ORAL HISTORY INTERVIEWS

BLAINE HAMANN

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STATUS OF INTERVIEWS:
OPEN FOR RESEARCH

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INTERVIEWER:_____
Brit Allan Storey

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The transcriber and editor also 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.

While we attempt to conform to most standard academic rules of usage (see *The Chicago Manual of Style*), we do not conform to those standards in this interview for individual's titles which then would only be capitalized in the text when they are specifically used as a title connected to a name, e.g., "Secretary of the Interior Gale Norton" as opposed to "Gale Norton, the secretary of the interior;" or "Commissioner John Keys" as opposed to "the commissioner, who was John Keys at the time." The convention in the Federal government is to capitalize titles always. Likewise formal titles of acts and offices are capitalized but abbreviated usages are not, e.g., Division of Planning as opposed to "planning;" the Reclamation Projects Authorization and Adjustment Act of 1992, as opposed to "the 1992 act."

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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.

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www.usbr.gov/history

Oral History Interviews
Blaine Hamann

Storey: This is Brit Allan Storey, senior historian of the Bureau of Reclamation, interviewing Blaine Hamann, assistant regional director of the Lower Colorado Region, in his offices in the Boulder City Office of the Lower Colorado Region, on January 16, 1997, at about two o'clock in the afternoon. This is tape one.

Mr. Hamann, would you tell me where you were born and raised, and educated, and how you ended up at Reclamation, please?

Early Life

Hamann: I was born in Anchorage, Alaska. Educated through high school in Palmer, Alaska. I went to engineering college at the University of Idaho, and essentially ended up with Reclamation because I had a summer job at Grand Coulee [Dam] while I was going to school.

Storey: When were you born?

Hamann: I was born in 1943.

Storey: What was Alaska like then?

Hamann: My parents were some of the first colonists that went up there with, I forget what they call the project now, but it was an attempt to colonize Alaska that was put out by the government in 1935. My parents were in that batch of original colonists.

Storey: Probably with my cousins, the Stewarts.

Hamann: Probably so.

Storey: Who had Stewart Photo in Anchorage.

Hamann: Isn't that amazing. I went to school with some Stewarts.

Storey: You were raised in Palmer?

Hamann: Yes.

Storey: Where is Palmer?

Hamann: It's about forty miles northeast of Anchorage.

Storey: But in those days it was pretty primitive.

Hamann: Oh, yes. Mom and Dad lived the first two years there in a tent with two kids. Now, that's primitive. (laughter)

Storey: Yes, it is. How did you end up at the University of Idaho. You had Fairbanks and the University of Alaska, of course.

Hamann: I joined the Air Force when I graduated from high school, and spent four years in the Air Force deciding that I didn't want to put any more time in the Air Force. (laughter) I decided I was going to school somewhere. My brother happened to be going to the University of Idaho at the time under the Navy Education and Commissioning Program, NECP, they called that. So I stopped to see him, and he kind of said, "Well, since you're going to school, why don't you start here? It's a good place to put the shovel in the ground." So I said, "Well, yes, okay," and I ended up staying there.

Storey: This is at Moscow?

Hamann: Moscow [pronounced Mos-coe]. If you live there it's Moscow.

Storey: What did you study?

Hamann: Electrical engineering.

Storey: Why did you choose electrical engineering?

Hamann: Basically because it was so broad, you could get into darn near anything and still be an electrical engineer. Actually, I did the course work for a master's degree, but I didn't finish. It was a thesis degree, and I never did get around to writing a thesis. I studied in quantum physics, quantum mechanics in graduate school, and ended up in kind of the digital field, controls, computers, and that sort of thing, which was my interest at Grand Coulee when I first went there.

Storey: Tell me about how you got your first job at Grand Coulee.

Going to Work at Grand Coulee Dam

Hamann: Well, it was one of those flukes of life, I guess. I'd been angling for a job with the Navy, and I was set up to go to China Lake for the summer, as a summer job, and just about the time that I was ready to go, that Navy job fell through. They had a cutback or something, and the summer job disappeared, and I was casting around for other places to go. I happened to think about Grand Coulee, called over there, and they happened to have summer work.

Storey: What were you doing over there? Who hired you, do you remember?

Hamann: Sure, it was a guy named Frank Knudsen [phonetic].

Storey: How were you hired? Did you have to fill out a 171?

Hamann: Oh, yes. Yes, filled out a 171, sent it over there, they said, "Yes, come on over and go work," so I went over there.

Storey: What did they start you out doing?

Hamann: Drawings. They had a heck of a backload of drawings that needed to be changed from red and green to as-builts.

Storey: Red and green is?

Hamann: That's a term that we use in engineering. You take a drawing and you put new things on the drawing in red, and you scribble out old stuff with a green pencil. So when you change a control system, you call it red and green the schematic diagram, which [is] a drawing. Then that red and green is a paper print that goes to what's now called a CAD system. Back then it was just a drafting section that had pens, pen and ink, Leroy sets. The technician would get the original print out of the file and make the changes to it that were on that red-and-green drawing copy and then that would complete the as-built process. So you'd have an up-to-date print.

Storey: How many of those would you have worked on in a summer, do you have any idea? Three, hundreds, dozens?

Hamann: Thousands. Probably a couple thousand.

Storey: So you're not redrawing the whole drawing, you're just altering the original drawing?

Hamann: That's correct.

Storey: How do you take off? You said, I think, green was used to indicate what wasn't there any longer. Did you actually take it off?

Hamann: Yes. At the time there were different classes, different categories of drawings. There were drawings that had been done in Denver, and Denver had the originals. In that case, you would send what's called a sepia copy. This was a process that I'm not too familiar with, except that it involves ammonia, I remember that. But you run the original through with a special kind of paper and you get a copy of it that's called a sepia. Sepia, because that's the color of the lines on the drawing, kind of a dark brown. With a sepia copy you could use a chemical that would take the lines off the drawing, and then you'd use ink to put it back on, or whatever the new stuff was. Then you'd send a copy of it to Denver, and then they would update their drawings in Denver.

That got to be quite a process. It had got to be way behind. Denver didn't have enough people to keep up with the workload bureau-wide of all of the field offices sending these thousands of copies of sepias in to get their originals updated. They made a change in there about the time I was going back for my second year at Coulee, and they gave up. They would send the originals to the field to get the originals updated, and we'd update the original drawings right there, and then sent them back to Denver. Quite a process.

Storey: You talked about the red and green drawings. How long ago, before you got to them,

had those red and green marks been made, do you have any sense of that?

Hamann: Well, there was a real problem trying to keep the as-builts up to date, so that when a workman came to get the drawing of any kind of a control panel out in the plant, that he would go to the drawing file section and get a copy that had some expectation of being right when he got out to the panel in the field. That process was difficult and there was a lot of backlog in that. We had prioritized it so that we were doing the electrical schematics top priority, doing the electrical panel installations as a second, and anything that was just an architectural drawing or something along that line, we just never got around to those. So there would be red and greens from years and years back on just structural-type drawings.

Storey: Were you the only person doing this?

Hamann: Oh, no, there were about ten people doing it full time.

Storey: Working on this?

Hamann: Yes.

Storey: Now, the image I'm getting here is, there were a lot of changes going on, just continually.

Hamann: When I got to Grand Coulee, it was just at the beginning of the construction of the Third Powerhouse.[1]

Storey: In 19–

Construction of the Third Powerplant

Hamann: That was 1969, that I got there. Actually, it had been going on for two or three years before that, but the first jobs that had to be done was, there used to be two switchyards, a switchyard for the left powerplant and a switchyard for the right powerplant. Well, the real estate that that right powerplant switchyard was on was the area where they were going to build the Third Powerplant or house. So job one was, move that switchyard. It turned out to be, well, you couldn't just move that to a new place, we consolidated the two left and right switchyards into the consolidated switchyard at 230 kV up on the bluff, up above the dam.

Storey: That would be west of the dam there?

Hamann: You know, I don't know anymore which particular compass direction it was.

Storey: Was it on the Grand Coulee side, or was it on the–what's the other town?

1. Authorized for construction in 1966, Grand Coulee Dam's Third Powerplant consists of three 600,000 kV generators and three 700,000 kV generators with a total producing capacity of 4,125 megavolts. For more information on the Third Powerplant, see Wm. Joe Simonds, "The Columbia Basin Project," Denver: Bureau of Reclamation History Program, 1998, 48-51, www.usbr.gov/history/projhist.html.

Hamann: Coulee Dam. It was on the Grand Coulee side, and it was closer to Grand Coulee than it was the dam, actually. That's when the 230 kV cable systems were put in, where they bused three generators together and installed a pipe-type oil insulated cable that took three generators at a time up to the switchyard.

Storey: Went up the tunnel there?

Hamann: Yes.

Storey: That's the one that stretched ultimately, I believe.

Hamann: That's right. It was called thermal ratcheting. When they heated up, they would swell and move down downhill just a little bit. When they cooled off, the theory was, they would rachet back uphill. Well, they forgot to do that. (laughter)

Storey: The cables did? (laughter)

Hamann: Yes. So sooner or later, we had this excess of cable down at the bottom all kind of snaked back and forth inside the pipes and kind of pushing everything off-center, and the potheads up in the switchyard a few thousand feet away were kind of getting sucked into the ground. That ultimately resulted in going back to overheads.

Storey: Now, let's see. I asked you if that was because there were a lot of changes going on. Were the changes mostly related to the construction of the Third Powerhouse?

Hamann: Yes.

Storey: Rather than in Powerhouse One, Powerhouse Two, and all the other associated things, there were lots of continual alterations and improvements, or a combination?

Modernizing the Grand Coulee Powerhouses

Hamann: I'd say it's a combination. There was an awful lot of work going on in the left and right powerhouses, the old powerplants, to modernize them. They were being upgraded. Several units had blown windings, and there was quite an effort when I got there of installing new stater windings in the original units. They were getting a pretty thorough rehab while that was going on, new type control systems and all that sort of thing.

Storey: Did you ever meet any of the construction folks?

Hamann: Oh, yes, Jerry Metcalf [phonetic].

Storey: People like Don Duck?

Hamann: Oh, Don, yes, he was a legend. Howard Fink.

Storey: I've forgotten the name of the construction engineer for the Third Powerhouse.

Hamann: Muller [phonetic]. Bob Muller.

Storey: Yes, that may have been it.

Hamann: Bob Muller, I think he was the field engineer.

Storey: There was a project construction engineer, an older man, I think. I've forgotten his name right now.

Hamann: Howard Fink was one of those. He and our power field chief, Ray Seley [phonetic] both retired at the same time, I think that was in about 1972, '73, '74, somewhere in there.

Storey: Did you happen to be there when they started blasting to remove the–let's see, that would be the right abutment, wouldn't it, when you're looking–

Hamann: That's correct.

Storey: You figure it looking downstream, I believe.

Hamann: That's correct. No, I wasn't there. That had happened about two months before I got there. Got some good pictures of it.

Storey: What were the stories going around?

Blasting Away the Right Abutment

Hamann: Oh, there was quite a legend that arose around that. Bureau concrete is kind of legendary for being some of the hardest stuff in the world. The contractor that was supposed to do that was going to use not very much dynamite, he was going to use fertilizer and diesel oil, tamp it in the holes, and he drilled what he thought was enough holes and started loading up, and the Bureau inspector said, "You know, this is Bureau concrete. You'd better drill some more holes."

"Ahh, pish-tosh."

When they touched it off, all they did is make a bunch of smoke rings. So then he got serious and went back and drilled a whole bunch more holes, and that time when they touched it off it actually fell down.

Storey: I remember Don Duck telling me a story about blasting and unbalancing the generating units. Did you ever hear anything about that?

Hamann: No, I don't remember anything like that. That would probably have happened just before I got there.

Storey: One of the reasons I'm interested in the changes things is because another part of our office in Denver is responsible for the Historic Preservation Compliance. People

who are not informed might jump to the conclusion that we've got original electrical equipment and original windings and all that kind of stuff, but I think what I'm hearing from you is that there's a constant process of evolution in dealing with that material.

Equipment Life Cycles

Hamann: Oh, that's very true. You know, a powerhouse is a pretty complex thing. There's an awful lot of equipment in there, and every piece of equipment has a different life cycle span, life span, and things wear out and need to be replaced. So we end up with maybe the original turbine head cover, but the turbine wheel has been replaced. We probably got the same shaft, and probably the same rotor spider, but probably the poles on the machine have been replaced. Perhaps the irons in the stater has been replaced. Certainly, the old asphalt mica stater windings have been replaced. If the machine's been uprated, it may have new bus work, it may have the old bus work in it. Control systems, they get obsolete. The stuff that's in there, you can't buy parts for anymore, and you can't afford to make parts for them, so when you get to that stage, you know, you get to an incremental state where it's just no longer feasible to try and maintain something that's that old, and so you tear it apart and put something new in. So that evolution goes on constantly.

Storey: What about technological change? Is there a lot of technology sort of upgrading, or how does that work in the electrical field?

Hamann: Oh, that's a constant problem in the maintenance of a powerplant that was built thirty, forty, sixty years ago, is you end up with this curious mixture that spans from the very oldest to the most brand-new stuff out of the technology think tanks, and you've got to maintain all of it. So you got to have the ability, the experience, and the knowledge to fix everything that's been invented since we got into the power business. It's quite a job. Quite a job.

Storey: I can see where it would be. What kind of expertise does it take on our part?

Hamann: Ask me that in a different way. I'm not quite sure how to answer.

Storey: What kinds of expertise do we need on staff in order to be able to deal with that problem of keeping things working and functioning?

Hamann: We need some pretty salty electricians and mechanics. We need engineers that can integrate old stuff and new stuff.

Storey: What kind of proportions are we talking about here? Do you need a lot of electricians and mechanics and one engineer?

Hamann: Oh, just seat of the pants, I think one engineer can keep three to four electricians busy.

Storey: Interesting. You went to Reclamation for a summer job, is what I understand.

Hamann: Yes.

Storey: Between your freshmen and sophomore year?

Hamann: My junior and senior year, actually, that I had the summer jobs.

Storey: So maybe between your sophomore and junior year, and your junior and senior year?

Hamann: I think it was between my junior and senior year, and then I went back the summer after for senior to grad school. So I worked there actually two summers before I went on permanent.

Storey: Where did you go on permanent? How did you go on permanent? Was this one of those situations where you were a student hire, and it was expected that you were going to work for Reclamation?

Becoming a Permanent Reclamation Employee

Hamann: No, actually I was on a limited summer appointment. I don't know if my supervisors would totally agree with this, but what I thought I did was made myself valuable so they put me on permanent. (laughter)

Storey: When you finished with your M-A class work?

Hamann: Yes.

Storey: How did that work? Did you call up and say, "Gee, I'd like to come work there," or did they get you aside and say, "Hey," or how?

Hamann: Well, it was just an extension of that summer job. When the appointment ran out, they converted it to a permanent appointment.

Storey: Who were your professors at Idaho? Anybody in particular that influenced you toward Reclamation, maybe?

