems like Ellis had an engineering background and a whole different value system than what Dominy had. Maybe he was there to kind of soothe the feathers and build the bridges back that maybe Dominy had disrupted in his tenure, and that Commissioner Armstrong was not going to come out with a lot of new programs, directions, or policies.

Storey: Um-hmm. After him was Gil Stamm, I believe.

Gil Stamm

Capener: Commissioner Stamm, I think, was looked at as a very *capable* person and a very hard-working person. I think that my impression there is that he exacted a lot of productivity from people, a hard-working person. At least from my level, I think that he had a lot of respect of the people.

Storey: But you never met him?

Capener: Yes, I did. I did meet with him.

Storey: What was he like in person?

Capener: Well, the meetings I had with him were not where you would sit down and really get to the point of knowing him as a person. It was in more of a formal environment, formal context. Very friendly person, certainly presented himself well. A good man for the job because he could carry good conversations, he could entertain, he could dominate, if he wanted to, in the sense of certainly conveying to the people that he is in the leadership position, and people would respect that and they would listen to him.

Keith Higginson

Storey: Then came Keith Higginson.

Capener: Well, I don't really remember much about Keith. Again, it probably has a tendency to go with what issues were coming to the front. I may have met him once, but it was not out here in California. It would have been someplace else, in another kind of meeting or something.

Bob Broadbent

Storey: After Keith was Bob Broadbent.

Capener: Broadbent was an interesting person. He was more of a down-to-earth-type person. My recollection was that even though he was commissioner, he had some kind of a down-to-earth projection on his personality. So that kind of endeared him to a lot of people. I think he was well liked.

Storey: And then Bob Olsen and Cliff Barrett were acting commissioners.

Bob Olson and Cliff Barrett

Capener: Well, I knew both Bob and Cliff from other assignments that they'd had. I guess the thing with that is that when a person goes into those positions as acting, you don't really judge them by the same standard as you would a commissioner, because they've only got certain latitudes and other things that they are expected to do. Cliff, you know, he was a good man. I like Cliff and Bob as well. Good technical people. Quiet. Cliff was really quiet.

Dale Duvall

Storey: What about Dale Duvall?

Capener: Dale was really kind of a–well, like I said? He was a hand-shaker and smiles and pat-on-the-back kind of person. He seemed to always project a very happy attitude when you met him. Now, behind closed doors when you're wrestling with issues, that may have been different. But just his public image was one of very outgoing, a very outgoing person, and you kind of felt that he was interested in you as a person, although that's a feeling that you have, a feeling that has to be substantiated by some actual actions, and then you never have an opportunity to get to that level with him, at least I didn't, to see just whether he would support you as a person in controversial issues.

Joe Hall

Storey: Next commissioner was Joe Hall, acting commissioner.

Capener: I knew Joe from Denver when he was regional director in Denver, and he was also in the E&R Center, as I recall. Joe was looked at as a very *technically* competent person, a good engineer. I think that built a lot of confidence in him from people in my position, because you had an intuitive feeling that he knew enough about the Bureau and the operations and the engineering aspects of it that nobody could put

anything over on him. Technically he could talk the talk and walk the walk, and his decisions would be good ones.

Storey: What was the gossip going around about why they brought him back from Western [Area Power Administration]?

Capener: I can't remember the details. I seem to recall that it was political differences of opinion between him and the administration as far as Western. Now, what that meant, I really can't recall. But it was a political thing, and so the idea was that we would find a place for Joe.

Dennis Underwood

Storey: What was Dennis Underwood like as Commissioner, and what was his style?

Capener: Dennis was, again, a very friendly, outgoing person. He liked to get out and see things and see people, and he liked to get down and meet everybody. He came out a couple of times to our facility and he just *loved* to get down with the rank and file. He just wanted everybody to get around, and he'd call in people in from the crowd, "Come on, everybody, let's get around here," when it was picture-taking time, and get everybody included, shake everybody's hand. It conveyed to the troops that here's somebody that is a real person. He's not just some kind of a politician that's standoffish. And his policies were basically accepted. I think that he had the support of the people, because we felt that he understood and would listen and would get things in good shape, and we had *confidence* in letting him make the decision. If we didn't always agree with it, we'd support it anyway.

Storey: What did the water users think of him?

". . . I think about this time, the water users started to become a little skeptical of Reclamation in general because of a lot of environmental things that started to creep up. . . ."

Capener: Well, I think about this time, the water users started to become a little skeptical of Reclamation in general because of a lot of environmental things that started to creep up. I don't know that they disliked him, at least the ones that I had an association with. I think it was more of a, "Well, we have to wait and see what he actually does and why he does it." I don't think that they felt there was any kind of a *hidden* agenda, that he was out to revamp or restructure Reclamation law. It was kind of the *warning* buzzer, if you will, of what was to follow.

Storey: Which leads us to Dan Beard.

Dan Beard Was Perceived by Water Users as Representing Congressman George Miller's Views on Reclamation

Capener: Yeah, Dan came in there, especially in the California area, as "Here's Congressman Miller." All the things that Congressman Miller wanted to do *against* Reclamation

and the water users and so forth would be reflected in Dan and his policies, and so he stepped in that position with I think most people assuming that he was given an agenda from the administration or from Congress, from Miller, to try to tear the Bureau apart and move all of the environmental issues to the fore, at the expense of the agricultural community.

". . . in the water contract negotiations, we sensed that . . . Ed Osann . . . had a little bit of a hidden agenda in the sense of how the water was to be used and what language in the contracts would be . . ."

Dan many times said that he had no obligations to *anyone* when he came in, that he was going to do what he thought was right and what was best. I think, by and large, that's probably true, but in some of the things that we did in the water contract negotiations, we sensed that probably more with Ed Osann than with Dan had a little bit of a hidden agenda in the sense of how the water was to be used and what language in the contracts would be there to ensure that water was used for–let's see, what was it?

There Were Some Issues about What Should Be Billed as Agricultural Water and as M&I Water

Well, an example would be the breakpoint between whether water was to be billed at the M&I rate or the agricultural rate, what size of land automatically would take with it ag land.

Out here in California, we were thinking of maybe five to ten acres, because if you had ten acres and were growing a good ag crop, cash crop, you can make a living off of it in certain parts of California. Ed felt more like, well, boy, if you haven't got a hundred acres, you shouldn't have ag water.

"Ed Osann was looked at as the one to convince, or the one who would put ideas into the commissioner's head, in some instances. So they were both kind of in the same barrel, if you will, and the water users did not like them. . . ."

Ed Osann was looked at as the one to convince, or the one who would put ideas into the commissioner's head, in some instances. So they were both kind of in the same barrel, if you will, and the water users did not like them.

". . . Dan came out and stood his ground. They came to *appreciate* his position, and . . . the more contact they had with him, the more they felt that, well, maybe he *is* trying to do his own thing and maybe what's been going on in the environment wasn't so good, because the attitude of all the water districts now is different than it was four years ago in regards to water for environment, water for fish. They're more of a working, willing partner than an entity that felt ownership to the water and nobody could take it away from them, and they fought regardless of the persuasive arguments of the environmentalists; they just knew that it was not right to give water to the environment. . . ."

I think they grew to respect Dan, because Dan came out and stood his ground. They came to *appreciate* his position, and the more he was out here, the more contact they had with him, the more they felt that, well, maybe he *is* trying to do his own thing and maybe what's been going on in the environment wasn't so good, because the attitude of all the water districts now is different than it was four years ago in regards to water for environment, water for fish. They're more of a working, willing partner than an entity that felt ownership to the water and nobody could take it away from them, and they fought regardless of the persuasive arguments of the environmentalists; they just knew that it was not right to give water to the environment.

I do know a lot of those entities have changed. I think Dan was very instrumental in doing that, because he presented himself as honest, and he would listen, and he would understand, and he would then feed back the information to the people. They *knew* he understood what their issues were, but he had another goal in mind, and that was to try and help and restore some of the environmental things.

Attitudes Changed Faster Because the Area Office Became Involved in Environmental Issues

I think from an office point of view, that transition took place much faster because we started, then, to get involved in some of these environmental issues and started to staff up with people like fishery biologists and others who belonged to *our* organization and had loyalty to Reclamation and had *credibility*, then, in what they said and what they did, credibility with Reclamation. And they, I think more than anyone, opened a lot of eyes to the fact that Reclamation didn't do everything perfect and there were some things that a civil engineer didn't understand when they built dams as far as the effect on fish, and that maybe we ought to take another look, and maybe we ought to go back and reevaluate and reapportion water and everything else.

Reclamation Has Accepted the Environmental Issues as Challenges to Be Resolved

Then I think that that was accepted, and then the challenge was, well, how do we do it? And I think that's where we are now. We've accepted the fact that things were not done perfect, and now let's put all of our technical expertise, the engineering and the biological sciences together to figure out how to *fix* it. I think the same enthusiasm is *directed* along these roads as we found back in the heyday of Reclamation when we were out building dams. It's a challenge and people rise to the occasion. They *believe* in it. I mean, they're convinced. Once they've established that credibility and see it, they're convinced that, hey, there is a real issue, there is real concern, there are *problems* that need to be solved, and let's go do it.

Convincing Environmentalists That Reclamation Has Changed Is Sometimes Difficult

Now our big problem is that there are a lot of environmentalists that don't believe, that don't take it seriously yet, because they remember the way that

Reclamation dealt with them in the past. People in Fish and Wildlife Service and State Fish and Game and others, they remember the times when Reclamation would say, "Who cares about the salmon? We've got to generate power."

Attitudes Will Change as Reclamation Does Work and Has its Environmental Staff Interacting with the Environmental Community

That's still being worked on, and the only way *that's* going to change is through the interface with Reclamation's biological people and some concrete work that is done.

A good example is one of our big critics here in Redding was a biologist by the name of Harry Rectinwaugh [phonetic] who worked for Fish and Game. Harry was a good man. I knew him personally and still do. He was not a radical or anything like that, but he had all these weird ideas that when we fluctuate the river too fast, we strand fish, or when the temperature's too warm, the eggs die. You know, we thought, "Well, don't *bother* us with that." And Harry became very frustrated because we did not see the problem the way he saw the problem and we did not give it the importance that he gave it importance, because coming from a biological background, he could see what was happening and we didn't. We didn't see that. We didn't see dead fish and we didn't see the impact ten years down the road on the returning salmon, and all that stuff. So there was a lot of confrontation with him.

Well, then we started to get our own staff and our own people and we started to look at these issues and we started to change, and he's now one of our biggest supporters. He has the confidence that if there's anything we can do, we'll do it. So we go in and say, "Harry, we've got an extra hundred-thousand dollars this year. Can we buy some gravel, spawning gravel, and dump it up below Keswick so it can wash down the river during the flood season?" You know, Harry is just elated with things like that. And so now he realizes that Reclamation is really going to try to correct some of these problems, and we have. We've changed a lot of our policies on how we operate the rivers and the reservoirs and so forth. So he's one of our supporters in that regard.

"Of course, the worst thing that could happen is we get a commissioner in there or somebody in there that starts to turn us back the other way. That would be very, very disastrous to us. . . ."

It's going to take time to broaden that to other people in other agencies to where they will accept that, that we have actually changed. Of course, the worst thing that could happen is we get a commissioner in there or somebody in there that starts to turn us back the other way. That would be very, very disastrous to us.

Storey: Can you sort of trace the history of where you were on environmental issues after you became superintendent at Shasta and what the turning points were?

At First the Environmental Issues He Confronted at Shasta Had to Do with Pollution by Materials Such as PCBs and Asbestos

Capener: I guess the environmental issues that I was originally concerned with were more in pollution, EPA [Environmental Protection Agency]. We started to become aware of such things as PCBs[6] and toxic wastes and things of this nature because we use them. A lot of our transformers had this hazardous waste in them, this PCB stuff.

So laws were passed that said you've got so many years to change out your transformers and everything else. So we started to look. We started to look not only at that, but we started to look at similar-type things that were hazardous wastes, and we found a lot of them. We found practices of dumping in ravines that fed into the river, and we found practices of remodeling things and taking the asbestos particle boards and so forth and just dumping them someplace. Then, of course, the original generators, the windings of those generators, were asphalt, mica, *and* asbestos. So they used asbestos in them. I don't know how many of those we shipped down to the scrap dealers in years past with the asbestos in them. But it generally was not friable asbestos, so it didn't really create a hazard, but it was asbestos, so you had to treat it differently. Floor tile had asbestos in it. Ceiling tile had asbestos in it. Wallboard had asbestos in it. So many things. Insulation had asbestos in it.

So we went through a period of several years of going through and changing some of our product lines, changing some of our equipment out to get rid of all this hazardous stuff, trying to clean up the yards, clean up everything else. So that kind of opened the door to being more environmentally safe.

Pollution in the Sacramento River from the Iron Mountain Mine and the Spring Creek Debris Dam Were Recognized as an Issue

Then the issue of Iron Mountain Mine came up. Iron Mountain Mine is in the watershed that partially drains into Sacramento River and into Keswick Reservoir, and the Spring Creek debris dam, which is one of our facilities, was built to kind of *impound* some of the runoff from Iron Mountain Mine, because it's very toxic, very high acidic and iron. We used to just kind of empty that reservoir out during the wintertime and during the early summer.

Storey: Why?

Capener: Well, because it's a small reservoir, so you can't have any carryover water in it. It has to be empty before the next rain season. It's not large enough to take it. So the idea was that we would capture the big flows out of the Iron Mountain Mine watershed or drainage, and then we would regulate those flows from the debris dam into the Sacramento River through Keswick Lake at levels at such that it wouldn't kill the fish.

Storey: So in the winter there was more water? I don't understand why you would drain it in the winter.

6. Polychlorinated Biphenyls (PCBs). Note that the interviewee said P-B-C, rather than P-C-B.

Capener: Well, we drained it in the winter. We increased the releases out of it in the winter. It may not be drained. But we do that because that's when the high flows occur in the river. So if the flows are high enough, then we can have very high flows out of the debris dam, and it may very well drain it down. Then it might fill it up again a month or two later.

". . . to us, it meant the risk of dumping water that we may not be able to recover, because some of the new standards that would be required is that we would have to actually increase the releases out of Shasta to provide enough *dilution* flows to accept the water out of Spring Creek Debris Dam, *dilute* it to a level where it wouldn't be harmful to the salmon and the egg . . .Slow but sure, came the realization that we should do that, even though it was not one of our authorized functions. So we ran the risk of dumping irrigation water . . . and foregoing power . . ."