Hamann: Not toward Reclamation, no. I can remember, let's see, Paul Mann [phonetic] was one. Bill Parrish [phonetic]. Earl Gray [phonetic]. Real educators.

Storey: So then you went to Reclamation.

Hamann: Yes.

Storey: What did they start you doing, drawing more drawings?

Hamann: With drawings, yes. I had enough of that, so I went out and did some engineering things, solved a couple of problems that had been kicking around.

Storey: What kinds of problems?

Hamann: Oh, let's see, probably the first one I took care of was in the consolidated switchyard. This was a transfer bus scheme, which means the lines and the generators come into the bus through a single breaker, and then for any particular bay in the switchyard there is one breaker that can be multiplexed into any single position of any one of the other breakers. So if you need to take one breaker out to do a service on it, you can take a breaker out without killing a line or killing a generator.

The problem that the operations people had was the permanent breaker for the particular bay had all the controls and the relaying and the instrumentation hooked up permanently to the mimic board down in the powerplant. If they were using the transfer breaker, they were flying blind. They had control of it, of course, but they didn't have any instrumentation on it. So I rigged up a way where they could get the instrumentation set from the transfer breaker translated down to the powerplant when they were using the transfer breaker.

Storey: How long before you got to work on that, after you came back?

Hamann: I did that the second summer there.

Storey: So you were already transitioning out of the drawings by the time you became permanent?

Hamann: Yes.

Storey: What did they put you on after drawings?

Hamann: Just any engineering problem that came up.

Storey: Did they put you in the rotation program?

Hamann: You know, there was some talk about that, but we were too doggone busy. I never did actually get in the formal rotation program. There was just too bloody much work to do there at Grand Coulee while we were operating generators and building third powerplants, and all that kind of stuff, that I never got around to rotation.

Storey: What other kinds of things were you doing besides working on this design in the switchyard?

Replacing Circuit Breakers

Hamann: Oh, that didn't take long, that was a pretty small job, really. That was a three-or four-week thing. When I got that done, oh, what other things did I work on? It's hard to remember back. Did a lot of help to Mel Land [phonetic], an engineer that was there that was responsible for replacing all of those circuit breakers in the switchyard. The original breakers had been outclassed by the new fault duty current available there, and we had to uprate those and put in new breakers. That was a big job. That was Mel's job.

Storey: What kind of a cycle would have been on the breakers originally?

Hamann: Well, I think the breakers that we were replacing had like a two and a half G-V-A capability, gigavolt amp capability. They break a fault of two and a half gigavolt amps. After running a fault study with both plants consolidated and the new powerplant going in, it was more like we needed a five G-V-A breaker there.

Storey: So it was twice as large?

Hamann: It would enter up twice as much fault current.

Storey: Somebody, I think maybe it was Felix Cook, talked to me about changing breakers from two-cycle to one-cycle breakers. Was that at this location, do you happen to know?

Hamann: That was. It was in the 500 kV switchyard. We had purchased some low-bid breakers from an Italian outfit that didn't make the grade. In addition, in order to keep the northwest kind of safe, how to say that, to keep some stability factor in the system, we needed breakers that would break faults there at one cycle, one-cycle breakers. I think the Magrini breakers were supposed to be one-cycle breakers, but they'd never make it. That would take them up to three cycles, and that would add way too much destabilizing force into a fault somewhere.

Storey: To the grid?

Hamann: Yes.

Storey: So part of the issue here is stability of service?

Hamann: Oh, yes, reliability, stability. Yes, a powerplant the size of Coulee has to fit well in the power system; we can't just throw it in anywhere.

Storey: Why not?

Hamann: Because you overload the transmission lines. You've got to have the voltage control, you've got to have the generator load control. It's got to fit in the power system where the energy that you're generating can get to where the load centers are. So that takes the power grid to handle that.

Storey: How long were you there at Grand Coulee?

Hamann: One month short of ten years.

Storey: Really. So from '69 to '79?

Hamann: Right, I left in May of '79.

Storey: Were you doing the same thing all the time?

Hamann: No. No, when I first went there, the Engineering Section of electrical engineers, there were probably, I'm thinking, six or eight of us, and I was more specialized in control systems, especially digital control systems. A decision had been made that would install a SCADA [Supervisory Control and Data Acquisition] system there to control the Third Powerplant. We call them P-M-S-Cs in Reclamation, but the generic term in the industry is a SCADA system.

The problem we had is there was just too much logistics problems trying to get all the old-style control cables and all that sort of thing into the existing control center, but it was just logistically not feasible. So we were going to go to a computerized control system where there would be a remote terminal unit at each generator that would be controlled by a pair of wires from a master control in the control room. Then the operator would work through a man-machine interface into the computer system. The computer would then do the communication and control out to the generators. So instead of having to haul miles and miles of multi-conductor cable in there, you can just haul in a coaxial and do the same job.

Storey: Was this kind of control technology something that was being developed there, or were we just applying technology from somewhere else?

Hamann: We were applying existing technology. It was pretty new at the time, so we had all kinds of design problems and that sort of thing in the original systems. But, yes, SCADA systems were pretty well established in the industry at the time.

Storey: What about digital control systems?

Hamann: That was a technology that was probably not really leaking into the powerplant environment quite as fast as they were in other places. The problems there, gosh, you got so many sources of transience and that sort of thing. You get high-class, high-tech stuff, and close to thousand-volt spikes and things on control cables and whatever. Digital technology didn't survive well in powerplants at the time. The industry hadn't evolved to the point where they were protected well enough to be insulated from the pretty nasty powerplant environment.

Storey: I'm a historian. Can you explain to me what digital control systems are, and SCADA control systems are, so that I understand?

Hamann: I can give it a try. SCADA is an acronym for Supervisory Control and Data Acquisition. The architecture is a pretty large computer. Usually in those days it was actually two separate computers in a redundant sort of a configuration. The computer would have communications subsystems that would talk to a variety of remote terminal units out in the world somewhere, which were small–

END SIDE 1, TAPE 1. JANUARY 16, 1997.
BEGIN SIDE 2, TAPE 1. JANUARY 16, 1997.

Storey: You were trying to explain to me digital and SCADA systems.

Hamann: Yes. So SCADA, that acronym for Supervisory Control and Data Acquisition, a master station somewhere with dual redundant large computers, the communications to remote terminal units, and the interfaces between real world and the computer world was at these remote terminal units, where you'd bring in the instrumentation from the generator, the control needs for the generator, and those interfaces would be connected to the remote terminal units in the field. Then the operator could start and stop generators by fooling with a C-R-T, with a cathode ray tube, a television tube and a keyboard and control the powerplant from there, rather than walking over to a large board that mimics the outline of the power system, and turning the actual control switches that were electrically remotely connected to operating points on the generator. So that's a SCADA system. That's kind of what digital controls are, the use of computers in the powerplant.

Storey: So they complement one another, at least, if they aren't the same.

Hamann: That's correct, yes.

Storey: I've never understood how you can control things with touching the keyboards. It's sending an impulse somewhere and telling something to do something?

Hamann: Yes, the operator touches a keyboard, signals the computer to do like a start function on a generator. The communication from the keyboard goes into the main computer, and the computer decodes that particular instruction as a need to send a signal to the computer at the remote terminal unit, so it squirts a communication down to the R-T-U. The R-T-U looks at it and says, "Oh, they want me to start the unit. That means I need to go out here and energize this particular control output." So when that happened, then associated with the computer a relay contact closes, and that starts doing things in the generator circuits.

Storey: What kinds of issues did you run into as you were doing this? You said there were glitches, if you will, that came up.

Issues with Modernization Efforts

Hamann: Well, one of the more severe technical problems is, relays are electrically very noisy, and Grand Coulee, at least at the time, was just chocked full of relays, because that's the way you controlled things. Those things would generate spikes, voltage spikes and current spikes, that would get into the more tender circuits and computers and other sorts of digitally operated things, and blown them up.

Storey: So how did we solve that problem?

Hamann: Well, the industry got wiser, we got wiser, we started getting a lot smarter on where we tried to use those sorts of computers. We started finding out places where they just flat didn't work very well, and instead of trying to do things with digital circuits, we stayed with the older systems and just used the relays. There's nothing

particularly wrong with a relay, it's just that it takes up a lot of real estate, takes a lot of energy, and sooner or later they wear out.

Storey: How long were you working on this? I guess this is an automation program?

Hamann: Yes, that's what it was, automation, installation of a P-M-S-C. I probably started to lean over and to specialize in that after about two years. Then at that point, I started working much closer with the designers in the Denver Office. Our prime designer, his name was Rudy Hogg, and Rudy and I worked very closely together, probably three years there running, I expect, that we worked very closely together, building the specs for the computer system, for the procurement, doing the designs that went into it, working out the problems in interfacing to the powerplant, getting the plant ready for a computer. I mean, there's a lot of conditioning that had to be done to get a plant the size of Coulee ready for a computer system. All these interfaces had to be built and put together and installed.

Storey: Rudy's last name, how do you spell it?

Hamann: H-O-G-G.

Storey: That's what I thought you said. Like Ima Hogg in Houston, had a wonderful house there.

This is probably going to sound very dumb to you, but if the mechanical systems and the relays worked fine, why did we want to automate?

Need for Automation

Hamann: There's two reasons for that. One is, even though they worked fine, they were not expandable to include a powerplant that was three times bigger than the original. There just wasn't enough real estate, there wasn't enough access to bring all the control cables all the way from the Third Powerplant to the control room in the left powerplant control bay. You know, by the time you get around through all the corners and bends and conduits, it's probably like a mile-and-a-half run.

I would say there were probably two or three hundred control points on a generator and probably the same number of instrumentation points, so there's maybe five or six hundred parameters to bring back to the control room from each generator, and there were going to be six of them. So there were thousands of these control points and instrumentation points that would have to be brought into the control room.

If you used the way it had been done before with multi-conductor control cables, and you added that all up, there'd have to be this gargantuan raceway, you know, just bigger than the whole control room just to get the control cables there. The mimic board at the time took up the whole wall of the control room for the left plant, the right plant, station service, all that kind of stuff. There wasn't any more real estate there to expand it. Even if we had tried to use the same technology, we would have

had to put roller skates on the operators so they could get back and forth from one end of the board to the other as they needed to. It just logistically wasn't feasible to continue using the same methods.

Another reason was, in automation there was a desire to reduce the staff, the number of operators that there were needed to run the plant. The operating function was getting too expensive because it was very labor-intensive, so we wanted to automate things to cut down the intensity of the labor that had to be done. What it turns out is, you could reduce operating staff, but for about every body that you reduced in operating staff, you had to hire a computer technician to keep the computers going. So I don't think we ever really came out, made out there very much saving money by automating, but at least we did modernize things so that we could do things that just weren't possible in the old ways.

Storey: One of the topics that often comes up in major powerhouses like this is the labor unions. Did they have anything to say about all of this? Were they concerned?

Hamann: About the automation?

Storey: Yes, did you pick up on anything there?

Issues with Labor Unions over Modernization

Hamann: Yes, there was some concern there about taking jobs away and giving them to computers. It wasn't very severe, and I don't know why that was. It has been a big issue in some plants, but it wasn't too big an issue there at Coulee with the automation effort. It was a much bigger issue of the craft lines, separation of work between craft lines. That was a pretty hot issue at Coulee.

Storey: Did that affect your installation?

Hamann: No, not very much. I think it contributed to some inefficiencies. You know, if you're going to put in a pressure transducer somewhere on a generator to measure a bloody oil pressure or something, there's some plumbing work that needs to be done to plumb the oil pressure up to the transducer. There's some mechanical work to be done to drill some holes and tap them, so you can put some screws in there to hold the transducer in place. There's some electrical work to be done because you've got to hook the electrical output of the transducer up to something, some other location. So when there's very rigid craft lines, the coordination to get the plumbers there at the right time, and the mechanics there at the right time, and the electricians there at the right time, in order to get the work done efficiently, sometimes that gets a little ragged.

Storey: But they were installing the computer systems, right?

Hamann: The craft people were doing all of the conditioning, signal conditioning, control conditioning, and wiring work, to bring all of the generator points, the analog and digital points from the generator, up to the interface where the computer would plug

on.

Storey: Did you have to work with them in order to try to accomplish that, or was that was somebody else's job?

Hamann: Oh, you bet your boots. Well, it started out singly just me, but the further we went on, the bigger the job got, the more people we hired to do that, and so rather than I doing it, then I was doing more directing at the time, and those engineers and technicians were working with the craft people.

Storey: Do you have any recollections of working with the craft people?

Working with Craft People

Hamann: Oh, sure, worked with them a lot.

Storey: Any interesting stories?

Hamann: Oh, gosh, yes. There's probably all kinds of things.

Storey: Anything you'd like to share?

Hamann: Well, probably not. (laughter) Mostly it was me getting from dumb to smart, and them helping me do it.

Storey: In terms of dealing with them, you mean?

Hamann: No, in doing things in powerplants. I remember we had a problem with a CO_2 system on one generator.

Storey: That would be the fire suppression system?

Hamann: Right. Well, yes, if you get a fault in a generator, it dumps its bank of CO_2 bottles into the generator air housing to cool it and put the fire out.

They were having some kind of–I think it was a battery ground was showing up somehow or other in the system, and we were trying to trace this battery ground. I was reading the schematic and asking the electrician to do certain things in the circuitry, and I asked him to do one thing that just put an absolute short right from positive to negative across the battery. When I say battery, this is not exactly like what's in your car. I don't know if you've seen the battery rooms at Coulee.

Storey: I don't think I have at Coulee.

Hamann: The 250 D-C battery probably takes up a room probably about 100 feet long and 30 feet wide.

Storey: I've never seen a big one like that.

Hamann: Its cell is about a foot square and about two feet high, all series together, and with a 250 battery, I guess there'd be about 125 or 130 of those cells all series'ed up. So when you put a positive/negative short across that sucker, you really get some meatballs flying.

It exploded the wiring on this relay and started an arc that wouldn't go out. This electrician, his name was Harold Corp [phonetic], and he just sort of calmly reached in his pocket and he got his leather gloves out, and he just reached up and he grabbed the arc with those leather gloves and just snuffed it. I'm sitting there with my white face, and wet behind the ears, and thinking, "Boy, Blaine, you really screwed that up." (laughter) Yes, it's things like that.

They were good mentors, they really were. So, yes, I learned a lot from those folks.

Storey: You mentioned that more people were needed. Did you then become a supervisor? How did that work?

Hamann: In this effort to automate the plant, yes. Gosh, we probably ended up at the end, about the time I was leaving, probably twenty or twenty-five people working in the installation, computer repair, digitally conditioning the plant, all that stuff.

Storey: I take it this large number of people is necessary at least partially because of the large number of control points and instrumentation points?

Hamann: Yes, and the number of computers involved in the system.

Storey: What's a control point and what's an instrumentation point?