So we started to do that, and that's when we kind of really got in with it with Fish and Game, because they would come in and tell us, "You're releasing too much water out of the debris dam, and it's impacting the eggs." We had certain standards that we had to go up to and supposedly assure us that that would not happen. But those standards were based on old technology, and Fish and Game wanted to change it. They said, "We've got to look at new technologies. We've got to look at new standards." Well, to us, it meant the risk of dumping water that we may not be able to recover, because some of the new standards that would be required is that we would have to actually increase the releases out of Shasta to provide enough *dilution* flows to accept the water out of Spring Creek debris dam, *dilute* it to a level where it wouldn't be harmful to the salmon and the egg and early stages of development.

So we could see that it would be very easy to dump fifty-, seventy-five or a hundred thousand acre-feet of water out of there over a period of a week just to dilute the water out of the Spring Creek debris dam, and that was water that could become very critical during the summer to provide for agriculture. So we were kind of non-believers. We felt, "Is it really necessary to do that?" You know, kind of dragging your feet. Well, the more we got into it and the more that the biologists started to look at it–and at that time we didn't have our own biologist here. We had maybe one down in Sacramento. Slow but sure, came the realization that we should do that, even though it was not one of our authorized functions. So we ran the risk of dumping irrigation water, which is–

END SIDE 2, TAPE 1. MARCH 27, 1996.
BEGIN SIDE 1, TAPE 2. MARCH 27, 1996.

Storey: This is tape two of an interview by Brit Storey with J. Paul Capener on March the 27th, 1996.

So we were taking the risk of dumping irrigation water and foregoing power, which were authorized purposes for the project.

Capener: For the purposes of diluting water for salmon eggs, which was *not* authorized, at least

not at the same level. So we fought that battle. We'd come back to Fish and Game and Fish and Wildlife and we'd use the argument, "Well, providing water to the fish under these conditions is not an authorized function of Reclamation, so don't bother us."

It Took Time for Reclamation to Understand the Impacts of the Project on the Fish and Recognize That Policies and Priorities Had to Change

It took a little while for *us* to really grasp the magnitude of the problem. Once we started to see that what we were doing in regards to impact on the winter-run salmon and the spring-run salmon and some of the other strains of fish in the rivers, it became very evident that we had to commit some water, we had to change our policies, we had to change our priorities. And we started to do that, and that's when we started to make believers out of some of the fishery agency staff people that we were taking this thing seriously and we were going to change.

Then subsequent to that, you know, it's going back maybe three or four years ago, we've certainly put a lot of efforts into it, a lot of money, and a lot of *cooperation* to try and work with the problem and work with the people, and we are developing a very good rapport, at least at the local level, with the fishery biologists and those in similar positions.

Storey: So where do we stand now? Have we gotten everything we would like to do started?

Capener: I think we've identified everything. We've either identified a very real issue or we have identified something that needs to be studied but is at a lower priority. So once you free up some money and staff on the higher-priority critical items, and there's a waiting list of other things that have to be looked at. I think we've looked at the entire not only the Central Valley Project, but also over on the Trinity River. That's a separate authorization and a separate watershed and has some quite unique problems.

Regional Director Has Been Working on a Coalition to Address the Issues

But I think the fact that our regional director has worked closely with EPA and with the state and with Fish and Wildlife Service in trying to resolve the issues down in the delta, they came to the Delta Accord, where they signed a document making commitments involving both EPA, and the Bureau of Reclamation, and DWR, state of California, and the Fish and Wildlife Service, *that* was kind of the real *highlight*, I guess, of a lot of efforts to bring people into focus more on a holistic point of view than each agency trying to solve the problem their own way, but to bring everybody together to work on the problem and cooperate and work together to resolve them.

I think that there's two levels, at least from my perspective, of where we have good cooperation, and that's the working level at the area office and then the working level at the regional office, because Fish and Wildlife Service is in the same building. So the director and the assistant directors and their counterparts over in Fish and Wildlife Service have very a good working relationship.

There's still a narrow band of challenges, I guess, in staff, and that is, those that aren't out in the field, that are not the leadership of the agency in Sacramento, there are still some people there in the organizations, mostly in the Fish and Wildlife, at least from my perspective, that have not yet been convinced that Reclamation is serious about what we're doing. They still feel that there is some debt to be paid by Reclamation for all the wrongdoing, and so, "We've got Reclamation on the ropes. Let's beat them up a little bit before we let them go."

Storey: Uh-huh. These are in other organizations?

Capener: The ones that we've encountered mostly have been in our sister agency, Fish and Wildlife Service, at the kind of the staff level at their regional office. They're coming in and saying, "We've been trying to tell you guys this all along, and now you finally agree to it, and now you expect us just to forget everything of the past?" They want to draw a little blood out of you first. (laughter) But their leadership doesn't reflect that. The leadership is certainly very cooperative, as are the people out in the field. When we work together with them, they're very cooperative.

But it's kind of interesting. That's where you get into some of the personalities, and some of your actions of the past come back to haunt you. Because you say, "Ah, who's a fishery biologist? They're nobody. They don't know anything. They just go out and catch fish and I do that, too, on the weekend." And so there was kind of a little bit of professional rivalry there, I think, that was a little misplaced, and now it's coming back maybe to haunt us a little bit.

Storey: You've mentioned the releases to dilute Spring Creek Debris Dam water, and you've mentioned releases bypassing the hydro in order to try to stabilize the river temperature. Have there been other operating effects on Shasta or other components of the project from environmental issues?

Other Operating Effects on the Project Caused by Environmental Issues

Reclamation Loses the Use of Water for Irrigation and Hydropower Generation and Then Water and Power Have to Be Purchased to Fulfill Contractual Commitments

Capener: There has in the sense of maintaining higher flows during certain times of the year– in the late winter, early spring, January, February, March–to maintain flows of maybe five or six thousand cubic feet per second when we really do not have a surplus of water in storage. And so by keeping those flows up at, say, six thousand cfs, we run the risk of not filling the reservoir. In the past, we would have those flows maybe down to three thousand. But because of the way we have operated during the early part of the season, you tend to establish spawning beds and fish habitat that if you then drop the river down, you will dry those up and kill the fish. So that's why once you establish kind of a minimum release at a certain time of the year, you don't want to go below that.

Even this year our releases right now are up around probably six thousand cfs,

but the reservoir has less storage in it than it did last year. We didn't fill last year. So, you know, ten years ago we'd have the releases down to maybe three thousand, four thousand, to try and add storage to the reservoir. And the same is true over on the Trinity River. The Trinity River we felt at one time that about 120,000 acre-feet of water released at Lewiston, which is the regulating dam *on* the Trinity, below Trinity Dam, about 120,000 acre-feet of water would be *sufficient* to maintain the river throughout the *entire* year. So you'd maybe release five hundred cfs as your maximum during the day, and then that accumulative amount would add up to about 120,000 acre-feet. Then it went to 180,000 acre-feet. We conceded that maybe some more was required. Now, with all the studies and everything else that's going on, they're talking about a quantity of water up close to 300,000 acre-feet that should be committed to be released out of the Trinity River, out to the Pacific Ocean to maintain the fisheries and the riparian habitat of the river and to try and correct some of the problems that occurred in past years from *lack* of *flushing* flows. That's water that does not go through three generators or three generating plants. That's water that normally would have been diverted over through Carr powerplant into Whiskeytown and then into Spring Creek Powerplant into Keswick and then through Keswick powerplant. So we're losing substantial amounts of generation, and we're losing the water that could have been used for irrigation purposes and other purposes. So that's probably 150,000 acre-feet of water. The final amount is still uncertain. They're still working on it.

Storey: How do these changes in the way we operate affect the economics of the projects?

Capener: Well, we don't get any money for the water that we release down for the environment, so it does affect the economics of it very definitely. It's water that's not sold to the farmer, and so our revenue from water sales is affected. If we have to bypass powerplants, then we lose a lot of revenue that we otherwise would accrue through generation, and Western Area Power Authority ofttimes has to go out and replace that by buying energy. So they have to go up in the Northwest and purchase the energy to meet their contractual commitments. So that's kind of a double whammy. Not only do we lose the revenue, we have to go out and buy at least *part* of that energy back to meet contractual commitments.

"So it's affected the repayment abilities and so forth. I guess what really needs to be done is that the Congress really needs to go back and reallocate the costs on the CVP and put [in] more of those as non-reimbursable costs that are now going to the fisheries and so forth, so that they will be wiped off the books. . . ."

So it's affected the repayment abilities and so forth. I guess what really needs to be done is that the Congress really needs to go back and reallocate the costs on the CVP and put [in] more of those as non-reimbursable costs that are now going to the fisheries and so forth, so that they will be wiped off the books.

Storey: Yeah. Let me ask the question a little differently. Maybe I'll get to what I was thinking about. When we bill for projects, if I understand it correctly, we would do a cost-benefit ratio analysis to determine whether the projects appear to be economically viable. Has anybody thought about going back and looking at these

projects, *given* the loss of revenues and the loss of benefits, or do you factor in these environmental benefits? How does that work?

Capener: Well, if you're going to go back and do it all over again, you would definitely factor in the environmental benefits, and then they would become non-reimbursable, which would not detract from your cost-benefit ratio. That's one of the things that needs to be done. Now, in the interim, what you're doing is that you're living off of a *very good* cost-benefit ratio that initially was put together. And the other thing you have to do then is increase your revenue stream through the sale of your water. So the cost of the water goes up to the farmers and others who purchase it, so that you *do* have enough revenue stream in to meet the obligations under the original assumptions of the payout and so forth.

This is something that we're doing in water contracts is to correct a number of oversights on revenue such that the project *will* be paid out by the year 2030, I think it is, which is long after the fifty-year payout period, but it would be extended to the year 2030. So that means that you have an adjustable water rate. It will be adjusted each year, and it will be adjusted such to ensure the payout over this period of time. One of the mistakes that we made under the original contracts, which were thirty-year contracts, we had a fixed rate, three dollars an acre-foot or four dollars an acre-foot, I forget exactly. It varied a little bit, but it was very low. Nobody had anticipated inflation.

Storey: That was back when we got 2 and 3 percent on our savings accounts.

Capener: So inflation came, our expenses went up, and our revenue stayed basically the same. So we really went in the hole.

National Recreation Areas Managed by the Forest Service and Park Service

Storey: As I was driving to Hayfork yesterday to meet with this guy who works for me, I drove into, I think it was called the Shasta-Trinity-Whiskeytown National Recreation Area, which is managed by the Park Service.

Capener: That part of it is, yes, that you drove into. The Shasta-Trinity National Recreation Area was formed by Congress quite a number of years back, and it covers basically the area around Shasta and the forest around Shasta and around Trinity and around Whiskeytown. It's just one great big chunk of hundreds of square miles of lands.

It's interesting that when that was formed, the Forest Service and BLM [Bureau of Land Management] were the principal land administrators, and so the Forest Service, naturally, they had a national forest on some of this land, so they were the ones who would take over the administration of the forests. For some reason, they didn't want to be bothered with a little thing around Whiskeytown, and they came in and said, "Well, you know, we really don't want to be bothered with that little bit of land around Whiskeytown Lake. Why don't you try and find somebody else to administer that? We'll stick to the Shasta-Trinity National Forests," under the then current existing Forest Service boundaries.

So they said, "Oh, well, okay. We'll get the *Park Service* to do it." So the *Park Service* kind of came in and they just administer a little bit of land around Whiskeytown Lake and the recreation on Whiskeytown, and that's all that they have.

Dealing with the Forest Service and Park Service on Reclamation's Projects

Storey: OK. Well, that's interesting. Tell me what kinds of issues arrive for Reclamation in *dealing* with the Park Service and the Forest Service as the managers of recreation areas on our lakes–on our reservoirs.

Lake Levels and Debris in the Lakes Are Two Issues

Capener: They're not really what I would call barn-burning issues. They deal mostly with lake levels. The Forest Service would like to see the lake levels held high during the recreation season, because they have a lot of resorts that operate under their license, licensed by the Forest Service. They operate houseboats and concessions and everything else on the reservoir. So they like to see them do well, so they'd like to try to keep the lake up high. They're not really *demanding* anything, it's just a desire on their part. But they've never came out and really been critical of the way we operate our reservoir.

The other thing that we share jointly in common is the debris problem on the lake. There's a lot of debris that comes into *all* of our reservoirs during the wintertime with the increased flows from the tributaries, so the Forest Service has the responsibility of the surface water. So they had to try to get rid of all of that stuff from a safety point of view, because if you drive a boat thirty miles an hour around the river, you don't want to hit a big old log that's two inches under the water. So we used to try to help them out a little bit, because they never did have enough money to do it all. So they'd come to us and say, "Can you spare a front-end loader or something to come down on the boat ramp and help us move things and help us get the debris out?" So, yes, we would. We had equipment that could benefit them. So we had kind of a little work relationship there with them.

Then they ran out of money completely and so they said, "We're not even going to bother to take the debris out of the reservoir at all. We'll just let it beach as the lake goes down, and then we'll try to go around in some areas and pile it up and burn it." And they'll use the conservation crews. These are minimum security people from the local jails, and penal institutions, and so forth. They'll come out and use that labor to do it.

Fisheries Issues

The other issue we get involved in is one of the fisheries in the sense that we have to try and operate our reservoir so as not to dry up the spawning areas once the fish have spawned, because the bass and some of the other fish, they spawn in water that's maybe eight, ten feet deep along the shoreline, and if we drop the reservoir too fast, then we may expose that line before the fish hatch out and get out into the reservoir. So we've had to modify our operations a little bit to accommodate that as

far as we can. By juggling water between the various reservoirs, we accommodate them. And it seems to work good. They seem to be pretty much content with it.

Bald Eagle Issues

The other is an issue that we have up there with the bald eagle. We have quite a few bald eagle pairs around Shasta Lake and Trinity Lake, and even there at Shasta Dam–every once in a while you'll see a bald eagle. The issue there is that if the lake gets too low, you affect the *feeding* grounds for the bald eagle. They have to go *too far* from their nest to get fish from the lake. So there's a study that was begun about three years ago, jointly between us and the Forest Service, to study the habits of the bald eagles around the lake and see how lake level impacts the survival and the growth of the bald eagles. That's still going on. It's handled with the biologists here out of the local forestry people and the Bureau's office up there.

"Whiskeytown, we keep the lake up during recreation season . . . So that's an excellent recreation area. That's where most of the *local* people go. . . . The *tourists* go to Shasta. . . ."

So those are the kinds of issues that are similar on Whiskeytown, although not of the same magnitude. Whiskeytown, we keep the lake up during recreation season, because we control both the inflow and the outflow, so that lake is *full all* summer long. It only drops down a foot to reduce the erosion around the bank. So that's an excellent recreation area. That's where most of the *local* people go. They don't go up to Shasta. They go to Whiskeytown. The *tourists* go to Shasta. The people from San Francisco and LA and everyplace else, they send them all to Shasta, and the locals go over to Whiskeytown, because that's their own little private lake, they think.

Reclamation Provides its Safety Officer to the Park Service at Whiskeytown National Recreation Area

There's no real environmental issues, *per se*. There are a few things that come up and we work out as they do, but it's a good working relationship. We share resources occasionally. We have an agreement with the Park Service to provide them safety services through our safety officer, so he goes over and does safety inspections for them and so forth. They're too small to have their own professional safety man. So we have an agreement to do that for them. I think it's a good relationship, a good working between them.

Storey: Do they try, for instance, to get money for development of facilities or anything like that?

Capener: Not from us, no. They get their own appropriations or their own fees or whatever their resource funds are, but they don't ask us for any fund participation.

Relationship with the Western Area Power Administration

Storey: Another agency would be WAPA, Western Area Power Administration. Do you have a lot of interaction with them at your level here at Shasta and, if so, what is it?

Capener: No, not now. We had quite a bit of interaction with them when we made the split, and we were trying to really make the thing work as far as who did what and whose equipment belonged to Reclamation, what equipment belonged to WAPA, and *how* we were going to let them into our powerplants. Did we trust them or not to come in without any of our people being there? You know, those kinds of things. Some of our people once WAPA was set-up. They held a little resentment towards them, because they felt it was not necessary to begin with, to split the system up that way. So there were some of the people that said, "Well, you can't let a WAPA technician into Carr powerplant to look at relays for the transmission lines that they service without having a Bureau person there."

And we'd say, "Why?"

"Well, they're not Bureau people. You can't let them in there. We have to have one of our people there to watch them."

So you went through *that* until you finally built up enough trust that, yeah, they can go in. They know what's going on. They can go in by themselves and do it. So that took several years to work through that, and now WAPA is really more oriented towards meeting the needs of their customers and building additional transmission lines, interties, and so forth. There's not a lot of construction or other activities going on in *any* of our facilities as a result of WAPA. So it's a pretty good relationship.

There was some resentment when WAPA went out and started to build buildings in *our old* switchyards that they now *owned*. They'd go in and spend a million dollars building a building that we felt was not necessary because it just took the stuff out of *our* warehouse and put it in *their* warehouse. Why couldn't they just leave it in *our* warehouse or in a shop that they had that was across the river? And now they wanted that shop located over in their switchyard, so they built a new building for them. Why couldn't they just use the old shop? Why? We saw that type of thing, and there were comments about it. That's pretty much gone now, and we have very little interface with them except when they have to come in and we do some common maintenance on joint radios and microwave systems, things like that.

Now it's a good working relationship. They just call up one of the technicians on our staff and work out details or call up the operators at the powerplant and work out details on, "Hey, I've got to go into your building at a certain time." Fine. It's all done.

Storey: We started talking about people. Another interesting group of people are the chief engineers. Let's see, you came to Reclamation about the time Barney Bellport was chief engineer. It was after '63, wasn't it? I'm not recalling exactly.

Capener: Yeah, I came in '64. June of '64.

Storey: Did you ever meet him?

Capener: I met him at some general-type meetings. Obviously I didn't have any work that involved meeting with the chief engineer or many of his staff at *that* time, because my engineering duties were not of that magnitude that I would be going to Denver.

I guess the chief engineer's office serves, obviously, a very important function in the design and dealing with what I would call non-routine or non-traditional problems, technical problems. A lot of our dealings with Denver were with those non-traditional problems that kept up since the facilities were already built. So we'd have something crazy go wrong with our generators and we couldn't figure out what in the world it was, and the region couldn't help us at all, so we'd go to Denver.

Lyle Klataske in the Denver Office

But we'd deal with staff like Lyle Klataske and others there who were–I mean, they were state-of-the-art engineers in rotating machines. They sat on the IEEE governing board and wrote papers and all that type of stuff, and *good* people to work with, and we got *good* results from them.

"We just *really liked* to work with them . . . we learned some things . . . they were very pleasant to work with. Our biggest criticism was that they never would find time to come out, and they never published enough. They knew all that stuff and . . . They wouldn't write stuff for the benefit of everybody else. . . ."

We just *really liked* to work with them, because we learned some things, and they were very pleasant to work with. Our biggest criticism was that they never would find time to come out, and they never published enough. They knew all that stuff and they wouldn't write little books about it. They wouldn't write articles. They wouldn't write stuff for the benefit of everybody else. I swear, every time I went back there and talked to Lyle Klataske, I said, "Lyle, you've *got* to put all this knowledge down in articles and documents and books and everything else and *get* it out to us."

"Oh, I will." He'd say, "I will." He was one of the most busiest people there and, obviously, he didn't have time to do it, not yet, at least.

"The times that I would go back there . . . for design approval, where . . . the chief engineer's office would sign off on designs before we would then issue contracts, my impressions were that we'd have two people or three people from the region go in and there'd be fifteen people from Denver in the meeting. . . . We really got the feeling that there were just too many people back there *involved* in everything, and to try and find one person that could make a decision at some of these technical levels was very difficult. . . ."

The times that I would go back there on maybe some larger issues where we were going back for design approval, where we had to sign off on designs and then the chief engineer's office would sign off on designs before we would then issue

contracts, my impressions were that we'd have two people or three people from the region go in and there'd be fifteen people from Denver in the meeting.

Storey: This would be in Denver?

Capener: In Denver, right. A lot of them would just not be too involved in the discussions. They were there representing their expertise and so forth, but you got the impression that, "We sent three, you guys have three people there, and we'll work out all the problems and save a lot of time and money and everything else." We really got the feeling that there were just too many people back there *involved* in everything, and to try and find one person that could make a decision at some of these technical levels was very difficult. You could find somebody that would tell you what needs to be done, but then they'd say, "I've got to run it through so-and-so and up to this guy and this guy and they've got to look at it and approve and everything else before we can send you a letter back approving what I just told you was the way to go." So it would be several weeks later and we'd get a letter surnamed by half a dozen different people out of Denver that basically concurred with the things that our engineers and one or two engineers in Denver had agreed upon.

So the *bureaucracy* was something that we always felt was an overkill, and we kind of made the interpretation that–two things. One, you have to have a lot of people on standby, if you will, in a construction company, and so we felt that a lot of these people were on standby because the Bureau was still building projects. So you don't fire all of your staff when you're doing contracts. And that we could understand. The other thing was that we felt it was such a large organization that maybe there's people that really didn't understand–

END SIDE 1, TAPE 2. MARCH 27, 1996.
BEGIN SIDE 2, TAPE 2. MARCH 27, 1996.

Storey: You were saying it looked like it was an organization where folks didn't understand the inefficiencies that were going on.

The Denver Office Seemed Inefficient, and it Was Difficult to Get Information on Your Financial and Budget Status Regarding Work in Denver

Capener: So we felt maybe the leadership division heads and assistant directors and so forth, they didn't really understand how many people were involved in trying to resolve problems that we thought could be handled by two or three people, they may have had five or six people working on it. We didn't really feel motivated to confronted them with it, because they had to do the work for us. If we upset the apple cart, then maybe the work wouldn't get done in a timely manner. Then, of course, we thought to ourselves, "Well, maybe we don't know, since we don't work there all the time." But that was our impression, that it was really overstaffed with too many people.

Now in today's Technical [Service] Center, it's a different story because they have gone through a downsizing that has really brought the level of staffing down. I've kind of lost track of it, but I kind of have the impression that it's much better

now in the sense of still having good technical work but not having all the people there.

Some of the things that have bothered us, and still do, is not in the engineering aspects, it's more in the business aspects of Denver, finance, your budgeting and all that stuff, where we find it very difficult to get any kind of information on our financial status and our budget status and so forth, because it is just *so* many people involved.

Felt Functions Should Be Decentralized out of Denver

We always kind of felt that a lot of that shouldn't even have to go to Denver, that we should decentralize some of those service functions, whether it's personnel, or whether it's accounting, or whether it's budget, or whatever, that we should try to decentralize that. And the opposite has been true. Denver centralized and even [has] gone out and picked up work from other agencies using their staff and so forth.

So, you know, it's just a difference of opinion. They look at it that they can serve more people and more agencies if they have the resources there. The bigger the organization, the more difficult it is to sometimes get results out of it. That's true in the private sector as well as government.

Storey: Did you have the feeling it cost too much to use Denver? Was that part of what was going on?

"In the past, we would have to agree to pay what we felt were *really* high prices, very, very high overhead costs. So we'd be very reluctant to send anything to them. We'd try to get things unofficial. . . ."

Capener: In the past it was. In the past, we would have to agree to pay what we felt were *really* high prices, very, very high overhead costs. So we'd be very reluctant to send anything to them. We'd try to get things unofficial. We'd call up on the phone and talk to people like Lyle Klataske and others. If it was not a very complex thing, they'd tell us in maybe twenty-, thirty minutes what the answer was and that's as far as it went, and we went and did it. We didn't make any official submittal.

But I think the high cost of Denver has finally, at least in part, been resolved with the downsizing and their attempts to streamline and be more competitive financially. I think there is competition now, because we don't always go to Denver for everything. We look at our own in-house. We look at A&E contracts [architectural and engineering contracts]. We look at other people that can do the work locally, give *them* a chance to bid on some of that stuff. So I'm sure that it's on the right track and it will find its level of competency there that will reflect staffing level and the type of functions and expertise that they need to provide the Bureau.

Storey: What was your impression of Barney Bellport when you met him?

Barney Bellport

Capener: Well, I guess my impression was that he must be a very smart individual because of the position he held. I don't know, I guess he was kind of a person you didn't argue with. If he had an idea or an opinion or something, why, that was probably the way it was going to go. So if you wanted to have a certain decision made your way, you didn't wait until he made the decision; you tried to get to the staff of people working on it, get *them* to make the decision, then make the recommendations to Barney. I suspect that that's probably true with a person in his position, that when you've come to what you think is the thing to do, you do it, you go ahead.

Storey: Next person in that position was Harold Arthur. What were your impressions of him? Did you ever meet him?

Capener: I don't think I never had much working relationship with Harold.

Storey: What about Bob Jansen?

Bob Jansen

Capener: As I remember, Bob was more of a personal kind of a guy. You kind of related to him as more of a working engineer. You felt more comfortable talking with him.

Storey: Of course, that was after you were here at Shasta, and he was brought in from the outside. How did people react to that?

Capener: I think we looked at it as good. I think we felt that it was good to get somebody from the *outside* with a *fresh* view of things, that didn't have a lot of debts to pay or a lot of enemies or a lot of friends that they would favor. I think that we felt that it was a good thing to do; it would give Reclamation maybe a fresh look at things.

Storey: Do you think other people shared that view?

Capener: Oh, I'm sure some did and some didn't. I think some looked at it as maybe a threat to them to dismantle, that more things would go out under contract to private-sector engineering firms, things like that.

Storey: After Mr. Jansen was Rod Vissia. What do you remember about him?

Capener: Well, I guess I'd met Rod before he was in that position. I think that makes a difference if you know somebody in a different light, a different job or something. You tend to be able to accept them in a higher position. I had very little dealings with him and I didn't have any real concerns one way or the other.

Storey: And the last one was Darrell Webber.

Darrell Webber

Capener: Darrell, of all of them that I've been associated with, I think Darrell was more visible.

Maybe that was just because of the nature of the business that I had to bring before [him], but Darrell seemed to be at more meetings and so forth. We kind of looked at it as maybe there was a little bit of a battle of hierarchy going on between Darrell and the E&R [Engineering and Research] Center and the regional offices and the commissioners. Sometimes we sensed maybe there was a little bit of politics being played on who would be the spokesperson and who would be the deciding official for certain and various things. He gave you the opinion of being very much in control and sure of himself and, by and large, he said and did things that everybody agreed with–accepted.

Storey: You've already touched on this, but I'd like to explore further. What are the boundaries of responsibility and how did the various offices relate to one another? You have Washington, you have Denver, you have the regions, and you have the projects or the area offices. How did that interaction work and who was responsible for what?

Division of Responsibility among the Various Reclamation Offices

Capener: Well, we always kind of looked at the region as probably one united front.

"Even the various offices in the region, we would not criticize each other outside the region. . . ."

Even the various offices in the region, we would not criticize each other outside the region. We felt that this was the brotherhood, we're all together in the region, so we'd support each other. Once you get out of the region, all bets were off. So you could criticize other regions and you could make fun of them and you could call them whatever, you know, that they spent too much money or they didn't do things as good as you did, and that was fair game. I think part of that was just healthy camaraderie in that you didn't mean anything ill by doing that to them. It was you just couldn't let them think that their region was better than your region.

Every time I talk to whoever happens to be managing Coulee, I'd say, "Oh, that's the other Shasta," because I never will concede that Coulee is bigger than Shasta or any *better* than Shasta, you know. They take a second seat to Shasta. We're the best dam. But I think that's okay.

"Washington, . . . we always looked at that as just a real political thing and we just hoped they would keep their fingers out of our work. . . .the best thing they could do for us is to get us a good budget and work with the Congress for us. . . ."

Washington, I think we always looked at that as just a real political thing and we just hoped they would keep their fingers out of our work. They wouldn't get down to the level of trying to find out what we were doing and how we were doing it, that they'd deal with the political things, they'd deal with the Congress, they would deal with the states, the political aspects of the state government if necessary. And the best thing they could do for us is to get us a good budget and work with the

Congress for us.

". . . the E&R Center . . . the service we got out of them, I think, was *always* good in the sense it was good engineering. . . . We thought it was too expensive. . . ."

Then the E&R Center, it's mixed feelings. Again, the service we got out of them, I think, was *always* good in the sense it was good engineering. The cost was always a factor that we became concerned with. We thought it was too expensive. But the people we liked. We enjoyed going back there and visiting with the people at the working level. I don't know if that answered your question or not, but . . .

Storey: How, for instance, did you split the responsibilities between the regional office and the project office, and how did that change during your tenure?

Capener: Well, when I first came, we had responsibility for all operation and maintenance that we did out here. We'd set our own schedule. We'd do everything, take care of it. If we had problems, we would go to the region and ask for technical assistance on our operation and maintenance programs.

Some Non-technical Administration Services Provided to the Offices Weren't Realistic

They provided a lot of the nontechnical services in property control, in finance and budget, oversight stuff, which many times we did not like, because we felt like in property management they were sometimes insensitive to what the real world was like and what our problems were, and that they would go more for, "Well, the book says this, so you've got to do it." They would take that position rather than, "Well, we'll see if we can't find a way or an angle to let you continue to do what you're doing."