Control and Instrument Points

Hamann: For instance, the things you measure on a generator, like the amps, the watts, the VARS, temperatures, oil pressures, that sort of thing, that's an instrumentation point. So say there would be one transducer that has current transformer and potential transformer inputs to the transducer that are analogs of what the generator's doing. Then this transducer translates that signal from the guts of the generator into a zero to one miliamp signal that goes into the computer. So a zero to one miliamp scale into the computer, which the computer measures with an analog digital converter, that means zero to perhaps 3,000 amps in the generator. So that's an instrumentation point.

Then that instrumentation point gets measured by the remote terminal unit. The information about what the generator current is, is signaled to the main computer, the main computer translates that into the right symbols and numbers to put on the TV screen for the operator to read, and then he can sit there and read what the generator amps are for that particular generator. Well, there's eighteen generators. You've got eighteen of those, besides just amps, you got volts, you got megawatts, you got mega VARS, you got gate positions, you got all kind of instrumentation like that that goes

along with controlling and monitoring the unit.

A control point is usually a relay contact, where if you close this relay contact, then it performs some certain function to control a generator. So a control point would be like, speed level motor, that's the point where you control the power out of a generator. So the computer would get a signal from the operator to raise the load on some generator that goes into the man-machine interface, gets translated by the computer, gets communicated down to the R-T-U, and the R-T-U is told to close that contact. Well, when it does that, it puts power on the speed level motor in the governor cabinet, and raises the speed level of the generator, the generator opens up the gates a little bit to start putting out more power. So that's a control plate.

Storey: Tell me more about how your job evolved as you went from just yourself to all these other people working on the automation at Grand Coulee.

Evolution of the Job

Hamann: Why that evolution occurred, how it occurred?

Storey: Well, what was going on? Was it more complex to get things done because there were so many people involved? Did you become a supervisor? Somebody else become a supervisor? How did all that work?

Hamann: Well, one of the ways it worked is, as we got closer to the arrival date of the computer system, we had to be prepared to maintain two very big computers, all of the electronics that went with the man/machine interface, all of the computers that went with the communications subsystem, all of the remote terminal units. There couple three truckloads of computers involved there. You've got to be ready to maintain those the day the system arrives. So we needed a cadre of trained computer technicians. The work to be done, to just get the plant instrumented, so that all of those transducers that I just talked about were in place and ready to plug on to the computer, was a huge job. All that work had to be done, you know, between the time we made the decision, "Well, we're going to go for a P-M-S-E here," and that implied one hell of a lot of work to be done there in the plant.

Storey: I take it you had to specify a computer.

Hamann: Actually, Rudy was doing the work on specifications for the computer hardware itself.

Storey: Then you had to do the software. Somebody had to do the software?

Hamann: Yes, the systems house did the software.

Storey: What's the systems house?

Hamann: The prime contractor. In this case, it was Rockwell International, they got the bid.

Storey: I presume they did it in consultation with somebody at Reclamation. Were you involved in any of that?

Hamann: I was deeply involved in that. By that time my people, the people that were working on the computer system at Coulee, were deeply involved in that during the system build. Yes, we spent a hell of a lot more time than we ever cared to in Anaheim, California.

Storey: At Rockwell International?

Hamann: Yes.

Storey: Were you supervising this work?

Hamann: Yes. Yes, by then I had been promoted into several different jobs.

Storey: When you came to the Reclamation, first permanent, full-time job, what was your grade?

Hamann: GS-7. It was going to be 5, but I raised hell because I was on the Dean's List, so they said, "Well,, if you're on the Dean's List, we can give you 7." (laughter)

Storey: Dean's List in graduate school, no less.

Hamann: Yes, and in undergrad school, too.

Storey: And you left in '79?

Hamann: Yes.

Storey: At what grade?

Hamann: Thirteen.

Storey: So you were a division chief, a branch chief? What does this equate out to?

Hamann: My memory is getting a bit hazy.

Storey: It happens to everybody, don't worry about it. (laughter)

Hamann: I think the last title was Chief of Computer Systems Branch. That had three or four sections in it, and that included administrative-type computers work for the field division, too, the data processing stuff.

Storey: Doing time and that sort of thing?

Hamann: Yes.

Storey: Why did you decide to leave?

Moving into the Power Side of the Business

Hamann: Well, I was an electrical engineer and I had spent all of my career at Grand Coulee dealing with a specific computer system. Although I was very deeply experienced, the experience was very narrow, and I decided that if I ever wanted to continue calling myself an engineer, I'd better get out there in the world and do some things. I was pretty well dead-ended at that point at Grand Coulee, without crossing into some other sort of a field, like getting into the Bureau's power business, actually. I was in computer systems, I wasn't in the power business.

So I talked it over with my wife, and she said, "Yes, you're probably right. If you're ever going to get anywhere besides Grand Coulee, you'd better get out now." Because I was at the point where there weren't a heck of a lot of jobs out there in the Bureau's mainstream of business where I could step into it at a GS-13 without a lot of specific experience in that particular job.

That's how I ended up in Boulder City. A job opened up here in what was then the Power Division. It was a branch chief job in the Power Division, and I put in for it and got hired.

Storey: Doing what?

Hamann: That was coordinating the operations, functions, power operations and power engineering for the Region here. So I got involved a lot with the automation projects at Parker and Davis [dams], got involved with the automation projects at Yuma, got involved with Central Arizona Project. They were buying a computer for that, a SCADA system. Got involved in procurement there. At the time that branch had the electrical engineering design function for the Region, so any electrical designs that needed to be done for the Region were done from my shop.

Storey: What kind of a staff did you have when you left Grand Coulee?

Hamann: Engineers, computer programmers, computer technicians, systems analysts.

Storey: About how many?

Hamann: I'm thinking there were probably around twenty people.

Storey: Then you came here and had about how many?

Hamann: Much smaller staff here. It was five or six.

Storey: You came to the Region, rather than to Hoover [Dam]?

Hamann: That's correct.

Storey: You've touched on a topic near and dear to my heart, the automation of the system for the Central Arizona Project.

Automating the Central Arizona Project (CAP)

Hamann: Really?

Storey: Yes.

Hamann: Now, why would that be near and dear to your heart? (laughter)

Storey: Tell me more about it. Oh, it's just an interesting topic, I think. Very innovative, is my understanding.

Hamann: Yes. The people that were actually doing the work there in the Engineering Division, my involvement with them was to translate as much as possible as I could the experience with computer control systems, to try to help avoid some of the traps that we fell into through lack of knowledge at Grand Coulee. That turned useful.

Storey: What kinds of traps?

Hamann: I don't remember any specifics right now, but there's always a problem, when you're doing a system that that's big, the world out there knows it, and lots and lots of people beat their feet to your door to try to sell you their latest little doohickey. They tell you a lot of things, that if you believe it all, you're in big trouble. So to be able to toss a little experience to those fellows that were doing that computer system about what really works and what really doesn't work very well, I think, gave them a leg-up in designing the system for the C-A-P [Central Arizona Project].

I also got involved in the evaluation of the proposals that came back on that when they actually got down to the point of putting the request for proposals out, and they got five or six proposals back, and then there's quite a very large technical job of evaluating those proposals and trying to select the one that best meets your needs for the cheapest price. So I did some of the evaluation work on that.

Storey: Did you do it here in Region? Did you go somewhere else?

Hamann: It was mostly done in Phoenix. The books, logistics for an R-F-P [Request for Proposals] are kind of difficult because the prospective contractors turn in this proposal, and the proposal is proprietary information, and you've got to treat it as confidential information. They don't want to send lots of books everywhere in the world, they'd rather send one set of books to one place and all of the people that are going to be doing the evaluation gather around that one set of books. So that reduces the possibility of industrial espionage and all that stuff.

Storey: Did we have a system for the evaluation that made it pretty obvious who our winner was, or was there give and take among the evaluators, or how did that work?

Hamann: Oh, that's quite a process. It usually involved quite a bit of give and take. The way we usually do it is, each evaluator reads through a particular proposal and scores the different facets of the proposal on a scale of one to ten. Then the team gets together and talks about their relative scores, and why they rated it high or why they rated it low, or something like that, and we come to a composite-type rating for a particular proposal. So once you do that then for each one of the proposals, then you have a relative ranking of the proposals on a technical basis.

Storey: Do you happen to remember any of the issues that came up during that one?

Hamann: No, I sure don't. That was a long time ago.

Storey: Did the Region have any involvement in the actual construction and implementation of that, or is that strictly a project instruction engineer's issue and a construction office issue?

Region's Role during CAP Construction

Hamann: There was oversight from the Regional Office, but that's more general things, like budgets and timing and procurement issues and that sort of thing. The actual technical work was done at the project.

Storey: It must have been interesting. The way Larry Morton[2] explained this to me was that they purposely waited as long as they could to do the control system, because they wanted technology to have an opportunity to grow on them.

Hamann: You bet. You bet. That was a damn good strategy.

END SIDE 2, TAPE 1. JANUARY 16, 1997.
BEGINNING SIDE 1, TAPE 2. JANUARY 16, 1997.

Storey: This is tape two of an interview by Brit Storey, with Blaine Hamann, on January 16, 1996.

You were saying that that was a good strategy.

Hamann: Yes, that was a good strategy to wait for the industry to evolve as far as it could. There had been huge strides made from the late sixties, when we first started getting into the P-M-S-E at Grand Coulee, and the late seventies, early eighties, when C-A-P was going in a procurement. Lots of things that were real problems had been pretty

2. Larry Morton began his career with the Bureau of Reclamation in the Phoenix Development Office of Reclamation as a student engineer trainee. Morton's career began with working on survey teams and helping out with various computations for studies, until he graduated with his degree in engineering and was hired by Reclamation in January 1965. That fall, he joined the planning staff, which developed the justification for authorization of the Central Arizona Project. Morton eventually became the assistant project manager for the Central Arizona Project. Mr. Morton also participated in Reclamation's oral history program. See Larry D. Morton, *Oral History Interview*, Transcript of tape-recorded Bureau of Reclamation Oral History Interviews conducted by Brit Allan Storey, senior historian, Bureau of Reclamation, during 1996 in the Phoenix Area Office, edited by Brit Allan Storey, www.usbr.gov/history/oralhist.html.

well designed out, cleaned up. Things worked a lot better then.

Storey: Since then it's been another fifteen years. Would we do it a lot differently now than we did then?

Hamann: Yes, we are doing it differently.

Storey: We're changing things, is that what I'm hearing?

Evolution of Computer Systems

Hamann: Changing the central approach, the basic approach, to the way we do computer systems. The problems that we faced in procurement and maintenance of systems like that in those days, what you found is you became joined at the hip with the contractor who did the job, because there's so many thousands of man hours of work buried in that system in the software and design and build and debugging of the software programs, but the hardware itself is pretty volatile. Computer systems, jeez, their life span is like a May fly, it seems. They're like airplanes, they're obsolete before they're built. By the time you get them built and programmed and in your plant, they're practically a second generation obsolete, that sort of technical explosion of, what I'm trying to say, the high-tech explosion evolution of computer systems, or computers in themselves.

It had turned out that building master station controls with two dual redundant computers and all these programs buried in the one central station, it just isn't a good way to go these days. The manufacturer, obsolescence problems. The prime contractor himself, they start losing their ability, their corporate ability, to maintain what they built. They really don't have that much interest in it and you find yourself–

Storey: After they built it?

Hamann: Yes. Well, they want to move on to the next job. So they're very quickly obsolete and difficult to maintain. What we're trying to do now is build a new way of doing things, where instead of building a gargantuan system and putting everything in that one system, to build a lot of smaller modules that handle specific functional areas, and doing it with what's called an open architecture, where it's pretty well standardized. We have the ability to do that now. Computers have evolved to the point where they are standardized. It used to be that if you had a Xerox computer, you damn well had a Xerox printer, because it was the only that would talk to it. It's not that way anymore.

So we're able to build it with databases that reside in one piece of the machine, and man-machine interfaces that are a module that connect to the main communications system, like an ethernet or something like that. You can build systems that are now modular, so that you can replace them in small, more palatable pieces. These big computer systems, we're talking eight, ten, twelve million dollars, and they are truly and frankly obsolete before you ever get them. This way you don't necessarily save a lot of money, but instead of putting $10 million in it every ten

years, you can put a little less money in it every year, and keep replacing little pieces that have gone obsolete. So that's what we're trying to do with computer control systems these days. You've probably heard that down at Hoover.

Storey: No, I haven't interviewed anybody at Hoover yet.

Hamann: Oh, you haven't?

Storey: I haven't the time and energy for that. What else were you doing down there in your new job?

Hamann: In this Region?

Storey: Electrical design. Was there a lot of electrical design?

Hamann: Not a huge amount, but steady work. Steady work. The desalter construction [Yuma Desalinization Plant] was going on at the time and the C-A-P construction. There was automation work at Parker and Davis [dams]. There was a lot of work going on in that period of time in this Region, so it resulted in some electrical designs to be done here and there.

Storey: First you were at a project, then you came to the Region, and you were dealing with C-A-P, the desalting project, and a number of other things. One of the things I'm very interested in is the interrelationship with the offices. So, for instance, in the design work that was going on at Coulee on C-A-P and so on, how did you work out what was the project's responsibility, what was the Region's responsibility, and what was the Denver Office's responsibility?

Establishing Responsibilities between the Region and Project Offices

Hamann: There was a lot more rigid hierarchy in those earlier days. The Denver Office had the authority for all designs, specs, procurements of anything, I think at the time it was anything over 100,000 dollars. If a Region or a field officer wanted to do something, Denver did it. Or in some cases, if the field office wanted to do it and had the capability, they could ask for a delegation of authority, and the Denver Office would officially send them a delegation to do some particular job. So the work flowed essentially from the Denver Office, and there wasn't too many questions about where work got done. It's a lot different now. A lot different now.

Storey: But it seems to me as if you were doing a lot of design work at Grand Coulee, you were doing a lot of design work here on C-A-P. Am I misunderstanding what was going on?

Hamann: I'm not sure what your question is.

Storey: I thought you just said everything was done in Denver.

Hamann: All the work flowed from Denver. Denver did the large jobs, like design of the

Havasu Pumping Plant. Denver designed the Havasu Pumping Plant. The construction job was to take the specifications and the design books, and procure and install what Denver had designed.

Storey: That was what you were involved in then?

Hamann: I wasn't involved in that very much. What I was doing in the Regional Office here was a lot smaller-scale stuff. Our Design Office, our engineering design organization, if they needed an electrical design, they'd come over and get it from us. But that would be for the slice of work that was being done at the regional level. So there's this much work going on at the projects–

Storey: Great big chunk?

Hamann: Yes. It was mainly translating the designs and specs that the Denver Office had done into stuff that's on the ground. Some stuff being done in a Regional Office, but we didn't have huge capability at the time. So most of the things that we did were of smaller nature for projects or for places that didn't have the capability to do it for themselves. Then the larger work was being done in the Design Office in Denver.

Storey: When you came, you came as a 13?

Hamann: Yes.

Storey: How long did you remain a 13?