I think a good example is the regulation that governs the ratio of vehicles to employees. You're supposed to have, I think by the book, one vehicle for every four people that you have. We had one to three or one to two and half. They would come back each year and say, "You've got to get rid of vehicles because you have too many. It doesn't look good on our report." And we'd say, "Well, we can't. You can't put four people in a vehicle to go around and do work at three or four different locations and they sit around waiting for the ride to the next plant." In our work, many times you send one person out to do something in a vehicle and you send another one out to do something by themselves in a vehicle. And so you went around and around on this type of thing.

". . . the problem with finance was that they had a tendency to change your budget without telling you, and you'd get a report and find that they've cut money out of your program and never bothered to ask you why or the impact of it. . . ."

So we didn't feel that the administrative functions in the regional office were that supportive, not like the technical stuff. And the same with personnel. Finance was not quite as bad, but the problem with finance was that they had a tendency to

change your budget without telling you, and you'd get a report and find that they've cut money out of your program and never bothered to ask you why or the impact of it.

So that was the way it started out. There was quite a feeling of, I guess, *rivalry* in some instances. The region felt that that was their decision to make, and we felt that, no, it was our decision to make, and we'd take it to the assistant RD or somebody else and try to work through it. They didn't like to deal with that stuff either, the assistant regional directors. They'd rather that we work those problems out ourselves.

How Implementation of the Area Offices Affected Relations with the Region

Then things started to change. They started to take a little different look at the area offices, the field offices. Once they made the area office concept, then the emphasis was put on the *area* office and the regional office would only be a supporting office and the *area* offices would make the decisions and they had first call on the work. If they couldn't do it, then they could ask the region to help them. And we're still going through that transition. I think that there's still some areas where we're feeling our way, because you just don't, with the stroke of a pen, give people the knowledge and institutional background to be able to pick up and carry programs. It takes a little bit of time to get your feet on the ground.

It's like the water conservation programs that we have with the irrigators. That was all handled out of the region at one time, and now the idea is that each area office will handle their *own*. We have a water conservation specialist down in Willows, and that person then will deal directly with the water districts and sign off on water conservation programs and everything else and then won't have to go to the region.

The budget program is working to where we formulate our own budget in our program. We do all our own tracking. We take care of everything else. We just send it down to the region to be compiled in the package representing the region. Now, that's interesting if that works, because, you know, we haven't actually achieved that yet.

So the philosophy now is to empower the area offices and give them the authority to do everything as long as it's practical for them to do it, as long as they've got *enough* of a particular *workload* to justify the expertise doing it. If you're a real small office, then probably you're going to have more of your stuff done out of the regional office. But I would think here at Shasta that as the years go by, most all that stuff will be handled out of the area office, because we have a *tremendous* opportunity to extend out to the counties and to the state and to the geographical area with a lot of services, a lot of technical service, a lot of engineering and biological and environmental services that we can extend out, too. I think that's where Reclamation gets into resource management, being able to do that.

Storey: Uh-huh. Maybe one last question before we go to lunch. You were a project manager, an area manager, for about twenty years, which is a fairly long time to be in

a position like that in Reclamation. Where did you perceive that the danger areas were for an area manager, the things that could cause him to be moved elsewhere and that kind of thing, the sensitive areas, if you will?

Sensitive Areas a Project Manager Has to Deal with

Capener: The sensitive areas, I felt, were dealing with congressional people, your local congressional staff here, or others that may come for whatever purpose. You had to be sure that you gave them the courtesies, to not criticize them, did not openly criticize the administration. You had to be very careful on what you said, if you took exception to what was going on in Washington, either by Reclamation or by others, because we're often quoted in the paper. I mean, hardly a week went by that there wasn't interviews with the TV or with the newspaper on water issues and so forth, and they'd always say, "Oh, by the way, what do you think about this?" And they'd want you to talk about changing the criteria on land classifications, or is Washington doing this right, or something like that. So you had to be very careful *not* to overstep your expertise and give opinions in that context of being around news people or people from other agencies or so forth, where that might get back to the leadership of Reclamation or the political leadership.

I think you wanted to be very careful you didn't do anything that would discredit Reclamation as far as your personal actions were concerned, your personal life. You didn't want to be arrested for drunken driving or things of this nature or anything that would reflect upon Reclamation. You wanted to be careful not to criticize the leadership. I think the leadership in that context would be like the front office in the region, not to criticize them to other people outside of Reclamation or even to some people in Reclamation, because we didn't always agree with what the regional director might do, but he's the regional director and it's his decision, and we support him, and we should take that position. You don't go around behind his back and discredit him or call him names or something, because any leader needs the support of his people. I would expect the same support from my people, because they didn't always agree with what I said, but I expected their support, and it's only fair to give that to the regional director.

Jim Cook

So those are areas that you want to be very careful about, or come out with some off-the-wall statements in a meeting or at a press–I'll give you a give example of somebody that did that. Jim Cook, who was chief of our Planning Office here in Sacramento. At that time, issues down in the [Sacramento River-San Joaquin River] Delta were being discussed and haggled back and forth and everything else, and Jim came out with a statement that was published in the press about some of the islands down in the Delta. He says, "Well, they ought to just breach the dikes and flood them all, turn it back to the way it was before the dikes were built, and it would save everybody a lot of money and hassle." Well, that didn't go over well at all, and it wasn't long after that that Jim went back to Denver. He was transferred back. Although in theory, there was a lot of thought to what he said, but the way he said it and the apparent disregard for the consequences just sent a whole different message.

So it's those kinds of things you have to be careful with. You have a lot of opportunities in interviews with the news media to say critical things about others, other agencies, because they will ask you, "What do you think EPA is doing about this problem? Do you think what they're doing is right?" And you could come out and say, "No, they're doing it completely wrong. They're wasting the taxpayers' money. It's never going to work." And that may be true, but that's not what you say. (laughter) So you have to be very careful about it.

And I think you have to treat your people right, the ones that work for you. If you try to abuse your people, eventually it's going to get back to you, and eventually somebody in the region is going to take that serious and it's going to come out that you're not a good manager and manage people well. You know, *they* don't want that, so they move you somewhere else.

Storey: Have you ever seen that happen, besides with Mr. Cook?

". . . I've seen a couple of project managers that have been asked to retire. . . ."

Capener: Yes, I've seen a couple of project managers that have been asked to retire.

Storey: Asked to retire?

Capener: Um-hmm.

Storey: They had been with us for a while then, I guess.

Capener: Yes. There was one down at Tracy a while back. He was a very outspoken person, very outspoken. At union negotiations, when we were working there, he would say things that would just cringe your hair across the table to the union, things like that. I'm not sure what they said to him or how they did it, but he retired, turned around and got a job that paid a lot more with one of the water districts, so it worked pretty good.

Storey: A lot of people have done that out of Reclamation, I guess. Does that mean that, for instance, union negotiations are regionwide or something, rather than project?

Union Negotiations Are Regionwide

Capener: Yes. They are regionwide. We have *one* contract with IBEW that covers the whole region. So the Bureau's negotiating team is made up of representatives from each area office plus a representative from the regional personnel office. And the union has the same type of representation. They have a professional business rep, who I think lives down in the [San Francisco] Bay Area somewhere, and then they have representatives from each of the area offices.

Storey: So that group would negotiate a contract?

Capener: Right. Which they've now negotiated.

Storey: Does that mean salaries would be negotiated there, too?

Capener: Yes.

Storey: What is the–I want to say the Wage Board scale. That's not right, I don't think.

Capener: Yeah. The salaries that they are?

Storey: Yes.

Capener: It goes anywhere from about ten dollars an hour to the nontechnical people up to right around twenty-four, twenty-five dollars an hour.

Storey: But I guess what I meant is, are you negotiating that scale for this *region*?

Capener: Yes.

Storey: How does that work?

Capener: We sit down and the union will give us a proposal that they want to pay the electricians X dollars an hour, the mechanics X dollars an hour, the C&Is, the operators, all the various groups, categories, within the wage scale. And they'll propose to us a dollar figure and then we negotiate. Now, to assist us in this negotiation, we make a *survey* of *comparable* companies and what they pay comparable positions. So we look at what PG&E pays an electrician, what the city of Sacramento pays, the city of Redding, I guess, and several others, what they pay electricians. There are eight entities that we survey, and we mutually agree that this is representative of the type of position.

Well, they're all a little different. So then what you end up doing is negotiating based upon what other people are paying and based upon what latitudes you have to negotiate. Because one year we had a freeze on raises that extended to the hourly people, to the union people. So we just said, "We can't even negotiate wages with you, because Congress passed a law that says salaries must stay the same." Well, they didn't believe us. They had to go back and contact their people in Washington and, sure enough, that was the case. So we didn't negotiate wages that year.

But the next year, it was catch-up time, see, and then they wanted to negotiate not only what was being paid by *others*, they wanted to increase it by some increment to make up for what they didn't get the prior year. And so we did negotiate that.

Storey: So am I understanding this correctly? If there's another agency with a union, they might have different wage scales than Reclamation's scale?

Capener: Well, none of these are Federal agencies. These are all public or private agencies.

Storey: The folks that you compare to.

Capener: Right.

Storey: But, say, somebody else, some other Federal agency, had union people and had to negotiate wages.

Only a Few Bureaus Can Negotiate Wages

Capener: Well, there's only four or five Federal agencies that can negotiate wages. (Storey: Ahh, OK.) Reclamation can negotiate wages. I think the Border Patrol. WAPA negotiates, because they were grandfathered in as being part of Reclamation. I think BPA negotiates. But most Federal entities do not negotiate wages. It is set by Congress and it is set by the old Civil Service Commission and surveys and everything else, just like the GS is set now. We don't negotiate that. That's all determined by whoever has that responsibility. They just come out with a printed schedule of what the GS-5, 7, 9, all the way up the scale is going to earn.

Storey: I appreciate it. I think it's been a couple of hours. Better take a little break for lunch.

Capener: Okay.

Storey: Thank you.

END SIDE 2, TAPE 2. MARCH 27, 1996.
BEGIN SIDE 1, TAPE 3 MARCH 27, 1996.

Storey: This is a continuation of Brit Storey's interview with J. Paul Capener on March the 27th, 1996. This is tape three, resuming the interview at about one o'clock in the afternoon.

Going over my notes, I noticed that you mentioned that you were in the Manager Development Program, and we hadn't talked about that yet. When was that and what caused you to apply for it and all that kind of stuff?

Participation in the Manager Development Program

Storey: I applied for that when I was in Colorado. It was a program to expose individuals to various aspects of the organization that they may otherwise not get exposed to, and it was a program that was to be completed within a period of eighteen months to two years, although it wasn't a continuous involvement in the program.

So we had a counselor–I believe it was out of the regional office personnel– and set up a format, a program, whereby I would attend various training classes and work on various details at different locations throughout the Bureau over this period of time in order to get a better awareness of the activities of Reclamation and how everything kind of pulls together. So I spent some time in Denver. I spent some time in Washington, D.C., working in programs at that time. I spent some time over at one of the congressional offices for a few weeks, working with the congressional aides. And then I spent some time in Boise in that region. It seems like there was one other

assignment I can't quite recall.

But it was to try and prepare people for potential promotion opportunities, although there was no promotion guaranteed as a result of completing the program. And at that time, you didn't have any priority placement, although now the program still continues, but today's policy regarding the program is that once you've successfully completed it, you do have some priority placement in that if a position comes up that you're otherwise qualified for, your having completed one of those programs gives you a priority placement over someone who perhaps had not done it.

So it was a good program. It took me away from the family, because these were generally six-week *blocks* of time that you'd go and work with other aspects of Reclamation. The Bureau would pay your costs and you'd go in and work.

Storey: Why'd you apply?

". . . I thought it would be very interesting. I've always kind of been *drawn* to new things and new ideas and more education and broadening, perhaps, my understanding and perspective of things . . ."

Capener: Well, I thought it would be very interesting. I've always kind of been *drawn* to new things and new ideas and more education and broadening, perhaps, my understanding and perspective of things and so forth. It's just something that I had a natural desire to do, and I thought that it certainly would help my career as well.

Storey: You mentioned the flattening of the organization, I think it was yesterday, where you'd been given the goal of having no more than two layers of supervision between the regional director and anybody in the organization. Of course, that kind of flattening was *important* in the reorganizations that have taken place in recent years. Is there something that you think makes that possible? Has something changed, or is it just an attitude?

Reclamation Needs to Try New Things

Capener: Well, I don't think that the jury is in on that whether it's going to be a better way to run the organization. It looks a lot better on paper and it seems as though it was the *thing* to do because it was being done in the private sector and meeting with various degrees of success.

Elements of Concern in Flattening the Organizational Structure of Reclamation

I remember one time we actually went out and visited, I think it was Kodak Company, there north of Denver, who had implemented kind of a pilot program in decentralization or delayering and team building and so forth. They felt very highly of it. Some others have tried it and liked it, and some tried it and it didn't work out for them. I think that the government has always been criticized for being too complex and too much bureaucracy, and I think in most cases rightly so. So I think it was time that the government did something to show that they were progressive and

could keep up with the private sector in new ideas and new management, new management styles. Over the years, the Bureau seems to have tried *so many* different things. The budget, for example, went to zero-based budgeting for a few years, and then that didn't work, so they abandoned it. They've tried all kinds of different programs, done them a few years and then thrown them out the window and tried something else.

So I think that the Bureau hoped that this would give some positive results. It certainly looks good in that it cuts the layers of approval way down. It cuts the bureaucracy by several layers. I think it's really going to work. The reservations I have with it is that it doesn't seem *yet* to have diminished the administrative workload. It just concentrates more work in fewer people. It's still in the learning process, but until you have that first level of employees, whether they're a self-directed work group or however they're configured, they really have to find their place in the *empowerment* aspects of it. *What* are they going to do? What type of decisions are they going to make and so forth, and is it going to work? That's the level that's going to determine whether it will stay with us or not. It's going to take several years for that to mature to see if it is something that will endure beyond the newness of a program and the people will accept it and support it.

Aside from that, the layering or delayering also causes you to delegate more responsibility and more authority, and that's always a good idea as long as you have the backing of the organization up the line, that if you're going to delegate to a subordinate the authority to make decisions and they screw it up, that they're not going to chop your head off. So that everybody assumes the risk when you do things like that and allows some failure to occur or some mistakes to occur.

So far it's been good. So far that's happened, and so far we've had things that have been done that could have been done better and went back and *did* them better, and nobody really got upset about it. So I think the real key is in that first level of the organization and getting those people to assume the authority and the responsibility.