Assistant Project Manager at Hoover Dam

Hamann: I left as a 13. So I moved from the Regional Office Power Division down to Hoover as the assistant project manager at Hoover. That was an identified developmental job, and so I spent about three or four years, four years, I think, down at Hoover, as a GS-13. I left Hoover in 1987 for a promotion to the project manager at the Colorado River Storage Project in Upper Colorado [Region], and that was a promotion to a 14.

Storey: So you were in one of the management training programs, is that what I'm hearing?

Hamann: It wasn't really a management training program like the Departmental Management Program, it wasn't anything like that. It was just an identified development position, and it was an engineering job. I thought, "Gee, that sounds like fun." So I put in for it and was selected for it.

Storey: When did you go down there?

Hamann: I was just trying to think. It was probably '83, something like that.

Storey: So you were about four years in the Regional Office?

Hamann: Yes, three or four years in the Regional Office, then moved down there in '83, and

left there in '87.

Storey: What does an assistant project manager at Hoover Dam do?

Hamann: Well, the biggest task I had was aimed at building an organization to take the plant over. Now, the history of Hoover, back when Hoover Dam was built in the late twenties, early thirties, the Bureau of Reclamation was not well into the power business. The Secretary of Interior at the time decided to farm out the job of operating and maintaining the power-generating machinery and the equipment down at Hoover. So two contractors did that for the first fifty years of Hoover's life. Those were under two contracts that were called the agency contracts. Those two entities were the Los Angeles Department of Water and Power and the Southern California Edison Company. So they did the operating and maintaining work on the generation equipment there until May 31, 1987.

But we knew in the mid-eighties that we did not intend to renew those contracts when they expired in 1987, that Reclamation was able to do that sort of work and that was the sort of thing that was in our mission, so that we weren't going to renew the contracts. But we had to build an organization that was ready to do that.

Storey: That was in the era when, if unit number two was operating on the Nevada side, we knew that that was somebody's power?

Hamann: Yes.

Storey: It was specifically dedicated.

Hamann: Yes. The darn thing was wired right up to Los Angeles, and unit N-8 was wired up to Las Vegas, and unit A-3 and A-4 was wired up to Arizona. Yes, that's right.

Storey: So you were there transitioning from that private process to the Reclamation taking over.

Hamann: Yes.

Storey: What other kinds of planning did you have to do to get ready for the takeover?

Uprating Hoover's Generators

Hamann: Well, we also planned the operating program. In fact, that's work I did when I was here in the Regional Office, was put together the book, the justification book, for uprating Hoover Powerplant, that resulted in the legislation, the Hoover Powerplant Act of 1984, that authorized the project.

Storey: Uprating.

Hamann: Yes.

Storey: What's that mean?

Hamann: The original nameplate capacity of the plant was 1,344 megawatts. There was a lot more hydraulic horsepower capability there than had been tapped by the electrical systems. So uprating was, in conjunction with some maintenance programs like replacing generator windings, to go ahead and do the other work in order to get the plant able to tap that latent horsepower. So we uprated the plant from 1,344 to, I think it's 2,078 now.

Storey: More than doubled–no, not quite double.

Hamann: Not quite double.

Storey: Maybe about 50, 60 percent increase.

Hamann: The original nameplate capacities on the generators were eighty-seven and a half megawatt, and we raised them, most of them, to 130 megawatts. That took an infusion of about 170 million dollars.

Storey: This was possible because of technological changes?

Hamann: Yes.

Storey: Did we add new units?

Hamann: No new units, just kept the same old units, but the basic technological changes, increases in insulation quality. Original insulations were asphalt mica, insulation on the generator stater windings. By the late eighties, epoxy glass insulation systems had flowered into the market, and epoxy glass is a lot stronger insulation. "Stronger" is not quite the right word, but you can–

Storey: More effective, maybe?

Hamann: Yes, more effective. You can use a lot thinner insulation to get the same voltage protection. So that means that you can put less insulation and more copper in the slot. More copper means more electrical capability.

Storey: That's how you get the uprate?

Hamann: That's right. So if your replacing a stater winding, you've got the slot, it's already there in the iron, you got to fill it with something, and you can fill it with copper, you can fill it insulation, and it turns out that copper and insulation are about the same price. So if you put in more copper and less insulation, you end up with an uprated winding, and it's the same price as the original winding. So we could buy an eighty-seven and a half megawatt winding for the same price you can buy 130 megawatt winding. The incremental cost is in all of the auxiliary systems that might have to be upgraded in order to get that much more power out of the unit, like circuit breakers, maybe, or the bus works, or instrumentation systems that won't handle that much.

Storey: Were there any other kinds of technical problems? What about transmission lines?

Working with Western Area Power Administration (WAPA)

Hamann: Well, the thing that we had to do in order to get Hoover-efficient was to eliminate that situation where generators are wired into particular states. We had to change it so that we had a common point of delivery for all of the Hoover energy and a common place for the customers to come get their entitlements. We worked that out with our sister agency, the Western Area Power Administration [WAPA], and we used the Mead substation, down here south of town, as that common delivery point.

Storey: So up to there it's Reclamation lines?

Hamann: Federal. I think Western actually owns the pieces of the transmission lines from Hoover to the Mead sub. We worked very closely with them. I mean, we're two horses hauling the same cart.

Storey: Probably a lot of former Reclamation employees there.

Hamann: Oh, yes.

Storey: That transition took place before you came to Hoover, I believe.

Hamann: That's correct. That was 1977.

Storey: Did that cause any issues at Coulee while you were there, when that transfer took place?

Hamann: No, because the Bonneville Power Administration had always existed there in the Northwest, and the relationship between Coulee and Bonneville was the same relationship that was created by the separation of our marketing and transmission functions into a new agency.

Storey: I keep forgetting Western isn't everywhere Reclamation is. (laughter)

Hamann: That's right. Everywhere but in the Northwest.

Storey: In the Pacific Northwest. What other kinds of things were going on? What I think I'm hearing is, you uprate the generating units, then you have to uprate the delivery system to deal with what the generating units are pushing into it.

Hamann: Yes, and if you're doing it right, you're doing all that simultaneously, which means one hell of a lot of work.

Storey: I presume we were doing it correctly. (laughter)

Hamann: Yes, I like to think so.

Storey: Did we have any problems when we started putting the new uprated units on line?

Problems with the Hoover Uprating

Hamann: Oh, gosh, there's always all kinds of problems doing that.

Storey: What kinds of things come up?

Hamann: Oh, things that you design that aren't quite right; things that you designed right, but didn't get installed quite right; things that got designed and installed just like you think they ought to, but they don't work the way you thought they did. You know, all those little fine-tuning things when you're doing new stuff. Those always crop up, always on Friday afternoon.

Storey: One of the solutions might be to only start things on Mondays. (laughter)

Hamann: No, you got to finish them on Mondays, that's the damn business. (laughter) You're committing to put the unit back on the line on Friday afternoon, that's always a big mistake. You're always out there Friday midnight in a snowstorm, up to your butt in a snowbank, trying to make something work. (laughter)

Storey: Do you remember any of the details of any of those things that came up, by chance? What kinds of issues are involved here?

Hamann: We had only done two units at Hoover before I left, A5 and N7, and that was a pilot program. I was still in the Regional Office when those two were rewound. So I didn't really get involved in the work of the uprating program, in its grand and glorious peaks in the late eighties and early nineties, because I was upstream on the Colorado River Storage Project. I came back just about the time it was wrapping up.

Storey: Who was the regional director when you came to the Region in '79?

Regional Officers

Hamann: Manny [Manuel] Lopez[3] had just retired, and Gene Hinds[4] was taking over.

Storey: What was Mr. Hinds like?

Hamann: He was a nice guy, he was really nice. Naturally, being new and fairly down in the organization, I didn't work a lot with him, but he was a very personable person.

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3. Manny Lopez was Lower Colorado Region regional director from 1975 to 1979. Mr. Lopez also participated in Reclamation's oral history program. See Manuel (Manny) Lopez, *Oral History Interview*, Transcript of tape-recorded Bureau of Reclamation Oral History Interviews conducted by Brit Allan Storey, senior historian, Bureau of Reclamation, in 1995 and 1996, in Jefferson County, Colorado, edited by Brit Allan Storey, 2008, www.usbr.gov/history/oralhist.html.

4. Gene Hinds served as regional director of the Lower Colorado Region from 1979 to 1981and went on to become regional director of the Southwest Region from 1982 to 1988.

Storey: Then you went down to Hoover. Who was the project manager?

Hamann: Ben Wilkinson.

Storey: What was he like?

Hamann: He's a great guy, too. Really appreciated not only the working for him, but the opportunity he gave me. So, yes, I like Ben.

Storey: Had he been there a long time?

Hamann: Let's see. Yes, I think so. Ben, oddly enough, had been at Grand Coulee.

Storey: So you knew him from there?

Hamann: No, he left there before I went to work at Grand Coulee, and he moved down, he was the manager at Parker Dam for a long time, up actually until Western was created in '77, and it was decided to move the power plants into one consolidated group of people, and the Parker-Davis control system, which was in Phoenix, transferred to the Department of Energy. When that happened, Ben was promoted to the project manager at Hoover, which had Hoover, Parker and Davis involved.

Storey: So he would have been there from '77?

Hamann: Yes, I think that was about right, '77, '78, somewhere in there.

Storey: You had an office down there?

Hamann: Yes.

Storey: How did you like working down there?

Hamann: Oh, I loved it. It was great. Yes. It was hard to leave.

Storey: It's an interesting office building there overlooking the afterbay.

Hamann: Yes.

Storey: It's an afterbay, isn't it?

Hamann: The afterbay, yes.

Storey: How did you get down there? Did you take the elevators?

Hamann: Yes.

Storey: You parked where?

Hamann: Well, I'd park my motorcycle over by the exhibit building, then walk over to the elevator and ride the elevator down to the plant.

Storey: Was there enough parking over there for all the employees that worked at Hoover?

Hamann: Parking has been a perennial problem there. There's just not enough flat real estate around there in that canyon to really park all the cars that need to be there and want to be there.

Storey: So how did we deal with it?

Hamann: Well, there was an employees' lot. If you got there early, you got a spot in the employees' lot. Other than that, you just took potluck in the public lots.

Storey: What else was going on while you were down there? Were you just solely assigned to the uprating program and the transfer program?

Hamann: No, I was directly responsible for the maintenance crews, for the warehouse. I don't remember exactly all it whacked up. Ben kept the guide force and the police force and the office administrative functions, himself.

Storey: Ben Wilkinson?

Hamann: Yes.

Storey: Oh, okay, I thought I'd wrote–Ben. Nothing. (laughter)

Hamann: I am surprised.

Storey: You're surprised time is flying so fast?

Hamann: Yes. Yes, I thought I'd talk for about a half hour. (laughter)

Storey: I told you about that. (laughter) So what kinds of maintenance problems or issues, I should say, are there down at Hoover? Is this an issue of routine maintenance to prevent problems, or what?

Routine Maintenance at Hoover Dam

Hamann: We would like it to be a 100 percent preventative maintenance. You never have that luxury. There's always the problems of, you can't just maintain it, it's broke, and you've got to replace it. And then problems of not only is it broke, but it broke at midnight, so you've got to replace it, do something on an emergency basis. But the most effective job we do is preventative maintenance.

Storey: How do we do that? Do we have schedules?

Hamann: Well, now, remembering back to the mid-eighties there, when the operating agents

were still responsible for the O&M of all the generating machinery, the job for the Bureau forces, for our forces, were the auxiliary systems, the dam, things in the dam, appurtenant works, the waterways, you know, all the piping, all the station service equipment in the plant. All those things.

Storey: Painting stuff?

Hamann: Yes, unless it was a generator. If it was a generator, the agents painted it.

Storey: Why did you decide to leave there?

Hamann: Well, it was a promotion, for one thing. It was running the project myself, you know, the project manager, rather than the assistant project manager. Although Ben was a great guy to work for, you know, the old saying is, "If you ain't the lead dog, the scenery doesn't change." (laughter)

Storey: How did you decide to apply for that one? Had you applied for a bunch of things?

Hamann: No. No, that was the first job I'd put in for since I was down at Hoover.

Storey: How did it come to your attention?

Hamann: Oh, that's just the way we do business, you know, when a vacancy comes open, it gets advertised, and you hear about it, and if you want the job, you put in for it, and if you're selected, you go.

Storey: You were a 13?

Hamann: Yes.

Storey: So this was a 14 position, then, I presume?

Hamann: Yes.

Storey: Quite a change after you had been here for how many years?

Hamann: About ten.

Storey: Another ten years here.

Hamann: Nine, I guess, something like that.

Storey: I would get the sense that you probably don't move very often.

Hamann: Well, I guess I haven't. Some people get itchy feet awards. I think our last regional director, actually a couple of regional directors, Bob Towles, you probably talked to

Bob Towles.[5]

Storey: Yes, I just spoke to him the week he retired.

Hamann: I think he held the record for itchy feet, had held the most number of different jobs in the Bureau.

Storey: Really?

Hamann: Yes.

Storey: Well, he was in construction until he went–well, he was even in construction down at Phoenix.

Hamann: Yes. I think he had some thing like thirteen or fourteen different jobs in his career.

Project Manager of the Colorado River Storage Project

Storey: The Colorado River Storage Project, where is that headquartered, Salt Lake?

Hamann: No, it was headquartered in Page, Arizona.

Storey: Oh, it's at Page.

Hamann: With the Glen Canyon Dam.

Storey: Well, what does the Colorado River Storage Project involve?

Hamann: Well, it's six dams, eight powerplants on the tributaries to the Colorado [River].

Storey: So we're talking Blue Mesa?

Hamann: Yes. Blue Mesa, Morrow Point, Crystal Dam on the Gunnison, the Fontanelle Powerplant and Flaming Gorge on the Green River. Two power plants up on the Grand Mesa, what they call the Molinas Powerplants, and Glen Canyon.[6]

Storey: That's an impressive array of powerplants.

Hamann: Yes, that was a lot of fun.

Fontanelle Dam

5. Robert Towles served as regional director of the Lower Colorado Region from 1991 to 1994.

6. Authorized in 1956 and set in motion with the construction of Glen Canyon and Flaming Gorge dams, water stored by the Colorado River Storage Project provides a portion for direct use in the upper basin, in addition to producing hydroelectric power to serve the needs of Colorado River upper basin states. The project includes four storage units: Glen Canyon on the Colorado River in Arizona near the Utah border; Flaming Gorge on the Green River in Utah near the Wyoming border; Navajo on the San Juan River in New Mexico near the Colorado border; and the Wayne N. Aspinall Storage Unit on the Gunnison River in west-central Colorado.

Storey: Fontanelle, though. Fontanelle, we've had a couple problems with over the years. Were there any of those while you were there?[7]

Hamann: They were just finishing up the repair of the dam as I came into the project.

Storey: This was about '89?

Hamann: '87.

Storey: So this was not the original, this was the second time that it threatened to fail?

Hamann: Oh, yeah? I wasn't aware that there'd been a problem with it in the past.

Storey: Yes, Barney Bellport,[8] when he was chief engineer in the seventies, had to go up and fix a problem there.

Hamann: Really?

Storey: Yes.

Hamann: Yes, I guess that's–

Storey: I believe so.

Hamann: By golly, that's right, they ran into a problem when they were originally filling it.

Storey: That's right. And he ordered it breached until they could solve the problems, was my understanding.

Hamann: Yes, there was something about the darn spillways, and how it wasn't maintained–

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Storey: Well, anyway, there was the initial problem. What was this second problem that they were correcting when you got up there all about?

Fontanelle Dam Repairs

Hamann: It was leaking. The impervious layer was leaking, so they needed to go in, and did a

7. The primary feature of the Seedskadee Project, Fontenelle Dam is located on the Green River 24 miles southeast of La Barge, Wyoming. The project provides storage and regulation of the flows of the Green River for power generation, municipal and industrial use, fish and wildlife, and recreation. For more information, see Toni Rae Linenberger, "Seedskakee Project," Denver: Bureau of Reclamation History Program, 1997, www.usbr.gov/history/projhist.html.

8. Bernard (Barney) Bellport served as regional director of the Mid-Pacific Region from 1958 to 1960 and went on to become director of the Office of Design and Construction (Chief Engineer) for the Bureau of Reclamation from 1963 to 1972.

really innovative fix to that. I'd never seen anything done that way before, but it's becoming a fairly standard application now, where they put a concrete wall down through the center of the dam, all the way around down to the bedrock. The machine to do that is really an interesting machine.

Storey: They don't just excavate a trench and fill it with concrete, huh? (laughter)

Hamann: No. No, not for a reservoir that's full of water.

Storey: Yes.

Hamann: It's like a gigantic–I'm trying to think of the right word to use, it's a rectangular tube, I guess I would call it, probably–I think this was about ten or fifteen feet the long way and about three feet the short way on the tube, and then the tube itself was in the neighborhood of fifty or sixty feet high. The very bottom edge of that rectangular tube had grinding teeth on it, like an oil well bit, driven with hydraulic motors, and this tube would be set up on the top of the dam, and it would just start grinding its way down into the dam.

As it went, the slurry mix, that was almost like a well-drilling slurry, would go into a reclaiming plant, you know. The teeth would grind up all the rocks and the crud inside the dam, and that would be translated into the slurry. Then the slurry went into a reclaiming process where it would take all that dirt and sand and crap out, and put it back in the top of this hydrophage, I think they called it.

This darn thing would just grind its way all the way down through the center of the dam, right down into some distance into the bedrock down under the dam. Then they would put in the grout pumps, and as they put the grout into the bottom, right down at the very base of the dam they'd start filling this hydrophage with grout, and as it filled up, it would push the slurry out and they'd slurry it, go into a storage place.

When they get all done, they have got a hole, actually a column, built right down through the center of the dam. So they pull the hydrophage out, and now they've got this pillar of grout right all the way down through the dam. Then they would go over to a new site and start the same thing all over again.

So at that point, they'd have a column in the dam that would be whatever those dimensions I gave you were, maybe ten feet long and three feet wide. So they'd go over eight feet and they'd do a new one. Then they'd go over eight feet more and do another one. When they got the first pass made with the gaps in there that were eight feet wide, then they brought that ten-foot back, and they'd start it over and fill in all the gaps, taking one foot off each one of those new columns.

Storey: Of the previous columns.

Hamann: Yes.

Storey: Previously laid columns.

Hamann: So then when they got the last one in there, then they would have a continuous wall all the way across the dam.

Storey: Interesting.

Hamann: I thought that was a great process. That was really clever.

Storey: Yes. I presume it didn't leak quite so much after that either.

Hamann: Didn't leak at all anymore.

Storey: What were the kinds of issues that you were dealing with as project manager with those major dams and major hydroplants?

Managing the Colorado River Storage Project

Hamann: Oh, gosh, a lot of coordination with Western [WAPA], a lot of coordination with our customers. We were setting up a process where the customers got a lot closer to what we were doing, where they were actually involved in the work plans and the fundings and budgeting and that sort of thing. We were finishing uprating and rewinds at the Curecanti Units[9] and bailed right in to an uprating at Flaming Gorge. All what seems to turn out to be a typical evolution for Bureau powerplants.

Storey: What role would the project have in deciding about uprating Flaming Gorge and Curecanti, for instance? Is that something that the project suggested or is that something where Denver came out and did an inspection and said, "Hey, we did to uprate these"? Was the Region involved? How did that work?

Hamann: It was a combination of all three, you know, the agencies. At the plant level we would be doing the testing and the monitoring and the maintenance on the units and it would be our first signal that said, hey, these windings are going to hell on us here, we're going to have to replace them. Somebody in the chain would say, "Well, if we're going to replace, what's the potential for uprating?" Then we'd kick off an engineering analysis in the Denver Office to look at the potential for uprating.

Once the technical questions were answered about, yes, indeed, there is more horsepower there that we can tap, and here's how much they could be uprated to, then it goes back to an issue of, well, okay, so we can operate it, we're going to cost this much. Is that worthwhile? And that's an exercise where we need to deal with the economics of the power system and get close together with the customers and with Western to figure out whether or not it's a good deal economically to actually put that much money into it, that extra money. If the answer comes up, yes, cost-effective, well, then we go into a design cycle to do a request for proposals on

9. The Curencanti units, now referred to as the Wayne Aspinall Units of the Colorado River Storage Project, develop the water storage and hydroelectric power generating potential along a 40-mile section of the Gunnison River in Colorado by the construction of three dams and powerplants: Blue Mesa, Morrow Point, and Crystal.

uprating, back to the evaluation, the selection of a contractor, and then they go to work.

Storey: How does this process work? Who pays for it?

Project Funding

Hamann: The customers, ultimately.

Storey: Yes, but when you're looking, saying, "Hey, we need to do some work. Let's get Denver in here and we'll do some analyses and so on," is the project having to come up with the money for this? Is there a pot of money at the Region? Does Denver pay? How does that work?

Hamann: The Reclamation projects are funded at the project level; that's where the money is. The Denver Office, except for small amounts of money or special programs, the regional offices and the Denver offices are paid from monies that derive from projects.

Storey: So you're saying the project–

Hamann: Had to pay for itself.

Storey: –Would come up with this money out of its budget?

Hamann: Yes.

Storey: Is that a long budgeting process?

Hamann: Well, the Colorado River Storage Project [CRSP] is an odd animal. C-R-S-P and Hoover are funded differently than almost every other Bureau project that depends on the appropriation cycle from Congress. That's three years long. Then those appropriations are ultimately repaid by the sale of our product, megawatt hours. So the customers end up paying a rate for power that rate translates from the amount of money that we spend and operate and maintain in the project, but the money comes from the federal government and then is repaid back to the Treasury through the rate process, except for C-R-S-P, which is a true revolving fund, and Hoover, which is what they call a permanent appropriation. It makes it work almost like a revolving fund, so the customers directly pay for C-R-S-P. They put the money in a special fund and we spend from that fund. When we cash a paycheck, it winds its way back to a bank account that they put money in.

Storey: So this is a big pot of money that gave you some flexibility that you might not have had on another project, is that what I'm hearing?

Hamann: Well, there's two edges to the sword. If you're working from appropriations, you've got this big problem of the unwieldiness of that three-year process to get money from the federal government. There are ups and downs to that, too. If you're on a

revolving fund, it seems like you've got all this great flexibility, but you've got one additional problem, and that is, when you're out of money, by God, you're out of money. If there's no money in the account, people don't get paid or the paychecks bounce. So, you know, it's a finite source. I guess people would probably turn blue to hear me implying that the federal source is an infinite source, but it's a lot more flexible than a fixed bank account, because you have to run that project just like you run your finances at home.

Storey: Do your revenues go into there?

Hamann: That's the source of the money. The revenues go directly into this fund.

Storey: Were you ever in danger of depleting your bank account, as it were?

Hamann: You bet your boots. We were paying for the Environmental Impact Study [EIS] out of the same budget, the Glen Canyon E-I-S. That was one costly process.

Storey: So that was going on while you were there?

Hamann: Yes.

Storey: Let's see, you went up there, I believe you told me, as a GS-14?

Hamann: Yes.

Storey: Were you that throughout your period there?

Hamann: Yes.

Storey: How many people were working on the project?

Hamann: It varies up and down, but I'd say plus or minus 130.

Storey: Eight powerplants, as I recall?

Hamann: Yes.

Storey: Six major dams?

Hamann: Yes.

Storey: And you're a GS-14.

Hamann: Yes.

Storey: Somehow a GS-14 sounds underpaid to me.

Hamann: Oh, I always thought so, but doesn't everybody always think they're underpaid?

(laughter)

Storey: Well, a lot of us do. (laughter)

Hamann: But it was fun work. I mean, it was really fun. It was a fun job.

Storey: As project manager you had unions again, I presume.

Working with Unions

Hamann: Oh, yes.

Storey: Were there any new kinds of issues that you had to deal with now that you hadn't had to deal with before?

Hamann: Not characteristically. There's always specific sorts of problems. The union for the C-R-S-P is I-B-E-W [International Brotherhood of Electronic Workers].

Storey: [International] Brotherhood of Electrical Workers.

Hamann: Yes. That was new to me. At Grand Coulee, it was the Columbia Basin Trades Council. At Hoover, it was an A-F-G-E [American Federation of Government Employees] unit. This is the first time I'd worked with I-B-E-W, but it's pretty much the same sorts of things.

Storey: Does it cause problems for Reclamation running projects?

Hamann: The union?

Storey: Yes.

Hamann: Well, I think it depends. It's a relationship issue. It can be; it doesn't have to be. In fact, I think we've got one of the most productive relationships in the country going on down at Hoover right now with the partnership efforts there. I-B-E-W is quite professional, so the problems really usually aren't real big.

Storey: Were there any particular issues that came up at any of the dams or power plants while you were there that were notable?

Morrow Point Dam

Hamann: Oh, let's see, it seems like there's always something. Of course, the Fontanelle repair. At Flaming Gorge we were going through the uprating there. That's always exciting. The contractor for Morrow Point in operating those units had tubed the design and we had some real problems with that.

Storey: They had what?

Hamann: Tubed it, screwed it up. What he'd designed wouldn't work, didn't work, wasn't working. Big problem.

Storey: You would have to change contractor or what?

Hamann: Yes.

Storey: I suppose that becomes a major headache for the project manager.

Hamann: Oh, yes. Oh, yes. Lots of problems there dealing with the contractor who's created a problem and now we have to fix it. You know, defaults and all that kind of problems to deal with.

Storey: Well, you know, I'd like to keep going, but our two hours are up. So I'd like to ask you whether you're willing for the information on these tapes and the resulting transcripts to be used by researchers.

Hamann: I certainly am.

Storey: Good. Thank you very much.

END SIDE 2, TAPE 2. JANUARY 16, 1997.
BEGIN SIDE 1, TAPE 1. DECEMBER 15, 1997.

Storey: This is Brit Allan Storey, senior historian of the Bureau of Reclamation, interviewing Blaine Hamann, deputy regional director of the Lower Colorado Region, in his offices in Boulder City, Nevada, on December 15, 1997, at about seven-thirty in the morning. This is tape one.

You were saying that you had just received a copy of Colin Fletcher's book, *River*, I believe.

Hamann: That's it. Yes.

Storey: Tell me about it and him.

Colin Fletcher

Hamann: Let me tell you about him first. He's a most interesting person. I first met him when I was at the Colorado River Storage Project (CRSP) in Page [Arizona]. He came into my office one day, and he was interested in getting his rubber raft around Glen Canyon Dam so he could go on down the Colorado River, down through the Grand Canyon. He looked to be about, perhaps, seventy-five years old at the time, and I thought, "Whoa, what have I got here? What am I dealing with here?" I had never met him before and didn't have the faintest idea who he was.

We got to talking, and it turns out that Colin Fletcher is–I'd have to call him a gentleman explorer. He has done several amazing things in the Western United

States. He has walked the Cascade Ridge all the way from Mexico to the Canadian border.

Storey: I think he walked the Grand Canyon maybe. That's why I'm remembering his name now.

Hamann: He walked the Grand Canyon all the way around it on foot. One book he gave me at our first meeting was off the shelves in the bookstore out in the Visitors Center, and it was called *The Man from the Cave*. He had been walking down here along the Colorado River below Hoover Dam, and he'd run across this cave in the Nevada side of the canyon, so he spent the night there. It was obvious to him that that cave had been inhabited for some period of time by someone, and he got fascinated with it, so he took the trouble to research it, almost like a historic detective story, and found out who the guy was who lived there and when he did it, and where he went from then, and traced him down, ran him down, and traced his life all the way from his birth in, I believe it was Ohio somewhere, to his death down in the Chocolate Mountains down in California. The fellow's name that stayed in the cave was Chuckawalla Bill. That was a fascinating book, and that was where I was first introduced to Colin's style, his style of writing as well as his style of living.

My first meeting with him was business as usual to him, but it was pretty darn amazing to me to see some seventy-five-year-old person on a rubber raft wanting to get around Glen Canyon Dam so he could go down the Colorado River. There are lots of people who wouldn't dare do that. But I'll be darned, he did it.

This latest book, *River*, is the story of his journey.[10] He was interested in taking the entire Colorado River route from Well Springs to ocean. So his rubber raft–he's a purist–his rubber raft, he had it hauled up to the very headwaters of the Green Water up in Utah, essentially drug it up in the brush far enough to get it wet in the spring, which is the farthest one upstream, and then sailed, paddled, motored, whatever, all the way down the Colorado. He was purist enough that, although he hates dams, they're just to him an environmental abomination, he would bring his raft up to the upstream side of the dam and bump it, and then get transported around the dam and then go downstream and bump the nose of his raft against the downstream side so he could say he was not really stopped by that concrete, then go on down the river. You'd enjoy talking with him. He's a real [unclear].

Storey: It sounds as if the things he's done tend to focus around the Colorado River or the American West.

Hamann: I would say the American West. I expect he's done other things in other places, but the books that he's written about walking the Sierra Nevadas and the Cascades, walking the Grand Canyon, walking the Colorado, they seem to, yes, focus in the West here. And he treated me very well in the book. I didn't come off as a bureaucratic ogre.

10. Colin Fletcher, *River: One Man's Journey Down the Colorado, Source to Sea* (New York: Alfred A. Knopf; distributed by Random House, Inc., 1997).

Storey: Did you help him get his raft around?

Hamann: Yes.

Storey: How did you do that?

Hamann: I just had some people I knew pick him up at the marina, Wahweap Marina, after he had gone down and touched the dam, and then loaded his raft on a trailer and took it down the access road, and put it in down below the dam.

Storey: Dropped it in. It's interesting what you can get if you ask in the right way.