It's especially difficult in an area office where your people have been *accustomed* to work under a crew with a foreman where the foreman made all the major decisions. There was a lot of *power* in the hands of the foreman. They'd assign work. They would indicate who would do what. The priority of the work, to a certain extent, was determined by the foreman. They approved leave and vacations and all of that type of stuff. So they made a lot of decisions.

Now you have got to have those types of decisions made by perhaps a group in a self-directed work team. You don't want the efficiency to suffer for it, and yet you have to have something that will be fair and equitable, because one of the criticisms of the program was always, well, they have certain people that get all the good jobs; they give the easy things to somebody; they give the technically challenging things to somebody else that they like because it's some kind of a growth for them. Whether that's true or not, you know, it's probably partially true.

The crew could always bellyache against the foreman, because that was

somebody there that they could, behind his back, criticize and everything else and there really was no consequence for doing that. Now if you're a self-directed work team and you're sitting across the table from somebody and you're going to tell them that their ideas are not very acceptable, it's a little different story, and it takes a little bit of trust and a little bit of just jumping in there and doing that and take your lumps with it and not hold grudges and so forth.

One team that we have doing that, the operators, they went through that, because they had operators in there that would not pull their weight, and got some of the easier jobs and so forth under the old foreman concept. Now they sit down as a team and they work through that. They've had their rough roads. They've had situations where they've had to close the door and hash it out, and people got mad. They'd come to me and say, "This so and so is trying to do this. They're doing it wrong. They're doing it wrong. Somebody's got to go down and straighten them out."

And I'd say, "Well, get together as a team and put it on your agenda, work through it, see what you can do with it, and keep going back to that. That's the mechanism you have to do it, because I'm not going to come down and do it for you. There's nobody else to do it. You've got to do it yourself." So finally they came to that realization that it's their problems, and they're the only ones that can to solve them, and they're going to have to make the decisions. So they're doing it, and they're functioning probably better now than I think they ever had, even under foremen or however they might have been organized in the past. There's still some personality conflicts, as there are in any group, but they don't let that get in the way. That's kind of a risky thing to do. It probably takes more oversight and more shadowing on the part of management or somebody, more than what we're able to give, because with operators, they work shifts, and so it's very seldom they're all together at the same time, and it's a special operation.

We had a crew of electricians that were a self-directed working crew and they had problems and so forth. It's going to take somebody a lot more time to work through it. So it's difficult, but it's going to have to take some training and you're going to have to teach people how to function in groups and so forth. The hourly people just have a whole different orientation to things than, say, the GS people. People have come up through maybe the professional series, college education. They're used to working with study groups and all kinds of different things. These are people that are much more independent, and they generally go there, and do their job, and leave. They don't want to have to make decisions, so somebody else does. "Just tell me what to do and I'll go out and do it. That's the way I want to work."

So it's going to be interesting. By and large, I think it's going to work and I think it's going to work good. It's one of those things, however, that was mandated, and I don't think we did as good a job as we could in laying the framework for it and coming in with a lot of team-building and training and all of that type of stuff that probably should have occurred more than what it did. But everybody is so busy, time is so short, so you go in and do the best you can and then you just plug the holes as they develop.

Storey: Do you think there's going to be a tendency for grades to rise in this approach?

Grades Will Probably Be Determined Largely on the Basis of What the Region Delegates down to the Area Offices and Their Staff Rather than on the Basis of Team Development

Capener: I don't think so. I don't think that's going to make grades rise. I think the grade increase, if one occurs, is going to be a result of the delegated authority from the region and the decision-making process to the area and the area office. *That's* going to be more grade-determining. I think that the people in the organization, we already had 12s and 13s, and a 14 for the area manager, and I think the 12 and the 13 is probably the level that will be *that* first level of supervision, depending upon how you're structured and organized. I don't think that's going to change based on the organization.

I think we're going to have to have more responsibility and authority, not in just mission accomplishment, but in dealing with the controversies and with the politically sensitive issues and so forth that normally get bumped up to the regional director. I think more of that stuff is going to have to be resolved out in the area offices. I think that will be evident when that occurs, because there will be fewer and fewer visits to the front office by irate water users or environmentalists and so forth. They'll be pounding on the area manager's office, and the area manager has got to resolve those issues, because if he doesn't resolve them, then they're going to go right back to the regional director and nothing's going to change. So the area manager and his people have got to be able to resolve some of those issues and they've got to have the staff and resources to do it. Then I think you'll end up with some real strong area offices and area managers, and then I think you'll see that some of the grade levels may increase, because they'll be far more independent in their authority and in what they do. So it may get up to [GS-]15s.

Storey: Did anyone ever try to get you to change jobs after you came to Shasta?

Capener: No.

Storey: Didn't want you to move to another project?

Capener: No.

Storey: Apply for a regional director's position?

Capener: No, I don't think that I really felt a great desire to apply for a regional director's job. There were some things that came out requesting applicants for certain positions, but they were not specifically to me. They were sent to all area managers. There's assistant regional director's job open somewhere and so forth, and they'd encourage all to put in for it. But, no, nothing special.

Storey: What about people wanting you go to out into the private sector though?

Capener: Well, I've had a few inquiries regarding that from some of the water customers and some of the technical companies and so forth, but I don't think it was anything serious, because I didn't really give them any encouragement as far as doing that. But I have been occasionally asked if I would be interested in going to work for a particular company or water district or something, and I really wasn't. I felt that I'd want to finish my career out with Reclamation.

Storey: Now that you've finished your career with Reclamation, do you have any plans in that direction?

Capener: I haven't excluded it. I've got some things I want to try and accomplish before I get serious about looking elsewhere. The last three years has been a real strain on my family in the sense that the job demands have kept me busy probably sixty to seventy hours a week, and so I've been gone six days, sometimes seven days a week, from morning 'til night. Consequently, *nothing* was ever done around here. It's just my wife and I. I've *got* to do some painting and cut some trees and do some maintenance on my own place before it falls into the ground. So I've got to do that.

But then after I complete that, there are a few things I want to try, probably try them independent of anybody else. I have some writing I want to do and some things along that nature that I'll give it a try and see how it goes. And, I might be tempted to go to work for some of the companies that I've had contact with.

Storey: One of the things I wanted to ask you about were the regional directors you've worked with. Bill Martin was the first one, I guess.

Bill E. Martin

Capener: Yes. Bill was the one that interviewed me for this job. I've always admired Bill. He's a very well-mannered, very professional-type person. Because he wasn't a graduate engineer, we never really held that against him. (laughter) Economists, I guess, can do things, too.

Storey: Yeah, an ag economist.

Capener: Yes. And he was a good director in the sense that he knew a good balance between letting us do what needed to be done out in the project, and he handled a lot of the hot-potato issues and the *real* political problems and so forth, he took care of. So he was very supportive of us through his staff and so forth. We worked mostly through the assistant RDs. I can't recall any time I really had to go to him with an unresolved problem. Our contact was more just in–this is what we're doing and these are what our goals are, this is what we're trying to accomplish. We're asking him kind of, "Well, what do you think is going to happen in these areas in the future?" and that type of stuff. So I think it worked out very well.

Storey: His successor was Mike Catino.

Mike Catino

Capener: Yeah. Mike was the assistant RD at the time, and so I'd already started to work with Mike. I actually had more experience with Mike during the administration of Billy than I did with him. *Mike* is a very, very talkative person. Have you interviewed Mike, by the way?

Storey: Yes, I have.

Capener: How well you know, then. He has a lot of history here. He started with the Bureau when the Bureau started here in California, and so he could go out and show you the first shovel of dirt that was turned on the first canal. He grew *up* with Mid-Pacific Region. He knows all the history, and where all the skeletons are buried, and everything else. And he's a very likeable guy. He treated us well, he did. He gave us all the support and help, because he had a pretty good feeling for what went on out in the projects, and he knew what our issues and problems were, because he'd come up through the ranks. So we felt that we got perhaps even more than a fair shake in the balance between the regional divisions and regional needs and the field needs, because we could go in, and if we said, "Hey, Mike, we really, really, really need this," he would take us at our word and get it for us.

So we had to be careful, because we didn't want to ask for things that really were not necessary, because if we took advantage of it, you know, you'd lose that. So it was good for us. He had trust in us and we had respect for him and it worked good. He was always available to us.

Storey: That was at the time when Auburn was a hot topic.

Auburn Dam

Capener: Um-hmm.

Storey: Did Auburn in any way affect you folks up here?

Capener: Only indirectly because being part of Reclamation and Auburn being held up as a project that is being *forced* on people that don't want it or don't need it, or a project that's going to be unsafe because of earthquakes or projects that's going to devastate the ecology and the environment. That caused other people to look at our projects to see if we were doing those things. So if *Auburn* was in the paper that somebody was criticizing the seismic data on Auburn, we'd get calls up here that says, "What about the seismic data on Shasta? Has that been updated? Has that been looked at?" Or Trinity. So in that respect, we got involved in it. But we didn't defend or *have* to take positions on that, because that was all handled out of Sacramento.

Storey: David Houston was Mike's successor, I think.

David Houston[7]

7. Houston is pronounced How stun.

Capener: Dave. He's a cool man, Dave is. (laughter)

Storey: He's a what?

Capener: Cool. Very, very, very sharp. He has a very, very keen intellect. So you never want to play poker with Dave. You'll always lose. He liked to play poker. He was a good poker player. Some of our retreats and some other things that he'd come up on, he'd always have a poker game going after everything was over, and very seldom did he ever come up short. He was a real pleasant person to work with and real sharp. I think he always gave us a fair hearing and always gave us a fair shake. I don't know that I would have any criticism of his approach or policies or anything. He always seemed to be in charge and always had a smile.

Storey: But a complete outsider.

Capener: Um-hmm.

Storey: How did Reclamation react to that?

"At first we thought it was a setup . . . that he's come out here to do something that is not in keeping with our interests. . . . it didn't take us long to develop a very high level of confidence in Dave. . . ."

Capener: At first we thought it was a setup, that here's somebody coming out of Washington, a political appointee, that pulled strings to get a Civil Service appointment. Of course, then you think there's some hidden agenda in mind, that he's come out here to do something that is not in keeping with our interests. And so it was incumbent upon him to show what his true motives were. I don't think it took very long for those that worked with him and under him directly, it didn't take us long to develop a very high level of confidence in Dave.

Storey: Then Larry Hancock became the Regional Director, '89 to '91.

Larry Hancock

Capener: I think Larry was a little more difficult to understand in that it was sometimes difficult to really feel that Larry understood the situations. Now, with Dave, it didn't take long before he knew *exactly* what was going on and what your issues were and how you were going to resolve it. With Larry, you had to take much more time to be sure he understood. He didn't have that quick perception or the background, I guess, to allow him to do that. So sometimes he would go off on a direction a little off course from what you'd want. So you always had to be sure you kept in contact to feed back to him your ideas, and feelings, and suggestions on what you thought was the proper thing to do and to go.

As far as the majority of our work up here, we've always been very independent of the regional director in *actually* doing and discharging the

responsibilities of the Shasta office.

"I've *always* felt that if I really want to go down there and say, 'Hey, guys, I've got a real problem, I need this,' I would get it. So I really tried not to do that unless it was really something that needed to be done. . . ."

I've *always* felt that if I really want to go down there and say, "Hey, guys, I've got a real problem, I need this," I would get it. So I really tried not to do that unless it was really something that needed to be done.

"I really feel that the support from all those regional directors was just great. Sometimes I wondered, 'What am I doing wrong? . . . I'm out here and I never hear from anybody. They never call me up, and they never ask me what's going on and what I've been doing . . .' And I said, 'Don't rock the boat. That's not a bad situation to be in. Just keep them informed and go about and do your stuff.' And they liked that. . . ."

I really feel that the support from all those regional directors was just great. Sometimes I wondered, "What am I doing wrong? You know, I'm out here and I never hear from anybody. They never call me up, and they never ask me what's going on and what I've been doing right or wrong or anything else." And I said, "Don't rock the boat. That's not a bad situation to be in. Just keep them informed and go about and do your stuff." And they liked that. They didn't want to be bothered with things that somebody else should be taking care of.

So Larry was a little more difficult to corner and to sit down and talk with and explain those things, because he was more from an administrative-type background. There's a little different, I think, basic philosophy between the engineering background and administrative background just in the way you look at problems and issues, and we had to kind of work through that a little bit. But it wasn't really what I'd call a problem.

Storey: And then, of course, the last regional director is Roger Patterson.

Roger Patterson

Capener: Well, now, Roger is a whole different person. Roger, again, is energetic and he's *sharp* and he's been around. He was project manager down at El Paso, and then he was assistant RD up in Boise, I think it was.

Storey: In Billings.

Capener: In Billings. Yeah, in Billings. So he's had the experience and he has the grasp of issues. So, you know, there's no question that he understands Reclamation and understands our mission and is able to develop a confidence in other agencies or from other agencies, and I think more so than any other RD that we've had experience with. He's been able to work with the state and work with other Federal agencies and develop these partnerships, more so than anybody that I can recall. That's good. I

mean, that is really what is needed in today's environment.

"I don't think Roger has much tolerance for people that aren't pulling their weight, and he feels that if they're not going to do their job, get rid of them or get somebody else in there to do it. . . . And then he also is kind of like a orchestra conductor where he keeps moving the players around. . . .That's not all bad, because it does develop people with a much broader vision when you do that. "

The one thing that is also different about Roger is the way he looks at his staff and his people. I don't think Roger has much tolerance for people that aren't pulling their weight, and he feels that if they're not going to do their job, get rid of them or get somebody else in there to do it. We're not going to tolerate people that can't perform to a pretty high level of expectation. And then he also is kind of like a orchestra conductor where he keeps moving the players around. You know, I've not been one of those that have been moved around. A lot of people have. He'd send them up to *Klamath* on detail for *two years* to work up there. He'd shift people from all over, from Nevada. He'd shift people in the regional office to different responsibilities. He kept moving people around. That's not all bad, because it does develop people with a much broader vision when you do that. But then the one thing you started to notice was that there's certain people he kind of–

END SIDE 1, TAPE 3. MARCH 27, 1996.
BEGIN SIDE 2, TAPE 3. MARCH 27, 1996.

Storey: You were saying that Roger Paterson would get his *eye* on people and sort of look out for them and give them opportunities.