Hamann: Right. I thought, "Holy cow. This fellow knows not what he does," because he's got to face the Park Service to get a permit to get down there. He explained in the book the gyrations he had to go through to get that permit, but there were real people in the Park Service, too, and they did get him a permit. That was during the time when the Colorado River studies or the Grand Canyon studies were going on. There were a lot of journalistic permits and scientific expeditions that were extraordinary to the rafting concessions. They managed to get him licensed as a reporter to do that.

Storey: When were you at Page?

Hamann: I was there from, it'll almost be exact, August '87 'til August '92.

Storey: So this book is at least five years in the making.

Hamann: About three, I believe. I'd been there a couple of years when he came. Oh, I see what you mean. Yes.

Storey: Well, I mean, if it's brand new.

Hamann: Right. He probably made his trip in the '91 and '92 season. It took him two years to do it. Winter fell before he got too far, and he had to lay up for the winter and then come back and start the next spring. So I'd say he probably was done with the field trip itself probably in '93.

Storey: So, about four years to get a book.

Hamann: Yes.

Storey: Write it, edit it, publish it.

Hamann: Yes.

Interviewed for the PBS Series *Cadillac Desert*

Storey: Interesting. There have been a couple of other things going on, *Cadillac Desert*, for instance, this video series on P-B-S was on and you're the first person I've talked to

who was interviewed in it.[11] I'd like to know how they approached you, and how long it took to get the segments that were actually aired, and all that kind of stuff, if you're willing to talk about it.

Hamann: Well, it was pretty painless, at least on my part. I know that, of course, the filmmakers went through a lot of trouble. They contacted the Regional Public Affairs Office here, and wanted to talk to somebody who was down at Hoover Dam, and that was me at the time. So they put us in touch, and we put together an interview schedule, and did the interview. Although it was about four hours on camera making the tape, there were, what, maybe thirty seconds or so, forty seconds, that actually made the final. Interesting, in that four hours I probably said the three off-color words and every one of them made the tape. I think I discovered how to not end up on the cutting room floor, just swear like a sailor and then they put it in the tape.

Storey: So, about four hours. A lot of prep time or how did that work?

Hamann: No, it was pretty extemporaneous, really. They just came in and set up the camera and we started asking questions, and I got started jabbering and waving my arms.

Storey: One of the interesting things to me about video is that, unlike this interview, my part of it is on the tape, theirs never shows up. Were they speaking to you and asking you questions on tape and all that kind of stuff?

Hamann: Yes.

Storey: So they edit all that out.

Hamann: Yes. They would ask sort of a general question, sort of a leading, open-ended question, and then let me fill in the blanks.

Storey: Who was it that interviewed you, do you remember?

Hamann: John Leese.

Storey: Oh, John Else?

Hamann: Else, yes. I said that wrong. Else, John Else.

Storey: What was he like?

Hamann: Oh, he's a nice guy, really nice. Pretty knowledgeable.

Storey: Did you feel they were grinding axes or what?

11. *Cadillac Desert*, Produced by KTEH/San Jose, John Else, writer, director, and producer, Deborah Hoffman, editor, 1997.

Hamann: No. As a matter of fact, I didn't. They had reasonable questions, reasonable–they were focused questions, and they weren't the type of questions of, "Have you stopped beating your wife yet," that typically you get when the media's into a Bureau-bashing exercise. I had a good feeling after it was over that it was going to be a good tape, and it was. They did, I thought, a pretty darned balanced job of exposing the issues, what they were then and what they are now.

Storey: When you watched the–

Hamann: When I watched the final tape.

Storey: That's one of the things I'm interested in, because using the term "Cadillac Desert" seems to imply they're going to stick to Mark Reisner's interpretations.

Hamann: Yes. It's interesting to see the evolution that Mark Reisner himself's gone through from the days of *Cadillac Desert* to his days now in the California rice industry. He has grown a lot.[12]

Storey: Understands a lot better.

Hamann: I think so.

Storey: Have you ever met Reisner?

Hamann: Yes.

Storey: When was that?

Hamann: When we started having the area manager meetings in the Bureau.

Storey: That would have been '93 or later, I guess.

Hamann: Around, yes. I'm having a hard time putting a date on it, but those are probably historic. You could find out exactly when that was. I think Margaret Sibley would probably have notes of it. If not the first, then one of the very first meetings we had, we brought in several outside environmentalists to tell us what they thought of the Bureau of Reclamation and what we were doing. We were consciously trying to reassess our mission and the way we did business with what this new society, or the present society, was really like, because we finally realized that we had gotten stuck in the past. We'd forgotten to update our culture barometer as we were doing these Western water projects, and suddenly we ended up at the end of our job queue and nobody wanted us anymore, and we were trying to figure out why, and what do we do now, and where do we go from here.

Storey: What conclusions did you arrive at about why and where and all of those questions?

12. Marc Reisner, *Cadillac Desert: The American West and Its Disappearing Water*, revised and updated (New York: Penguin Books, 1993).

Bureau of Reclamation's Transition

Hamann: Well, this is purely my own opinion, but back in the salad days of the Bureau, twenties and thirties and forties, everyone wanted what we did. The western states all had projects going. There was a competition for our services in building dams and water projects. The queue of work that we had to do was long, long even with respect to the time frames that it takes to do one of these water projects, you know, ten, fifteen, twenty years, or more. So we were busily down there in the trench, or I should say in the canyons, building dams and canals and waterways and all of that, and had forgotten to notice that our queue was getting shorter.

Along about 1980 or '85, we woke up and said, "Hey, we're out of work. Nobody wants a water project." The last two, I think, that were of really much of any substance, was the Central Arizona Project, and then the pending Animus-LaPlata Project, and that was it. So it really made us step back and go through some introspection on why that happened and where we were. We had also not noticed along the way that the–you're familiar with the term the "iron triangle" that was essentially, I think, invented to describe the Bureau of Reclamation, where grassroots people would elect politicians who went to Washington to fund an agency that did what those grassroots people wanted done.[13] So the constituency is one leg of the triangle, the politicians that supported it is the second, and then the servicing agency, the Bureau of Reclamation, is the third, and it was pretty tightly put together. If the administration didn't put enough money in these western water projects, the Congress would just put it in during the budget deliberations.

Back in the early days of the first [Ronald] Reagan presidency, the think tank called the Heritage Foundation that had compiled the–I'm trying to think of the name of the book, *Blueprint for Freedom*, I think that was the name of it. One of the things that were said in there besides how many tanks the Army should have and how many warships the Navy should have, is a statement that they needed to politicize the Bureau of Reclamation, that the Bureau had always been run by grassroots engineers that had come up through the ranks, and they needed to get political control of the Bureau. That's one thing that the president needed to do.

We didn't notice while they did it. Suddenly the iron triangle had disappeared and we were now more politically controlled. You look back at these signposts and say, "My God, how could we have been so asleep?" But that's how we got here.

So then there was a conscious introspection period where we were trying to figure out, well, if we're not going to be building large dams in the West, what are we going to be doing? Are we going to disappear? Is there another mission for us? Do we still have work to do out here?

13. According to political scientist Daniel McCool, "an iron triangle is an informal political alliance that forms to influence a specific public policy to its advantage." McCool maintains that iron triangles influence "the allocation of government goods and services' whereby elected representatives receive credit for meeting constituent needs, government agencies achieve expanded budgets and influence, and "interest groups get what they want from government." See Daniel McCool, *Command of the Waters: Iron Triangles, Federal Water Development, and Indian Water* (Tucson: University of Arizona Press, 1994), 5.

The answer was yes, but it's different work. The answer is that there's a lot of things been built now, you can't just walk away from them. So there's the continuing job of caretaking, stewardship for the facilities that have been built, as well as a slightly different approach to the mission of building water projects into one of being a resource agency, a water resources management agency.

That's the step we're on, just to more or less transform ourselves. I think it's a unique step. I'm no historian, but I've not yet heard of an agency who performed its mission, ran out of work, realigned its mission, and took off in a new incarnation before. That's what the Bureau is doing right now.

Storey: But weren't we always a water resources agency?

Becoming a Water Resources Management Agency

Hamann: I think we were better known as a water project construction agency. It took a lot of water resources knowledge in order to be able to do what we were doing, and that's the knowledge base that we're capitalizing on now. But I think our more visible role, our more visible theme, I guess you'd say, came from actually building great big dams and great big water projects. Opinion.

Storey: Sure. Was it a hard transition for Reclamation to make?

Hamann: Well, I'm not sure we're through it yet, and, yes, it is hard, might even say agonizing. It's hard to change. It's really hard to change a bureaucracy, and it's really, really hard to change a bureaucracy that has been so bloody successful, because people have a hold of the past, and they don't want to let loose of it. They know exactly how to do what was so successful in the past, and to cast free from that is, well, let me say a lot of people have not been able to do that. What is the saying? Nothing freezes you in the past as much as success. That's not quite right, but it's on that same order.

So, it was difficult, yes. It is difficult. We still aren't there. We're still agonizing over a lot of the changes that we need to make, and the people who have been very successful in their careers look at the future and it's just tough. It's tough to turn around in a rowboat, instead of rowing by where you want to go instead of where you've been in the past.

Storey: For instance, you were project manager for Colorado River Storage Project while you were in Page, I believe.

Hamann: Yes.

Storey: Was there any major construction going on? I'm not talking about O&M kinds of things.

Hamann: The major effort going on while I was there was the Animus-LaPlata Project, and it's still going on. That has run into many controversies that slowed it and changed it.

Storey: But that wasn't part of CRSP, was it?

Hamann: No.

Storey: But in that Region.

Hamann: It's in that Region, though, so it polarized the regional efforts. In addition, there was some ongoing construction with the Central Utah Project.

Storey: What kinds of problems did the reorganization, this realization that we were going to have to change, cause for personnel, for instance? Or what kinds of issues, let me put it that way.

Personnel Changes Stemming from the Reorganization

Hamann: One is the issue of what do you do with a great big construction-oriented organization of people when you're not going to be doing any great big construction anymore. That was the loud, clear message that [Commissioner] Dan Beard sent to the agency.[14] "We are not building any more big projects." So the people who wanted to keep building things that were good at what they did in construction, went out and found other jobs. There was a lot of, I say, pain and agony. I'll have to say a lot of that pain and agony was suffered in Denver in our Design and Construction Center there, the E&R Center, the Engineering and Research Center. That's really where the downsizing knives really hit the hardest, really cut the deepest.

Storey: But hasn't the Regional Office lost staff also, for instance?

Hamann: Yes, but it's been done fairly painlessly. The office that's taken the biggest cuts is the construction office in Phoenix on the Central Arizona Project, because that's winding up. I should say winding down, I guess. There were support staff here in the Regional Office that, as they go down, also need to. We need to go down here in the Regional Office. But it's been done pretty carefully, step by step, so that we have not had to put large numbers of people on the street without a job. There's been plenty of warning for folks whose positions were going to disappear, warning enough where they could go out and get another job. We've actively helped them find other work, so it's not been so painful here. They were not able to do it that way in Denver; there were just too many people that were surplus to the need. So there was a lot of reduction of force activity in the Denver Office. A lot of good old friends chose to retire early or ended up on the street.

Storey: I think I've been told in the past that a number of people no longer felt comfortable with the agency, because it was evolving in a way that–do you have any examples of that?

14. Daniel Beard was commissioner of the Bureau of Reclamation from 1993 to 1995. Mr. Beard also participated in Reclamation's oral history program. See Daniel P. Beard, *Oral History Interview*, Expanded Second Edition, Transcript of tape-recorded Bureau of Reclamation Oral History Interviews conducted by Brit Allan Storey, senior historian, Bureau of Reclamation, from 1993 to 1995, in Washington, D. C., edited by Brit Allan Storey, 2009, www.usbr.gov/history/oralhist.html.

Hamann: Well, I'd say the loudest and clearest message was to the construction arm of our forces. When Dan said, "We're not building any more projects," that essentially left them without anything to do. With that clear handwriting on the wall, they could clearly see that there was nothing left in this agency for them, even though they might have spent fifteen, twenty, twenty-five years building things, that that was not to be in the future. So they had to completely reorient their lives.

Storey: How do you think we're doing? You've already discussed this partially.

Hamann: Oh, I think we're still trying to find ourselves. The concepts of flattening the organization, buried in that is a–going to–let me stop and say going to a supervisor-to-employee ratio of maybe fifteen or twenty to one, removing layers in the organization, intrinsic in that is a need to change management style from a hierarchical approach to a more horizontal approach, and, in my opinion, that's where we've had the worst troubles, the toughest troubles. This has been a very rigid hierarchical organization since its very beginning, and its very success strengthened that. It wasn't a mandate to shift management style from vertical to horizonal, the mandate was to flatten the organization, but in doing that, you need to shift management style, too. That's where the biggest logjams are, I think.

Storey: Interesting. Have you been aware of the television program that's being prepared for the "American Experience" series on the construction of Hoover?

Interviewed for the "American Experience" Series

Hamann: Yes. Matter of fact, they interviewed me for that.

Storey: Tell me about that interview. Same kinds of things as I asked you about *Cadillac Desert*.

Hamann: Well, as a matter of fact, it's being done, at least from my view of it, pretty much the same way. In fact, John Else was involved with this.

Storey: Oh, he was?

Hamann: I'm not sure what his role was, as a consultant, perhaps–

Storey: I don't know either.

Hamann: –as someone who knew the lay of the land around Boulder City, perhaps, or something like that. I'm not quite sure, but I talked with him.

Storey: Another four hours?

Hamann: This one wasn't quite as long. A different interviewer, and location was the old Los Angeles Department of Water and Power lodge up here in Boulder City.

Storey: Lodge?

Hamann: The Lodge House.

Storey: This was the place where they entertained V-I-Ps?

Hamann: Right.

Storey: Oh, yes. I didn't know that still existed.

Hamann: Oh, it does. Beautiful place.

Storey: Los Angeles still maintains it?

Hamann: I'm not sure exactly how that's done.

Storey: But not Reclamation.

Hamann: No.

Storey: Yes, that would have been a contractor facility, I believe.

Hamann: There are people who could tell you much better than I what that was about. But it's quite a mansion.

Storey: Well, before we started, I told you I wanted to talk about your interest in control systems. You had mentioned before a couple of different ones–digital control systems, static control system. Could we talk more about that, where you first started to get interested, what stage the development of the technology was in, those kinds of things, and how it evolved?

Control Systems

Hamann: Well, sure. I guess I could start out by saying that my graduate work that I'd done with the University of Idaho, it was essentially in digital systems, computers and whatnot. I went to Grand Coulee, essentially first as a summer job, and then got fascinated with the place and signed on. The control system that ran Grand Coulee were the good old standby relay-type control systems, where you had a ladder diagram schematic of how the relays all went together, and when you pushed this button that relay picked up and did all things, and it went through the relay sequencing, but it was all done with large electromechanical relays. The control systems were large; I mean, they would cover a couple of panels of space on the control boards. They had very large switches and things. It took a lot of real estate on the control boards in order to make it work.

Storey: And you had to actually walk up there–

Hamann: Right.

Storey: –and work the switch or the button or whatever.

Hamann: Poke a button somewhere. Actually, it would work remotely. You could push the start button in the control room at Grand Coulee and a generator out in the plant would start up, but it was all done with these relays. I could see that there were better ways to do that, more modern ways to do it, especially ways that took a lot less space.

END SIDE 1, TAPE 1. DECEMBER 15, 1997.
BEGIN SIDE 2, TAPE 1. DECEMBER 15, 1997.

Storey: You were talking about the–

Hamann: At the time, the Third Powerhouse construction was in full swing, and we knew that we were going to have to bring the controls for the new generators in the Third Powerhouse into the control room. I could see it, obviously, that there was not enough space in the control room to treat the new generators the same way we treated the old ones. The mimic board that lays out how the electrical system and the generation system works would have been so large that we'd have had to put the operators on roller skates to get from one end of it to the other to do the control work. Just a lot of things just would not work. The number of control cables that we'd have had to bring across for the dam from the new Third Powerhouse to the control room in the west powerhouse would have filled the galleries full. It just wasn't feasible to do it that way.

So we began a new era of looking at bringing the new technology into play in powerplants. There were companies in the field at the time that were making what they called SCADA systems. That stands for Supervisory Control and Data Acquisition. These were essentially the model for what we wanted to build. At the time, they were constructed for pipelines, and a few had been constructed to control power systems. These were in large dispatch centers. There was one in Philadelphia, there was one on the–I believe it was in Delaware. Houston was buying one. The Bureau then kind of started to focus on how these systems are put together. They're essentially computer-based control systems. Our acronym for them was P-M-S-Cs, Programmable Master Supervisory Controls. I don't know why we had to come up with an unpronounceable acronym. So, that was the new push.

At the time the Denver Office was still the design authority, and I, in the field, worked very closely with the Design Office in coming up with the procurement specification for a control system for Grand Coulee.

I moved on from Grand Coulee in May of '79. The system was delivered shortly after that, so I didn't get in on the fun and games and actually installing the system and making it work. We had received several of the remote terminal units, or pieces of the remote terminal units. These are the computers that are out at each generator and several other locations in the powerplant that multiplex the data and bring it back to the control center over just a pair of communication wires. We'd had several of those installed, but the main computer system itself hadn't arrived when I left.

So when I came down here, there was a similar system being designed and procured for the Yuma Desalting Plant, a smaller side system for control of some of the waterways around Yuma. The Central Arizona Project construction was in full swing, and that had also a SCADA system, too, to monitor and control the water system.

Storey: Is this the era when Reclamation began to computerize a lot of things?

Hamann: Yes.

Storey: Say, for instance, at Coulee or at Hoover you computerize it. Does that mean all these manual controls completely disappear, or are they just in a different location? How does that work?

Integrating Computer and Manual Control Systems

Hamann: Actually, the computer system in general leaves the manual controls working. It disables them once the computer takes over the control, and you do that with mode switches at the remote terminal units where you switch it from local manual mode to supervisory control. It's one of those large control switches. In supervisory controlled, all those local relays and the control systems in the plant are disabled, and the remote terminal unit of the computer has control of it then.

Storey: But there's a way to–let's see, how should I ask this question?

Hamann: What, switch it back to manual?

Storey: Yes, if something happens to the computer you have a fallback.

Hamann: Yes.

Storey: Instead of a runaway generator.

Hamann: Right. Yes, you can switch it back to local manual then and still use the local controls.

Storey: What kinds of issues does that raise? For instance, with our computers nowadays, the kids are tending not to learn how to spell or to do math, because they rely on the computers to do them. Do we have issues that come up where we find that because our operators–is that correct term?–are working at terminals, that they are having difficulty when they have to deal with manual?

Hamann: Well, there've been a lot of evolutionary sorts of problems that went along with that. Gosh. When an operator tries to start a generator and it won't start, he turns in a trouble report to the folks who need to go fix it. Clearly, in the beginning days when there was as start switch, a regular switch on a control board and you push it and the generator wouldn't start, there was a known set of people who would go fix that. That was the electricians in the powerplant. Naturally, the trouble report always said

the switch is broken. Well, maybe the switch was broken, but there's about 10,000 other things that could have gone wrong out there into the plant, but the electrician could start from there and go troubleshoot and trace the problem.

Well, when you bring in a computer system to do essentially the same job, what you hand the operator then is a light pen to work from the C-R-T, the cathode ray tube, to do the job that he used to do by pushing buttons. So when he used the light pen and tries to start a generator and it won't start, then the light pen's broken. Something is wrong for sure. But then the people who had to fix it become a little less clearly defined. The trouble could be in the computer. The trouble could be, just as the operator said, the light pen might be broken. It might be in the man-machine interface to the computer system; it might be in the communication subsystem from the computer out to the plant; it could be in the remote terminal unit out at the plant; and it could be in any of those. It could be in either hardware or software. Until you get right out to the control point that's supposed to do something with the generator and doesn't do it for any of those reasons.

Boy, that's a lot of vacuum to go into to try and figure out what the problem is. We have had, probably still are having, a lot of struggles figuring out whose problem is it. Who should get called out to go fix it? Should it be the hardware guy, because the light pen's broken? Or should it be the software guy, because they've been having a bug in this computer at the R-T-U [Remote Terminal Unit]? That's been a difficulty in trying to figure out who to call.

Some of the technical problems, too, that we ran into trying to use computers in powerplants. Turns out the powerplants are not very friendly places for computers, because they work on these microamps of power and very small voltages, and very high speeds. Those aren't very compatible with powerplants. Powerplants are very electrically noisy. The relays and things that are in powerplants put out huge voltage spikes on control systems that work almost like antennas, bring those spikes right into the middle of a computer and just vaporize it. These are things we learned on the startup problems, the front end.

So we had to very carefully buffer the computer systems away from powerplant environments. We didn't know that when we started. We'd just walk out and there'd be some chunk of computer system vaporized, and trying to figure out exactly why took quite a bit of research. Finally figured out the ways to do it, the ways to buffer it, keep it clean, and keep it healthy.

Storey: Is this sort of like putting a lead room so Superman can't look in?

Hamann: A little different than that, but what you have to do is buffer the wires that bring outside signals into a computer system so that these spikes–you can't make the spikes go away, they're going to be there, but to keep them clamped and shunted so that they don't get into the computer circuits.

Storey: That's interesting.

Hamann: One of the big controversies I remember back in those days, these were the days of the first solid-state relays. These were actual semiconductors in the control circuitry that were triggered on and off by computer signals.

Storey: Excuse my dumbness, but that's as opposed to tubes?

Hamann: As opposed to relays–buffering relays. There was a contingent in the Design Center that thought that solid-state relays were the wave of the figure and the way to go. There was another contingent that thought that solid-state relays was like flash bulbs. If you put them in control circuits, put them in there all you want, but all they're going to do is explode. The latter group was the ones that were the closest to the truth. Solid-state relays at the time, they were not ready for industrial application like a powerplant. They'd just blow up like using flash bulbs.

Storey: When did you leave Coulee?

Hamann: May of '79.

Storey: And you began there about–

Hamann: My first stint there as a summer job, I think, was the summer of '69.

Storey: During that period, of course, Teton [Dam] failed.

Teton Dam

Hamann: Yes.

Storey: Do you remember hearing about that, and do you remember what you were doing, and do you remember how people at Reclamation reacted?

Hamann: Yes, I do. In fact, Glen Barker, who had been at Grand Coulee, an electrical engineer at Grand Coulee, was still with our regional office in Boise when Teton failed.[15] Glen came up to Grand Coulee and gave a presentation to our Rotary Club there about the failure. So when they heard it was going, he and another person, I think it was their assistant regional director, jumped into the airplane and they overflew the site. I remember him describing how it looked. But the Bureau of Reclamation was just in numb shock when that happened. It was the unthinkable event.

Storey: It sure was. Any specific examples that you recall? Do you remember where you were when you heard the news, what you were doing?

15. Teton Dam was planned as the major feature of the Teton Basin Project in eastern Idaho. On June 5, 1976, shortly after construction was completed, the dam suffered a catastrophic failure, causing over billion dollars worth of property damage and 11 casualties. For more information, see Andrew H. Gahan and William D. Rowley, *The Bureau of Reclamation: From Developing to Managing Water, 1945-2000*, Volume 2 (Denver: Bureau of Reclamation, United States Department of the Interior, 2012), 820-832.

Hamann: I don't. No, I don't. I'm just trying to dredge my memory for that. I don't remember that, but I know very shortly thereafter, an emergency call went out for people working at the dam that could go down and help with the disaster relief. One of the people who later came back and talked about their experiences said that he'd never realized that you track a flood by the dust cloud it leaves. I couldn't understand what he meant. What he said was as that flood proceeds out of the canyon and out into the farmlands, the wavefront of the water collects this churning, rolling mass of logs and Volkswagens and debris of all kinds that just rolls in front of the floodwater and puts this cloud of dust in the air as it thumps and proceeds on across the land. I'd never thought of a flood leaving a dust cloud. That was really something. Those were some tough days for the Bureau.

Storey: One of the things that happened, of course, that was in '76. In '77, Reclamation decided to transfer contracting authority from the chief engineer. This is for big projects to the regional office. Do you remember anything about that? Do you remember what was being said within Reclamation when that happened?

Hamann: That was a pretty traumatic time for Reclamation, too. The construction forces of the Bureau had always been separated from the operation and maintenance and ongoing Bureau activities. Construction was an outfit of its own. It had its own procurement authorities; it had its own design people; it had its own office. The chief engineer chose the construction management people, the construction engineer and those key people at the construction projects. That didn't have anything to do with the local O&M forces or the regional office.

Some of the things that were analyzed as a result of the Teton failure said that that probably wasn't the best way to do business, but that's the way it'd always been done, so again, there was a change effort, to where they had to change what had been done. That was pretty traumatic.

Storey: Do you remember anybody, for instance, leaving Reclamation or anything over that?

Hamann: Yes, there were several folks that did not agree with that and decided to hang up their spurs.

Storey: Mostly retirements, then?

Hamann: Yes.

Storey: Interesting. Now, you came down here and you worked at Hoover, is that right?

Interrelationship Among Lower Colorado Powerplants

Hamann: Yes. When I first came to the Regional Office, I came down to a position in the Power Division. It was Chief of the Engineering and Operation in the Power Division for the Region. That gave me responsibilities for essentially the operation and maintenance program at the powerplants on the river, as well as the electrical design for the Construction Division.

Storey: That was for Lower Colorado [Region].

Hamann: Yes.

Storey: So you came to the Regional Office.

Hamann: Yes.

Storey: So talk to me then, if you would, about the powerplants that are up and down the river, and any interrelatedness, and their relative sizes, and all that kind of thing.

Hamann: Well, when I came down in '79, that was just two short years after the Department of Energy's organizing act, and the transfer of functions from the Bureau to this new agency called the Western Area Power Administration (WAPA). Western's office was here in Boulder City. The regional supervisor of power at the time, who was the Power Division chief, had been Bob Olsen.[16] He moved to Western, and he was their chief officer in the area here. The Power Division was more or less ripped in half in that transition. Many of the people who worked in the Power Division went to Western and went to work for Bob Olsen. Ben Redeckey [phonetic] was left as the regional supervisor of Power here, with a much reduced staff. The transition of equipment and the lines of demarcation, and trying to get reorganized around this new agency with Western was in transition. So that was essentially the character of the work at the time, was trying to glue the pieces back together into a different picture.

At the time, the Boulder Canyon Project, Hoover Dam, was separated from Parker and Davis, the Parker-Davis Project. Hoover Dam had its headquarters at Hoover Dam. The Parker-Davis Project's headquarters were in Phoenix. That office had been a Bureau of Reclamation office, and it became the control center for the power system, which meant it transferred the whole control center to Western. The computer system, the P-M-S-C system, had the main computers in the control center, but the remotes were at the powerplants. Just a lot of things to try and figure out–who was going to take care of everything, make sure that everything was taken care of and nothing was left on the table, with no one taking care of it, it was quite a job.

Storey: Did it entail a lot of meetings with Western, for instance?

Hamann: Interminable meetings, *ad infinitum*.

Storey: One of the areas I've heard about is records, that if it said transmission lines in it, the records had to go to Western. Did that become an issue while you were there?

Hamann: I never got into that particular issue. It was a problem trying to figure out what files

16. Robert A. Olson earned a degree in electrical engineering from South Dakota State University. He served in various capacities in Reclamation from 1964 to 1978. Mr. Olsen served as acting commissioner of the Bureau of Reclamation from December 1984 to August 1985. Before this appointment, Olson was the Southwest Area Manager for the Department of Energy's Western Area Power Administration (WAPA) from 1978 to 1983.

should go along with the transfer and what files we should keep. Of course, it was never clean. As it turns out, well, it wasn't ever purely transmission or purely generation. It always involved some of both, but trying to figure out what pieces of what should transfer and what should not was very difficult.

Storey: So that was still going on when you came in.

Hamann: Yes.

Storey: That would have been a couple of years later.

Hamann: Yes. I spent about four years here, and I think we weren't finished when I went down to Hoover as the assistant project manager.

Storey: Did that cause a lot of tension?

Hamann: Oh, yes. That's pretty painful when you rip an organization right in half. You end up with a lot of hurt feelings. There were lots of feelings at the time that were turf issues and just people-oriented-type problems that were tough to deal with.

Storey: How are we doing now along the same lines?

Coordinating Efforts with Western Power Administration

Hamann: Oh, much, much better. Much better. Much better. I think we've finally over the hump, and Reclamation's gotten over the funeral. We've gotten back to work. Western's gotten organized so that they're very professional in what they do, and we can be professional in what we do, and we've recognized that we're two horses pulling the same cart and that we just cannot fight. So we've gotten over that. We've gotten together with them. We have a very good partnership relationship with Western, at least with our desert Southwest Region in Phoenix and the Lower Colorado Region here in Boulder City. We work well together.

Storey: One of the things that I understand goes on is that Reclamation's power can only be sold at cost. In effect, we're not supposed to make profits.

Hamann: That's correct.

Storey: What kind of liaison do we have to go through with Western in order to figure costs and all that kind of stuff? How does that work?

Hamann: Simply said, it's more technically difficult to actually do, but when you take a look at the big picture, Reclamation projects were built for a purpose, and if there's power associated with it, a certain amount of power has been set aside for project-use purposes. Power that is available in excess of the project's needs are available to sell, to help financially support the project, and there's quite a bit of history politics that go on, and how much, and how it's sold, and that sort of thing. But you're right, the concept is delivery for the cost of service. That goes back to the charter of the

Department of Interior, which essentially says that the resources of this nation belong to the citizens of the nation, and if those resources are to be developed and provided to the citizens, they already own it. It should be provided to them for the cost of that provision.

So, that's what we're about, is when the power in excess of project needs is sold, that's Western's ball game. That's what they do. So we tell them what our costs were in order to produce that power. They add on the costs that they experienced to transmit that power to where it's sold. Then they run the rate-making mechanism to figure out, given that much cost and this much resource, how much it costs per unit of resource. That's what they do.