Roger Patterson Liked to Use Direct Assignments to Bring in People He Thought Would Be Good, and Some Mid-Pacific Employees Felt He Was Playing Favorites

Capener: Yes. So there was some talk down in the ranks by people, that, you know, to get ahead you had to be one of Roger's favorite kids or employees or something; then your promotion up the ladder was guaranteed. If you could get in with him, then you'd get the good jobs, the good promotions, and so forth. I don't think Roger, at least to my knowledge, ever put anybody in a position they didn't deserve. I think what he did was he took advantage of regulations that have been laying dormant for many, many years as far as being able to direct assign people and to transfer people. So when a position was filled by direct transfer from another region, then all of a sudden here comes the replacement and shows up in, whether it's the area office or the regional office, and people would say, "Well, I never saw the vacancy." There was no vacancy; it was a direct assignment. Somebody Roger knew up in Billings or someplace else, all of a sudden they showed up down in Fresno.

So you could just see him kind of reaching back in his memory of people that he really felt were those on their way up and had the abilities and he was bringing them in around him, bringing them in around him, which I can't fault him for that. But it's a process that hadn't been used very much, so there was a lot of people who couldn't quite understand what was going on. We had some here in the Shasta office,

some of the branch chiefs and others that made those comments. "Well, who's this person down at Fresno?" Or "Who's this person over at Carson City? Where did they come from? So-and-so was there and retired and all of a sudden here's a new person. I never saw any announcement for that job."

"And that's the way it went . . . where he had moved people around in various divisions. *More* than any other regional director, he would put people on assignments and take people from programs and move them over into some other division and just kept moving people around. . . ."

And that's the way it went, as well as in the regional office where he had moved people around in various divisions. *More* than any other regional director, he would put people on assignments and take people from programs and move them over into some other division and just kept moving people around. At times we thought it was very confusing because here we've been working with somebody over in, say, the civil engineering end of it or in the Construction Division down there and that person was gone. Now that person was down in Fresno on detail for six months doing something. We'd say, "Wait a minute. He was working on a project for *us."* "Yeah, well, *too bad*. Find somebody else."

But from his perspective, and I think I would share this, I would endorse this, I think it was very good. I think it sent out a message that get out there and do good work, be aggressive, and your rewards are not going to be ten years down the road, they'll be more immediate than that. And that's good. There's some people that that intimidates, because they can't respond that way, and then they feel, "Well, gee, I always thought if you waited it out, you'd get it. If I worked in a group and my boss retired, eventually I'd get that and then I'd get his boss's job." So to them it was kind of a sad awakening that that wasn't going to happen. But I think it's been good. I've heard some very positive comments about the work that he's done and *developed* a lot of credibility with the people in California.

Storey: Of course, he's the last one.

Capener: Yeah.

Storey: Under your tenure, I mean. You mentioned that some of these issues that had come up that he had a grasp of, I think. One of the things that I'm interested in is acreage limitation. Did that affect the Shasta office in any way?

Capener: Acreage limitation under the Reclamation Reform Act?

Storey: Yeah. And before.

Acreage Limitation Was Not a Big Issue in the Northern California Area Office

Capener: No. Acreage limitation has *not* been a big issue here, because most of the districts that were formulated up in Northern California all came about since–well, some of them at the time Shasta was constructed, but a lot of the others came in the fifties

with the Trinity River Project, or they came about based upon having riparian water rights. And so they could have more acreage, but project water was not going on all their lands, so they could show that part of the land was irrigated from riparian water and part of it from Bureau water. So everything was okay.

". . . the issue that's going to be more controversial is going to be the delineation between M&I water and ag water . . ."

I think the issue that's going to be more controversial is going to be the delineation between M&I water and ag water, because *all* the districts are in areas where there's a lot of subdivision potential, and that subdivision is anywhere from, say, seven lots per acre, which is *clearly* M&I, to five- or ten-acre hobby farms. If a person has ten acres and they're raising a horse that they ride on Sunday afternoon, do they get ag water for that? No, they don't. They're supposed to get *M&I* water for it. Well, the districts don't think so. They see the integrity of their district being *better served* by providing ag water to those people, and they have an argument to support that. But unless they change the definitions, it's not going to stand. And I think that's going to be more of an issue on water usage than acreage limitation.

Storey: The issue involved in whether they get agricultural as opposed to M&I water is the cost of the water to them?

Capener: Yes, the cost of the water. It's considerably different. You'd pay for M&I water at the wholesale level that we sell could be like thirty-five, thirty-six dollars an acre-foot, and the ag water could be like fifteen.

Storey: And so we're interested because we want to know how much they owe us? Is this what I'm hearing?

Ag Water Is Subsidized by Not Having to Pay Interest While M&I Does Have to Pay Interest on the Construction Debt

Capener: Yeah. It comes into play in a number of ways. Ag water is subsidized in the sense that they do not pay interest on some of the Federal investment on the construction and on the O&M and so forth. They pay off the cost, but it doesn't accrue interest. M&I does. And that's in the law. So we're bound to make a determination on whether a farmer should be getting M&I or should be getting ag water because of the way the law reads and the *entitlements* that ag has that were intended to be subsidies for the agricultural industry, not only the low water rate, but a lot of other subsidies they get and not being subject to interest and things of this nature.

"So we have to keep those things separate so that we can say that we are properly administering the intent of Reclamation law. Reclamation law didn't define M&I water in the sense of the size of the parcel. They defined it in the *use* of the water . . ."

So we have to keep those things separate so that we can say that we are properly administering the intent of Reclamation law. Reclamation law didn't define

M&I water in the sense of the size of the parcel. They defined it in the *use* of the water, and water that is used primarily for the production of agricultural commodities or crops is ag water. So here a guy says, "I have ten acres and I need ag water because I have three pear trees out here, and every fall I set this stand out on the side of the road and I sell pears. I have an agricultural commodity that I'm marketing." Well, you get all variations of that, where people come up with *all kinds* of ideas that are supposed to be persuasive to ensure they get agricultural water. A good one was fish farming. A guy comes in and says, "I have this pond out here and I'm going to grow fish in it. So I want ag water."

"What do you mean, you're going to grow fish in it? What are you talking about? You're trying to pull something over our eyes."

"No," he says, "I'm going to grow fish in it, and I'm going to have commercial fish."

"'Well, okay, present to us a plan on just exactly what it is you're going to do and we'll make a determination whether you're supposed to get ag water or M&I water.'"

"Well, okay, present to us a plan on just exactly what it is you're going to do and we'll make a determination whether you're supposed to get ag water or M&I water."

So he comes in with a plan that he's going to raise all these carp–fish. He's going to take them down to the Bay Area and sell them in the Chinese market, Japanese market, where that type of fish is looked at as somewhat of a delicacy. He explains his operation, this is the type of food he's feeding, these are his suppliers, these are his truckers and everything else. By darn, the guy's got an agricultural enterprise. He's just raising fish instead of wheat. So, okay, you get the ag water.

". . . some areas around Redding has such a hardpan in it that you could never grow any crops in them. And so we don't go out and survey the land and say this is irrigable land, because it's *not* irrigable land . . . You couldn't grow corn or anything else on it, but you can flood it and have fish ponds and it's almost like being in a concrete pool. The water *evaporates*, but it doesn't percolate down into the ground. . . ."

So we've got several of those things going around here where it's becoming quite a profitable venture to grow fish, trout fish, catfish. Catfish is very popular. And the ground out here is just ideal for it, because the ground in some areas around Redding has such a hardpan in it that you could never grow any crops in them. And so we don't go out and survey the land and say this is irrigable land, because it's *not* irrigable land, you know. You couldn't grow corn or anything else on it, but you can flood it and have fish ponds and it's almost like being in a concrete pool. The water *evaporates*, but it doesn't percolate down into the ground.

Or we get a guy come in and say, "I want ag water because I've got ten acres

and I'm going to grow eucalyptus trees."

"Well, what are you going to grow eucalyptus trees for?"

"For firewood."

Well, it's another one of these, "Well, show us your plan."

And sure enough, he comes in and he shows that he's going to have these rows and rows of eucalyptus trees and they only take about seven or eight years to reach a point to where they're suitable for firewood, and he's got a rotation of cutting them and he can produce so many cord of wood a year at 120, 150 dollars a cord, and there are markets for it around here. And so, okay, you've got an agricultural enterprise on five acres or ten acres or two acres or whatever because of the type of work he's doing.

Other people would come in and say, "My garden and my horse should be enough to show that I'm in ag." We say "no." And some people won't accept that, so they write letters to their congressman and everybody else saying we're discriminating against them, we're trying to persecute them because here they are a small, struggling *family* trying to make a *living* off their land here and we won't give them the cheap water.

Storey: How does this work in practice? Don't we contract with the irrigation districts who then pay us?

". . . we require the irrigation districts to . . . take some general criteria that we provide . . . it's their responsibility to ensure that the water is used properly and that we are paid at the rate that's appropriate for the way the water is used. They have some discretion, if they want. They can charge somebody that has five acres, they can give them the water at the ag rate. But if it's clearly not an ag enterprise, what we're concerned is that they *pay us* at the M&I rate. And so they can do that. If they feel that it's in the best interest of their district . . ."

Capener: Yes. What we require the irrigation districts to do is take some general criteria that we provide, and given that criteria, it's their responsibility to ensure that the water is used properly and that we are paid at the rate that's appropriate for the way the water is used. They have some discretion, if they want. They can charge somebody that has five acres, they can give them the water at the ag rate. But if it's clearly not an ag enterprise, what we're concerned is that they *pay us* at the M&I rate. And so they can do that. If they feel that it's in the best interest of their district to do it that way, they can do it that way.

Or, given that criteria, they go around and they make the determinations themselves. They make the windshield surveys of their districts, and they look at the books and they look at the usage and the size of the parcels, which they have access to because they get revenue from all of those. They have all the land classification

documents, and so they make the determination, and then we go out on spot checks once every two or three years and see how they're doing.

Storey: We go to the district office and audit their books?

Capener: We go to the district office and look at their records, and then we go out on site, look at some randomly selected parcels, see what they're doing.

Storey: What kind of staff does it take to do this?

Capener: Well, it's an area that we have not enough staff. We've only got–one-, two-, three-, *four* people that administer all of our water contracts.

Storey: How much acreage is covered?

Capener: Several hundred thousand acres, and there's probably about thirty-, forty water districts. And then there's all the customers that have riparian entitlement to water along the Sacramento River, and then we just have a supplement contract with them, but they come under *part* of Reclamation law, so they use both project water and water-rights water, but they're still a customer of us. We have a contract with them and that contract has certain things that have to be administered. And then we have to go through all the billing. We read the meters or they send the meter readings in to us. It varies. And we formulate all the billing and send it out and collect the revenue from it and deposit it into the bank. Then it's reported electronically to our finance people who then kind of keep track of everything that's going on. It's a big job, and we were planning to get some more staff for that, because part of the delegation of authority to the area office is in those areas of administration of some of those policies and programs. So we are going to have to staff up for it. We'll probably need another person or two.

Storey: I know that we have contracts with the riparian users on the Sacramento River in order to quiet the water claims, I think.

Capener: Um-hmm.

Storey: Do we keep track of their use of the water?

Capener: Yeah.

Storey: So, in effect, we become the watermaster of the Sacramento River? Or am I thinking out of line?

Riparian Water Users Have to Report Usage to the State

". . . we have contracts with a *lot* of them . . . All that we have agreed to with them through these contracts is that we will recognize, for the purposes of Reclamation, a certain acre-foot entitlement of water that they have, and they will recognize that they will allow us to *use part* of that water during times of the year

for storage and other purposes and in return we will give them *supplemental* water during periods of time when they otherwise would not have any water because the river may have been over-allocated during the summer months. . . ."

Capener: Well, we don't have contracts with *everybody* that takes water out of the Sacramento River, but we have contracts with a *lot* of them that do. They still have to report to the state, because the state still administers the riparian water rights, and they're still under state laws as far as proper use of them. All that we have agreed to with them through these contracts is that we will recognize, for the purposes of Reclamation, a certain acre-foot entitlement of water that they have, and they will recognize that they will allow us to *use part* of that water during times of the year for storage and other purposes and in return we will give them *supplemental* water during periods of time when they otherwise would not have any water because the river may have been over-allocated during the summer months.

"So it beefs up their water supply for a good year-round water supply, because they take advantage of our storage capacities, and it benefits us in that we're better able to regulate the water to meet *all* of the irrigation demands *plus* get power generation out of it. . . ."

So it beefs up their water supply for a good year-round water supply, because they take advantage of our storage capacities, and it benefits us in that we're better able to regulate the water to meet *all* of the irrigation demands *plus* get power generation out of it.

Storey: What about waterspreading? Is that an issue for you up in this area?

Waterspreading in the Northern California Area Office

Capener: Not in the sense that it's developed in the West, in Wyoming and places like that, where people have come in and found that they've taken that water and irrigating thousands and thousands of acres outside of water districts. That's really not happened that way. The waterspreading that we would be concerned with would be more in what we've talked about in the *use* of the water, ag versus M&I, not in taking it or using it on Class Six lands within the district. There are some districts that have Class Six lands that should not be receiving water, and they *are* receiving water and they're receiving it at the ag rate. Those are issues that we say you can give them water but it has to be at the M&I rate unless they can provide an acceptable agricultural plan. That's where these fish farms come in, because they're ideal on Class Six lands. That's the best lands for a fish farm. Good hard pan.

Storey: These are the ones with hardpan.

Capener: Yeah.

Storey: At a level where it would flood the land if we irrigated?

". . . the waterspreading that we read about in the paper is where districts have

had extra water and so they've just gone out and given it to people adjacent to the district, and . . . the district doesn't have the authority to provide the water to them . . ."

Capener: Yes. So the waterspreading that we read about in the paper is where districts have had extra water and so they've just gone out and given it to people adjacent to the district, and these are people that do not have contracts with Reclamation and the district doesn't have the authority to provide the water to them, but they're doing it anyway and have been for many, many years.

Storey: And collecting the money.

Capener: Yeah. No, we don't have that type of problem up here.

Storey: You mentioned hobby farms a little while ago. Has subdivision of acreage under Reclamation water been a real issue up in this area?

Issues Regarding Subdividing Project Lands

Capener: It's an issue that is a result of–let's see, it starts really with the zoning, county zoning, and land development and then we get pulled into it when people start to subdivide lands and then they still want to continue to have the water on it. You can take a parcel of forty acres and you can split it down to quarter-acre size or less; I think seven dwellings per acre. But then you have to put in *streets* and sidewalks and everything else if you do that. But you can split a parcel of land to where you have, say, two, two-and-a-half-acre-sized lots. Then you don't have to put in any sewers. If you have good percolation, you don't have to put in paved streets or sidewalks or anything else.

So there's a point there if you're far enough away from the physical expansion of the city, kind of out in the county, where people will take their land and they will divide it maybe in ten-acre or five-acre or two-and-a-half-acre parcels along existing roads, and people will come in and build a house on it and here they've got a nice two-acre pasture that they can have a horse in, and it's just an *ideal* situation. They work in town. They come out. They can ride their horse or raise a few goats or whatever they want to do. Get some nice water out there to keep it all green and pretty. Just great. Well, that's fine, except that has to be M&I not ag.

Storey: But is that happening a lot?

Subdividing Project Lands in the Area of Redding

Subdividing Project Lands Around Redding

Capener: Yes. That's really the problem we have, because we have the two districts around here, Bella Vista Water District and Clear Creek Water District, where that's *exactly* the type of thing that's happening, is people are pushing out away from the city.

Storey: Of Redding.

Capener: Of Redding. They're not looking for twenty-acre sites, they're not looking for farms, but they're not looking for high-density housing either. They want something that has more isolation, ideally maybe a five-acre lot, and they want water on it because they don't want to be out there in the dry weeds and everything. And this is happening.

Subdividing Project Lands Around Corning

It happens around some of the towns down the valley like Corning, for example, that is really not an affluent area, and so people aren't going to go out there and subdivide and put in a lot of paved roads and so forth, because there's just not the industry to support those types of people coming in. What they have are retired people that are coming in on pensions that are looking for a little elbow room, and all they want is five acres so they can kind of have a little peace and quiet and maybe raise a few animals. That's fine, but charge them M&I. And then the districts will come back and say, "But these are retired people. It's a hardship on them to charge them M&I water rates. You should give them the ag rates, because they can't afford the high cost of the water." And that's another spin on the same problem.

Storey: I understand the Orland Project is urbanizing quite a bit, or suburbanizing, maybe.

Orland Project

Capener: Well, the Orland Project is one of the oldest projects that the Bureau has. It's been under the operation and maintenance responsibility of the Orland Project for many years, so we don't get too involved in the Orland Project other than oversight. They handle all of their own maintenance and everything else.

That area up there, most of that water is adjudicated. So they've already reached the limit of use out of the stream, and they have a state watermaster that rides herd on the water and the use of the water. Where we come in is the use of the Orland Project water. But the Orland Project themselves have been pretty good in administering that. They have some of the same problems that we mentioned, but again it's just a matter of making some inspections and giving them some guidance on what to do and where to do it.

The County Approved Some Subdivisions West of Orland for Which There Was No Water Supply

One of the problems they did have over there is that the county approved some subdivisions in one of the tributaries in the mountains there west of Orland where the water supply is. The developers came in and subdivided it and built houses and sold houses and so forth. They didn't have any water. And so here the people came moving in. I mean, there were maybe seventy or eighty homes that they were building. They said, "Well, where's the water?" There was no water. And they started screaming and yelling, "Well, where's our water? Where's our water?"

"I don't know. Go get a truck and bring it in."

There was no water lines. There was no water rights. There was nothing. Obviously that was a real problem, because the county really screwed it up and let them do that without a firm water supply. Even today they don't have one. So the Bureau kind of stepped in and said, "Well, we'll give you a conditional agreement, maybe a one-year contract, for some water, because we don't have the extra water to sell, so we can't give you a long-term contract for water. You guys are going to have to get together and form a district and go through the legal processes of organizing yourself and setting up your structure and then going find you some water. Maybe you can have Orland Water District sell you some of their water," or things of this nature. So those types of things happen occasionally.

Storey: I meant to ask you about our recreation facilities on Orland. We manage those. Do those present us with special problems?

Recreation on the Orland Project

Capener: No. It's a minimum level of recreation on Orland, which means that we just provide public health and safety. So we have rest rooms. They're generally self-contained vault-type rest rooms. We don't have any water supply. People bring their own water in. We provide garbage pick-up. But it's a very popular area. There's a lot of overnight camping. We have plans to enhance that a little bit in the sense of putting in some better water systems, and we've made arrangements with, I think, it's the Elk Creek. It's the little community up there that gets water out of the reservoir that has a filtration plant to buy water from them, and we then could put in the campground.

The problem we have is the Orland Project is basically paid out. They've repaid all of their indebtedness and they're very reluctant in agreeing to incurring any additional cost that then has to be repaid. So they say, "If you guys go put in a million-dollar water system for recreation, who's going to pay for it?" Well, the Orland Project. But they say, "We're not going to ask our irrigators to pay for that." And so that has to be handled rather delicately, because if we go too overboard on that, it's not going to fly. So what we've done is kind of set a plan to get some *water* to the recreation area on a very limited basis.

Storey: You mentioned retreats in the region. What were those about?

Regional Management Workshops

Capener: Well, these were kind of workshop sessions that some were held in Sacramento. But at least once a year we'd try to go off away from the regional office to some non-conspicuous place like Tahoe or the coast or somewhere like that, and just review. We have a committee that would work up an agenda for it, so the agenda would be maybe different every time. It kind of centers around water issues, how are we doing on the issues, and what are the things that are coming in the future, and what things should we be doing to make ourselves a better organization.

For example, we contracted with a college–I can't remember the name of it– to do a study of the region and its water use. It was trying to identify a regional, I want to say personality, but that's not the right word–well, anyway, to try and explain to us why we do the things the way we do them based upon our makeup of people and our historical roots in Reclamation and our value system and our customers. So they'd go through and get all the base information and conduct interviews and so forth. Then they'd come back maybe six months later and give us the–

END SIDE 2, TAPE 3. MARCH 27, 1996.
BEGIN OF SIDE 1, TAPE 4. MARCH 27, 1996.

Storey: This is tape four of an interview by Brit Storey with J. Paul Capener on March the 27th, 1996.

We were talking about this college that would go out and do questionnaires and talk to the customers and so on, then come back and report to this group.

Capener: This is the type of thing that we would do to try and educate ourselves as far as knowing who we were in the sense of some kind of a regional entity and understand the interactions we have with each other and with our public. That was one thing that was done. We always tried to have somebody like the commissioner come in and talk to us for an hour or two and give us an update on policies, his observation of things. We'd often have people from other Federal agencies like EPA or Fish and Wildlife Service come in and tell us *their* issues and *their* problems, how they viewed us as Reclamation as a party to solving some of those. Occasionally we'd have people from the business community. We had somebody, I think the Chairman of CH_2M Hill came in and told us how they manage their firm as an engineering consulting firm, how they're organized and what their management philosophy is and so forth.

So we tried to have some of that to give us a little *broader* perspective of management, management style, and to become better managers in a closer-knit organization. We had some internal problems we dealt with as well. We generally would have budget sessions and try to hassle-out conflicts in monies on who gets what. We would talk about policies that we felt ought to be changed. And so we'd, maybe, have little workshops to identify and make recommendations on things that ought to be done differently that may require policy change that could be taken up to the commissioner or something like that.

So it was a rather intense thing. There was a pretty healthy agenda that we had to take care of, and there wasn't really a lot of, what I'd say, recreation involved in it either, because they weren't in places where you played a lot. Maybe take an hour's walk in the evening or something. But most of it was a good working session. But it *started* out to be off-site every meeting. Every quarter we'd go off-site. Then it was felt that maybe that was not viewed properly by our own people, that here management was going over to the coast, Bodega Bay or somewhere else for another one of their retreats–parties. And so we said, well, we don't want it to appear that way, so we'll have only *one* of them away from Sacramento. The rest of them will be

in the Sacramento area, which is not unlike what we'd have for our monthly staff meetings anyway, just a different agenda and a little longer, two days instead of one.

Storey: Did you do this throughout the time that you were superintendent at Shasta?

Dave Houston Started the Regional Management Workshops

Capener: No, that just started. Dave started it.

Storey: Dave Houston?

Capener: Yeah. He used to have those. I think he was probably the first one that really got us started on that.

Storey: In addition to this, which was a *quarterly* meeting then, you would also have a monthly staff meeting?

There Was Generally Also a Monthly Staff Meeting in Sacramento

Capener: Yes. Generally they'd have a monthly staff meeting.

Storey: Who was invited to these?

Capener: It started out as just monthly staff meetings, and that was all of the project superintendents and division chiefs in the regional office. So your 400 Division Chief, your 200 Division Chief, and all of those people, plus each of the field office managers, and then other staff as necessary to explain programs and so forth. And there the agenda was focused more on the immediate problems at hand on what was going on, what needed to be done, deadlines that needed to be met. We gave reports on our activities and things of this nature.

Changed from a Monthly Staff Meeting to a Regional Management Team Meeting

Then a couple of years ago, we changed away from a monthly staff meeting to a regional management team. This was to be the *decision body* for the region, and it just included the regional director, the two [assistant] RDs, and the area managers. These would then become the regional management body. We met together to look at broad programs and long-term policies and direction and so forth, not to solve day-to-day problems. It's been going pretty good. We'd meet once a month to do that, and then we'd call in others as necessary to get information if we needed some people from other divisions and so forth.

I think when we started that, there were some people that used to attend the monthly management meetings that felt left out because they were not part of the management circle as they perceived maybe they were out of the monthly staff meetings, but I think it was working good when I left.

Storey: Had the monthly meetings been standard throughout your tenure here?

Capener: Yeah, pretty much so.

Storey: What about the retreats? Who was invited to the retreats from within Reclamation?

Capener: In *our* retreats it was basically just the same group that was viewed as the management group for the region. It was the same people that went to that monthly staff meeting, or when we went away from that, then we focused on the leadership team, and then we would invite other people to present programs and issues and so forth to us. So it kind of boiled down to really the same people attending. We just had different roles to play. The regional leadership team then became more of a sounding board and a recommendation and decision body for the rest of the regional management. So we could go to those retreats and convene as the regional leadership team, and other division chiefs or whoever in the region would then present issues and reports and problems and their objectives to us and so forth so that we could look at it and consider it.

For example, we'd have everything from should we consolidate the regional construction office and the Willows construction office into one office, because we have physically two different locations? Willows construction office handles the oversight and the administration of construction contracts. The Regional Construction Division actually does the design and construction. Should they not be consolidated into one? So we dealt with that. If they were to be consolidated, should it be everybody go into Sacramento or should they go someplace else? We looked at all those. That's the type of thing that we would deal with.

Storey: And you decided?

Capener: That we thought it would be best if they were consolidated.

Storey: In?

Capener: I don't know what's happened to it. That was kind of a recent decision.

Storey: Oh, that's a recent one.

Capener: Yeah.

Budgeting in the Region

Storey: You mentioned budgeting and that the retreats and the staff meetings would be used for budgeting purposes. Over the years, how did Shasta get *budgeted* for?

Capener: We'd come into an ongoing system. We have historical records, I guess that goes back before Columbus, to show how much money Reclamation has spent, how much money our *office* has spent, and it's broken down into various divisions. What we then would be asked to do, and this would be pretty uniform throughout the region, is to make certain assumptions. You can index salaries up and make certain assumptions on that. They would assume a certain level of funding from

Washington. And then we would have to identify any special programs that we had, whether it required additional staff, or whether it required major investments in equipment, or whatever it was. We had to start to identify that and present justifications for it and the amount of money that it would cost. We then would sit down and make our presentations to our counterparts in what our activities were going to be and the funding level that it would take to do it.

Obviously much more was asked than was available, and so then the next thing you had to do is go through a series of smaller groups to where you had to sit before the people over in construction and present your construction program to them. They would then make some kind of a ruling on whether they felt that was a viable construction program or whether they could support it or not, because they would then take that back to Denver to sell the E&R Center on the construction budget. And then the O&M program, if there were things in there that required large amounts of money like rewinds or buying major pieces of equipment, you could easily spend a quarter of a million dollars on a new grader, a new front-end loader, and a few things like that. And you had to sit down with the O&M people, the 400 [Division] people in the region and the property people in the region to convince them that this was something that you needed and you couldn't live without, and then hear the same story from everybody.

"So who was going to make the cuts? That was *always* a hassle . . ."

So when it was all said and done, they didn't know. They didn't know what was going on, because everybody came in with a persuasive argument and there just wasn't enough money to go around. So who was going to make the cuts? That was *always* a hassle, and it still is to a certain extent, on who's going to make the cuts. You know, we try all kinds of different things to, "Okay, we'll give an incentive to the people that will give up the most," to, "Okay, you look at this other guy's budget and he'll look at your budget and he'll cut you and you'll cut him. Let's see how that works out," to getting a impartial committee together to make the decisions. You know, all different kinds of things were tried. But that didn't work out too well, and I'm not sure it does today.

"Now what we do is we try and live within whatever appropriation we get out of Washington and recognize that there's some latitude to move money around within the region. . . ."

Now what we do is we try and live within whatever appropriation we get out of Washington and recognize that there's some latitude to move money around within the region.

The one thing I guess that I feel never was rightly done was to go down and make more of a grass-root comparison on the cost per unit of work that each of the area offices does. I pushed for that a number of times. I felt that we'd come out looking very good if they did that, and so I was in favor of it because we have a very good record of cost per unit of work, whether you measured that unit of work on the amount of water released or the amount of power generated or the amount of

maintenance work accomplished, because our staffing was really kind of on the conservative part. But I never could persuade people to do that, to make that kind of a comparison. There may have been some things in there that were not fair to the other area offices, but I would have liked to have seen that done.

Storey: What about the program sessions, I believe they used to be called? Did you ever participate in those?

Reclamation's Budget Team Travelled out to Each Region

Capener: Yes, we did. That's when the Bureau team would come around and they would look at the program of each region, and they would question your programs. We'd have the program documents, and we'd be involved in assisting in the formulation of those documents as it pertains to our office. Then we'd sit in on the program meetings when people from–generally it was made up of somebody from Programs Office out of Washington, very selected people from around the Bureau. *A* regional director generally would be on it, a few other people. We would be there and we would answer questions, if asked. The regional programs people would actually make the presentation. They had all the documents. They'd answer most of the questions. We'd get a lot of good encouragement from our visitors and, "Yes, we really think you need that. Looks great. You've got a good program there." And then a few weeks later they'd come back and say, "Sorry, we're not going to fund it." So I'm not sure how productive those were other than educating some people on what's going on. Whether that could have been done a different way, I don't know.

Storey: Now they're using the Budget Review Committee.

Capener: Yeah.

Storey: Is that an improvement?

Capener: No, it's about the same thing, just different players.

A Chunk of Concrete Fell out of the Dam

Storey: You mentioned that a chunk of concrete fell out of the dam. Tell me about that.

Capener: Well, one morning about a year and a half ago, there were a number of us just sitting there at our desks and looking at the dam as we always do occasionally. There was this little dark spot out on the dam just below one of the outlet works. You know, you kind of squint at it and said, "Was that there yesterday? I don't remember seeing that. How long has that thing been there?" So you go down the hall and ask somebody else. "What's that thing out there?"

And they look at it. "I don't know. Was that there yesterday? Go get the field glasses and let's take a look at it, see what it is." And so you look at it and, by darn, it's a hole, a nice square hole. Turns out to be probably about eight feet long and about three feet wide and about four feet deep. So it's not a small hole, but in

perspective of the dam it looked like a very small hole. So why did that come out? You know, what's going on here?

So then you start the ball rolling and find out a way to actually get inside the hole and look at it and try to make some determination. So the first thing we did was–well, two things. We got our boat out and we got our divers and we went into the tailrace to see if there's a piece of concrete down there. Sure enough, there's a couple of big chunks of concrete. I think the smallest one weighed about 600 pounds that came out of there.

Then we called up the Sheriff's Department, because they have a search and rescue rappelling team that rappels down cliffs and mountains and so forth that are search and rescue. We said, "How long has it been since you guys practiced your search and rescue techniques?"

"I don't know."

"Would you like to practice it? If you want to use Shasta Dam to practice on your search and rescue, we'd *love* to have you, because we've got this little project that you can kind of simulate as a disaster and you can go out here and rappel down the face of the dam and practice all your stuff, and while you're down there, take a few pictures for us."

They said, "*Great*, we'll be happy to do it."

So then they came out with half a dozen guys and all their equipment and everything else and tied off up at the top of the dam. Newspaper people were there. TV and everybody was there. We invited them all to come out for a big show-and-tell. *Down* the face of the dam they went, rappelling down there about 200-300 feet down into this hole, and they took some video and still photos for us. We had two-way communications with them so we could ask them questions and so on.

". . . there was a small . . . form that was left there during the construction process . . . and it eventually just rotted away. And then the hydraulics of the spills . . . had . . . shaken and vibrated and loosened until they cracked kind of like a block. . . . And so this thing popped right out. . . ."

The conclusion we've come to is that there was a small kind of like a form that was left there during the construction process, the wood or the fiber of the side of a form where they formed up that pour, and it eventually just rotted away. And then the hydraulics of the spills over the years had gone back in there and shaken and vibrated and loosened until they cracked kind of like a block. It was bordered on one side by a natural seam and on the top side by this form that had given way, and on the bottom side by a construction joint of some sort, because it was right by one of the outlet works. And so this thing popped right out.

". . . to the best of our information, it's not really hurting anything. . . ."

It's not an easy thing to fix. It's going to be *rather* expensive to go in there and do a lot of sandblasting and preparation and all that work to do it. But to the best of our information, it's not really hurting anything. We had Denver out and looked at it, had others take a look at it, and they said, "Well, you know, you may just have to make little operational changes in the way you operate your gates so that you minimize any flow of water over this hole. But other than that, it's not going to hurt anything. So budget the money in your program and then go fix it."

What we really wanted to do was go to the contractor that's currently on-site putting in that temperature-control device, because they've done a lot of concrete work, and just say, "Hey, how about doing that for us? You've got all your people. You've got all your equipment and everything else, just give us a bid on it and do it." But our contracts people say you can't do that. You have to go competitive, since it's not an integral *part* of the work that they're doing.

Storey: So it's a big chunk, but nothing dangerous or anything to the dam?

"We do have a leak inside the dam. Dams are not watertight, and . . . a great big humongous spray of water that's coming right through a construction joint. . . . It's under substantial pressure. . . ."

Capener: No. We thought maybe it would represent some kind of a fault or a weak point in the dam, but it wasn't. It's just something to look at and comment about, hopefully to get fixed one day. We do have a leak inside the dam. Dams are not watertight, and under the chambers, I think down about 630 or 700 elevation as you're walking down one of those tunnels inside the dam, you come to a great big humongous spray of water that's coming right through a construction joint. You can't even *walk* through it, there's so much water spraying. It's under substantial pressure. So we've got some braces and some deflectors in place there so the water doesn't spray across the passageway, but it's deflected back into the side of the wall so you can actually walk past it.

Storey: And into the gutter?

Capener: And into the gutter. But the cause of that is the gradual deterioration of the seal that they put on the construction joints on the upstream face of the dam. When they built the dam, of course, it was in sections, in pours, and along the upstream face of the dam they put in kind of like a rubber caulking that was in the construction joint itself, and it held. It was kind of a sticky thing and they put it in there and it worked great for many, many years. Eventually it started to give way, and as it gave way, it allowed some water to seep back in that construction joint, and as the dam contracts and expands, which it does year-round, it eventually would loosen it up a little bit more and more and allowed that water to find its way into one of the tunnels. It doesn't cause a structural concern, because even if the water came through there all the way, the mass of the concrete that provides the integrity of the dam and the anchorage of it, that's not impacted by any leakage through little cracks or things of this nature, because the concrete itself is not fractured or broken or anything.

Storey: What else should we have talked about? What else would you *like* to talk about?

"Contrary to local folklore, there's nobody buried in Shasta Dam. . . ."

Capener: Well, there's all kinds of stories about Shasta Dam. Contrary to local folklore, there's nobody buried in Shasta Dam.

Storey: It's easy to get them out of five-foot lifts, generally if there's a problem.

Heirs Sought More Payment for a Gold Mine near Shasta Dam

Capener: Well, we don't want to jeopardize the integrity of the concrete. So we're going to take all the impurities out of there. There's a gold mine. It's just at the base of Shasta Dam, apparently a very *profitable* gold mine, but it's on the upstream side of the dam under several hundred feet of water. The Bureau bought that gold mine at the time of the construction, at a fair market price. Here about six months, seven months ago, got a letter from the heirs of the former owner of that mine, and they said, "We think we didn't get enough money for the mine when our father (or grandfather or whoever it was) sold it to the government. So we want to reopen negotiations on that. We want you to pay us another 3 or 4 million dollars for that mine. The price of gold is up and everything else is up."

So we wrote a letter back and say–used a lot of words, but basically we said, "A deal's a deal. Too bad." (laughter)

Mine Tunnel Downstream of Trinity Dam

Another interesting thing over at Trinity a number of years ago. We got a report that there was a hole. It was downstream of the dam but kind of in the abutment of the dam. It's an earthen thing, and there was a little sloughing, a little hole in the road that goes right along the spillway at the base of the hill. And we said, "Well, who's been digging in it?" They said nobody was digging in it. It seems like it's just kind of caving in, like a big gopher hole or something.

So the next day we drove out there to take a look at it. And by then the thing was probably about three foot in diameter and six-, seven-, eight-, nine feet deep, just a great big hole right into the ground, like somebody just *sucked* up the ground. So we thought, boy, that's strange. Of course, our first thought was it's water leaking from the dam. So we put lights and dropped stones and everything else down there, and it was just dry as a bone. So obviously it wasn't coming from the upstream part of the system. So we got out our old original construction drawings and looked at it. And sure enough, there were several mines on that hillside that were identified on that drawing, and they were all just kind of covered over, and what this was was a shaft of one of those mines running into the hillside, kind of a horizontal shaft. We don't know exactly how far back it went, but we said, "We'd better fill that in," of course. So we did, and that took, I don't know, fifteen, twenty loads of material with dump trucks to fill that in and get stability back on it. So there were little interesting things like that that kind of catch you by surprise once in a while.

Wintertime Fog at Shasta Dam

Other than that, one thing about Shasta is it's a very dynamic-looking dam, and one of the things I've observed over the seasons is that it changes its appearance from summer to winter, and some of the most picturesque images of Shasta is in the wintertime when the fog comes up the valley. It comes right up the river canyon, just about the height of the powerplant, and so the river canyon looks like a ghost river. Everything is covered up. You can't see the powerplant. You see a little bit of the switchyard. It looks like a big ghost river down there. And that fog will come up and hit the face of the dam and go right up the face of the dam, like an inverted waterfall, until it reaches the crest of the dam. Then there will be enough turbulence it will blow the fog back over on itself, and it caves back down like an inverted spill, spillway. That's really kind of a spectacular image of Shasta.

Storey: What would you say your worst experience as project superintendent was?

Capener: The worst?

Storey: Um-hmm, and the best.

Personnel Issues Were the Worst Experience as Project Superintendent/Area Manager

Capener: Well, I suspect the worst was when we had personnel problems that you had to deal with and people had to be disciplined or fired. I remember one that I did fairly early at Shasta. We had a job that had to be done and so we asked three people to go out and do it. It required operating a crane and things like this. It was an overtime job and they said they wouldn't do it. Said that, no, they weren't going to do it. We said, "That work has to be done. We're scheduling, you've got to do it." And they said, "No, we won't do it." So we tried to work everything we could. These were the only people that were qualified to operate the equipment. Schedules and other things wouldn't allow it. So the union told them to do it. We told them to do it and everything. So we ended up giving each of them a day's suspension. And, you know, it's really hard for me to do that, because they were good people. And there was just some little dinky thing they didn't agree with or didn't like. They were trying to make a point. So it was kind of like a standoff, who was going to win. And that was difficult. I didn't like that at all. There just wasn't any other way of getting around it.

Among the Things He Liked Best Was the Movement of Staff up in the Organization

Successful things, I think, is to watch the progression of people in the organization, when you open up opportunities for them. We had a young man right out of the Navy who we hired as a clerk-typist. He was married and had two or three kids, and he was a GS-3 typist, and a good typist. You know, he was right there in the typing pool. He started to go to night school on his own, learned electronics and everything else. So we had an opportunity to–

END SIDE 1, TAPE 4. MARCH 27, 1996.
BEGIN SIDE 2, TAPE 4. MARCH 27, 1996.

Storey: You had this young man out of the Navy who went to night school.

Capener: We had the opportunity, we were creating a ADP group and we had an opening there for kind of a semi-technician that could go in there and help us with our PCs and our computers and stuff. He'd gone to night school and he qualified, so we just lateraled him into that position. Well, to make the story a little shorter, he really worked hard and then we opened up an apprenticeship position for the C&I mechanics, and he was selected for that job.

Storey: C&I is?

Capener: Communication and Instrument mechanic. They're the electronic techs, hourly employees. He went on and, you know, of course, is doing real well. He started out at the *lowest* end of the salary range, a GS-3, and now he's in the range of about twenty-four dollars a hour in that job.

Another similar-type situation was with one of our warehouse people who was just part time. He would work for us eight hours and then go over to the junkyard, auto body junkyard place, and he would work there three or four hours at night and on weekends just to get enough money to make a living. But a good, hard worker, a good, dedicated guy, you know, just a *real* valuable person. Good work ethic. He was selected for an apprentice plant mechanic, which is one of the *hourly salary* people that earn top dollar. So he went through the apprenticeship and did that.

These people always are appreciative for what you do for them, when they start at the bottom and work their way up and you make opportunities available for them. They earn them, but you make them available. And I see those people always saying how much they appreciated the opportunity to come to work and to get a better job and either to complete their education and whatever it might have been, how appreciative they are. It's not always the case for people that come in that you transfer into these high-paying jobs. They're already there. They don't have the same feel of appreciation for, maybe, being able to be recognized for their hard labors and work their way up the organization.

We've had a lot of student aides that have come in, and they've always been nice to work with. They come in right out of high school or are in high school. They're all from financially disadvantaged families, and generally they've got *problems* and stuff. We try to make them feel like a professional and give them responsible duties to perform. It's really nice eight or ten years later they come back, they've got a college degree now and are married and have families. They never forget the opportunities that we gave them for jobs at Shasta. Those are the things that are rewarding.

Storey: Um-hmm. Anything else we ought to talk about? What's the question I didn't ask?

"There's one thing that's kind of unique. I think we're the only office in the Bureau of Reclamation that had a Mercedes sports coupe. . . ."

Capener: There's one thing that's kind of unique. I think we're the only office in the Bureau of Reclamation that had a Mercedes sports coupe.

Storey: Oh, tell me.

Capener: It's one of our cars. Yeah, it's one of our fleet cars, the Mercedes.

Storey: Fleet cars. That sounds more like a Roger Patterson fleet car. (laughter)

Capener: No, no. This is before Roger. It's, I don't know, an XL something or other, one of the real sporty cars. I drove that for a while. Then I had a nice full-sized luxury car. I think it was a Mercury or something like that. Red upholstery, nice red felt upholstery. It had a sticker in the window, one was a border sticker from Mexico, and the other was a border sticker from Canada, and it was a drug car. This was the big red upholstery car. It was picked up on a drug raid and put into the GSA pool to be sold, and we exercised an option to take it at no charge, and so we did. The same with the Mercedes. We got that the same way.

"Unfortunately, it didn't go over too well, because here was a Mercedes Benz with Federal license plates on it, going up and down the freeway. . . ."

Unfortunately, it didn't go over too well, because here was a Mercedes Benz with Federal license plates on it, going up and down the freeway. It even appeared in the *Sacramento Bee*. There was a letter to the editor that said, "What is this I see? A Mercedes Benz with a Federal license plate on it around Sacramento?" This is when I was driving down to Sacramento. And the response to the editor was, "You must be mistaken. It's probably a state license plate."

Storey: State license plate? (laughter)

". . . one of the senators from Southern California . . . saw that car there. So he got hold of the commissioner and said, 'What is this I see? A Mercedes with a Bureau of Reclamation seal in the window and Federal license plates?' Well, that was the end of it. We said, 'No, we're not going to bother to explain this. It's not worth it.' So we put it on surplus and sold it–got $23,000 for it, GSA did. . . ."

Capener: Yes. State of California license plate. State government rather than the Federal Government. Well, I didn't bother to correct the editor on that. But then one day it was parked in our parking lot up at Shasta on a Sunday, and we had one of the senators from Southern California that was passing through on vacation, and he happened to come in to look at Shasta and he saw that car there. So he got hold of the commissioner and said, "What is this I see? A Mercedes with a Bureau of Reclamation seal in the window and Federal license plates?" Well, that was the end of it. We said, "No, we're not going to bother to explain this. It's not worth it." So we put it on surplus and sold it–got $23,000 for it, GSA did. We didn't get the

money.

Storey: Which commissioner was this, do you remember?

". . . you try to do innovative things to break up the monotony and save a little money by picking up cars that you don't have to pay for, and sometimes it works and sometimes it doesn't. . . ."

Capener: I don't remember. That was a number of years back. Probably about ten, eleven years ago. But you try to do innovative things to break up the monotony and save a little money by picking up cars that you don't have to pay for, and sometimes it works and sometimes it doesn't. (laughter)

Storey: Well, I certainly appreciate your spending all of this time with me. Once again I'd like to ask whether your not you're willing for the material on these tapes and the resulting transcripts to be used by researchers.

Capener: Yes. They're welcome to it.

Storey: Good. Thank you very much.

END SIDE 2, TAPE 4. MARCH 27, 1996.
END OF INTERVIEWS.