Storey: I'm interested in this topic, because my understanding is that Reclamation did view many of the hydro projects as cash register to subsidize the irrigation projects. Well, if you're selling at cost, how can you make a profit to subsidize the irrigation?

Hamann: At that time, project-use power was typically at about half of the rate that power was sold through Western's processes to electrical contractors. So it looked as if there were a subsidy being provided to the project-use customers to give them a sweet deal, and that if they had to buy power for the same rate that large electrical consumers did, that they would not be a viable project.

Storey: You were there how long?

Hamann: Where?

Storey: At the O&M function for the powerplants.

Hamann: At the Regional Office here?

Storey: Yes.

Hamann: It was about four years.

Storey: So, what, about '79 to '83?

Hamann: Yes, '83, '84, somewhere in there. Ben Wilkinson, the project manager down at Hoover, put out a developmental position as assistant project manager, and I applied for that and got the job.

Storey: Did you have any interesting issues or projects come up while you were still in the O&M function? You know, like you set off dynamite and you found out the generators got unbalanced or whatever?

Hamann: Nothing really stands out. There was just a lot of work going on then, electrical design work, a lot of O&M things, but it was essentially all just work. Nothing really stands out as momentous.

Storey: But I suppose this would have been continuing the computerization of the plants.

Hamann: Yes.

Storey: Would that be an O&M function?

Hamann: Let's see. What we were looking to do, one of the things that had been done during the split-up with Western and the Bureau was to make all of the dams one office. Whereas Hoover used to be its own office, and then Parker-Davis was a separate office headquartered in Phoenix, once the control center transferred to Western, then they consolidated the dams, Parker-Davis and Hoover altogether under one Lower Colorado Dams Project. Ben Wilkinson, who had been the chief at Parker Dam, was selected as the project manager for the consolidated project.

I forgot the question you had asked.

Storey: Well, maybe I have, too. I was asking if the computer implementation function was part of the O&M.

Hamann: Right. What we looked at then is that Hoover Dam had not been computerized at all. In fact, it had been maintained practically as a museum under the operating contracts, the agency contracts, with the city of Los Angeles Department of Water and Power, and Southern California Edison. They had been the operating agents down there for the generating machinery since way back. It was a fifty-year contract. That was due to expire, along with the power contracts, on June 1, 1987. So what I went down there to do was to essentially actually consolidate the project, but to get started building our own operating force for Hoover Dam, because we were not going to renew those agency contracts so we had to build an operating organization.

Well, to do that we had to start from the ground up essentially, start bringing in people and training them. Some of the agency people were reluctant to impart with the knowledge that they'd gained over the years. It was quite a job building up an operating division down there to take over the powerplant in 1987. That was the main–

END SIDE 2, TAPE 1. DECEMBER 15, 1997.
BEGIN SIDE 1, TAPE 2. DECEMBER 15, 1997.

Storey: [Tape two of an interview] with Blaine Hamann on December 15, 1997.

So we had to figure out what we were going to do in the long run with those facilities.

Operating Lower Colorado Powerplants as One Unit

Hamann: So we sat down and did some planning around that, and decided what we really needed to do was to take the control of Parker and Davis, do the remoting control necessary at Hoover Dam, put the three projects together as a single operating

project, and establish the interface with Western from Hoover to the system control center in Phoenix. So that's what we set up and that's what we were about, and have been on that track for–well, ever since.

Storey: Did that increase our staff by quite a bit?

Hamann: What really increased the staff was staffing up for a new Operations Division, and then, too, just as soon as the Bureau regained responsibility for the powerplant, we got into the Hoover Powerplant Operating Program, which was a large money program, but it raised the nameplate capacity of the plant from the original 1344 megawatts to something a little over 2000 megawatts. That took a long time to do.

We did a couple of pilot units just to see how this was going to work while I was still at Hoover. A5 and N7 were upgraded. But the agents didn't want us to get into a full-blown construction program while they still had financial responsibility for the plants, so we left it alone until 1987, and then started in with the operating program in 1987. We did a lot of preparatory work in '86 getting contracts ready and getting them ready for award and that sort of thing. Getting prepared, but–

Storey: Where did the money for that operating program come from, and did it evolve over time?

Hamann: It came from the customers of Hoover power, and, yes, it did evolve over time. The Hoover Powerplant Operating Act of 1984 envisioned that we would uprate the powerplant and we would build a Visitors Center with appropriated funds. During the political process to get that act passed, the Visitors Center was left as appropriated sources of funds. The money for the uprating program was turned around to be contributions from the Hoover power customers. So those were contributed funds and they were put into escrow accounts that we used to actually issue the contracts to spend the money. The power customers sold bonds, deposited the money into accounts that we could encumber, and away we went.

Storey: What's entailed in uprating a generator?

Rewinding Hoover Generators

Hamann: Well, the main thing to be done is replace the stator winding. This is usually done under a maintenance program when a stator winding has reached its use, its normal service life, you start making plans to replace it. The insulations on windings have a finite life, and if you exceed it, well, all you do is burn up the machine.

So we started looking, in a maintenance sense, at the Hoover stator windings and they all needed to be replaced. The difference there is that newer, modern insulations tend to be much thinner, and for the same voltage strength as the older asphalt microwindings insulations, which means you've got a slot in the iron. That slot has to be filled with something, because you have to pack that slot full. With thinner insulation, you can get more copper in it. More copper equates to more capacity. So you essentially get the additional capacity in the generator winding for

free. Turns out that insulation and copper cost about the same per pound, so it's essentially free.

The work you have to do to actually get it out requires an engineering study of the unit to see what other ceilings you come up against with the equipment that is built into the generator. That might be cooling capacity; you might need to uprate cooling. It could be the generator bus bars; you might have to put in larger bus bars. Transformers are usually pretty closely sized with the generator capacity, so if you uprate the generator, you have to look pretty carefully at the transformer to see if the transformer will take it, and if not, then you have to replace the transformer. A lot of little things like that.

The excitation system may need to be uprated. All of those little things have to be looked at, and those are unique to each one of the generators. So even though you get the free capacity essentially in the winding replacement, it's going to cost you some more to actually get it out of the generator, the whole unit. So that's what amounts to an uprating program.

Storey: Very cost-effective? Sort of minimally cost-effective? How does that work?

Hamann: Extremely cost-effective. In every case I've run across in my career, uprating is very cost-effective. You can put in new capacity for fifty bucks a kilowatt. The closest competitor to it with combustion turbine is the cheapest next source is probably more like 150 or 200 bucks a kilowatt. So it's like a quarter of the price.

There are other issues that go along with it that you have to look at carefully. Getting more out of a powerplant intrinsically means you're going to use more water to do it. There's going to be an increased flow through the plant means that water has to be in the reservoir. In addition, that increased flow in the powerplant means it's going to be increased flow in the river, and what's that going to do environmentally? So you have to look at those issues, too. So even though in some cases it would be very effective to uprate the generator, the overriding concerns of not having a water supply to run it, or of having unacceptable environmental impacts from running it, really amount to telling us it's not feasible to do so.

Storey: Am I hearing that windings would last for fifty years, or am I hearing that they had already been replaced maybe once?

Hamann: Some of them had already been replaced once. Recognizing specifically for Hoover Dam, the first power from the powerplant was in the middle to late thirties, and the generators had been installed over a long period of time so that the last unit on line, I think, was N8, and it went in service in 1961. So there was a variety of ages involved there. But you generally look at an asphalt microwinding as having a life span, a useful life of about twenty-five years, and that had been far exceeded for some of the Hoover units, and it was showing. The technical tests, the inspections, would show that we were in pretty bad shape for some of those units.

Storey: So as soon as the contractors left in '87, we began moving through them, operating

everything?

Hamann: Yes.

Storey: So all the units had to be upgraded.

Hamann: Yes.

Storey: That's interesting for a number of reasons. One of the things I'm interested in is, you talk about transferring the control center to Western. Who's actually running our generators? Is it Western sitting in a remote site, or is it us sitting here?

Managing the Powerplants

Hamann: Well, it depends essentially how you look at it. We're still running the powerplants, and we're still running the generators. We can turn a generator over to some system control functions such as automatic generation control, where the signal that actually moves the generator up and down in output is derived at the control center and sent to us by a communication system. It's automatic. The control signal comes into the computer at Hoover, and that splits it up among the generators that are on this automatic generation control function, and automatically then raises and lowers the generation. So I guess you could say that we're both in control, depending on what mode the generators are in and what the needs of the system are.

Starting and stopping, we still reserve that, because there are too many things that could be impacted by a generator start and stop that aren't instrumented and would not show up on Western's screens in the Phoenix Office–who's in the turbine pit, what work is going on in the plant, whether there's special conditions for that unit or not. There's just too many variables involved to actually try to remotely stop and stop a great big generator like that.

Storey: I presume there's a priority for what Reclamation does, say, at Hoover. In other words, we store water, we have recreation, we have hydro responsibility and so on. Can you give me an idea of how the priorities shake out?

Establishing Operational Priorities

Hamann: You're right, there are priorities, and they're established usually by the act that creates the project. Specifically for Hoover, the act mentioned four priorities, first for flood control, second for storage of water, third was navigation, and fourth was power. Now, remember in those days Hoover was the first dam on the river, and there were attempts to use the Colorado for navigation.

That third priority was essentially discontinued when the last steamboats gave up trying to get up the Colorado River. But we've inherited the priority of recreation which essentially substitutes for that third priority now. And dead last is power. Interestingly enough, even though it's the last priority, it's the one that pays the bills.

Storey: But I would think that there might be some interesting interplays between the need for electricity and the need for not putting water down the river, for instance, or for putting water down the river.

Hamann: That very point was the test at Glen Canyon, the environmental test. The society there tested what one of the original priorities was, was to maximize the repayment of the project by using power. So Western was doing what they thought was the best thing to do, and that is maximize the revenue stream.

Maximizing the revenues meant using the plant to the maximum capability for power peaking, because peaking power provides the best revenues. So they had marketed Glen Canyon as a peaking plant so that it turned on during the daylight hours when people wanted power, and it turned off at night. So there's very little water in the river at night, and then these large amounts of water during the daytime.

So we would go from maybe a minimum of 2,500 or 3,000 second-feet at night to maybe 25,000 second-feet during the day. That was one of the aspects of the Glen Canyon environmental studies that was of most controversy. That was in the final results of that environmental study and the environmental impact statement, was to stop doing that, to put limits on how fast the water could go up and down, and how far it could go up and down, limits on maximum and minimums for the day, not only in absolute max and mins of water flow, but in rates of rise and fall.

Storey: Are there other kinds of interplays that go on here? Say we don't want to deliver water downstream from Hoover. Who makes the decision? Is it Western or Reclamation?

Hamann: Well, given that set of priorities, first for flood control, second for storage of water for irrigation, to the largest degree, that means that Hoover operates to deliver the water that's needed downstream for irrigation in the agricultural industry. Now, that release is mitigated somewhat by the operations at Davis and Parker, but not very much, because there's very little storage in those small reservoirs. So that means that the schedules of release at Hoover drive the system, and the need for releasing that water is what declares how the powerplant's going to run.

Storey: Now, for instance, do we ever release water that we don't put through the turbines?

Hamann: It was done in 1983 during the floods, but that wasn't by choice.

Storey: Not normally.

Hamann: Not normally.

Storey: So there's some sort of a cooperative way that Western and Reclamation have of managing the water so that Western gets the electricity it needs when it needs it?

Hamann: To some degree, recognizing that it's the need for releasing the water that declares how much power is available, Western takes the amount that's available and molds it

to its best use in the power system, and if at times they need to squeeze just a little more for a short period of time here and there, we can accommodate that, because there is just a bit of storage in Davis and Parker, or behind Davis and Parker, where we can mitigate that just little bit. But pretty much it's the needs for water downstream that drives the power system.

Storey: How long were you down at the dam as the assistant, that would have been project manager, I guess?

Hamann: Right. Assistant project manager. I left there in August '87. So I was down there for three or four years.

Storey: And putting together the new staffing for it, what kind of staff did we need, numbers? Do you remember what kind of increase it took?

Powerplant Staffing Needs

Hamann: Yes, it was about twenty-five people plus the support staff.

Storey: That's to run both of the powerplants?

Hamann: No, this was just for the new mission there at Hoover, for the new Bureau operation at Hoover.

Storey: To run the powerplants?

Hamann: To run the powerplants. Yes. Parker and Davis already had their own operating staff. They'd been doing that for a number of years.

Storey: So it takes maybe twenty-five people to run a big powerplant like Hoover?

Hamann: Yes.

Storey: When we say that, we're talking about operators. I don't know what you call–the electricians, the mechanics, and so on?

Hamann: No, that was purely the operating function. We also had to beef up the maintenance staff in order to take on the job of maintaining not only the dam and the waterways and everything else in the dams, but the new job of maintaining the generating machinery. If I remember right, the maintenance staff at the time was around eighty people, and we were going to need about 130 to really do the job. The operations staff was zero, and we figured we were going to need about fifty or sixty to do that job.

Storey: So did we hire a lot of people who had been working there previously, or did we staff up from other places in Reclamation? How did that work?

Hamann: We set some guidelines for how we were going to staff. One of them was that for

any of the operating agents' employees who wanted a job, we would give them a job at Hoover. They would have a job; they could continue working at Hoover Dam. Surprisingly, very few took us up on that. Well, it isn't surprising in the long run. They had a lot of vested interests in their own retirement systems, and in order to retain that, they had to continue employment with their agency. [Interruption in recording]

Storey: You were talking about how long you were at Colorado, and you were talking about the number of people that had been added, and all that kind of thing.

Hamann: Thankfully, I was able to find a real expert in operations to take over that workload. Farrell West [phonetic] took that on. He did a bang-up of setting up and staffing an organization for operations. He's still down there.

Storey: Then you went to the Colorado River Storage Project up at Page.

Colorado River Storage Projects

Hamann: Yes.

Storey: How many hydroplants in that?

Hamann: Eight.

Storey: One of them is Glen Canyon.

Hamann: Right. Glen Canyon's the biggest one. Then there's three plants on the Gunnison River–Crystal, Morrow Point, and Blue Mesa–and there's two plants on the Green River–Fontenelle and the Flaming Gorge–and there's two little tiny powerplants way up on the Grand Mesa just to the east of Grand Junction.

Storey: Las Molinas [Lower Molina].

Hamann: Las Molinas, yes.

Storey: What kind of output? In effect, this is the Upper Colorado Region, right?

Hamann: Yes. It pretty much covered the whole region.

Storey : So there was an operations center at Montrose, at that time would have been WAPA.

Hamann: Yes, that was the original operating center for the Colorado River Storage Project, which included Glen Canyon at the time back before the separation between Western and the Bureau happened. And much the same happened there as happened in Phoenix. The control center transferred to Western. That was the physical office building and the computer control system, and we needed to set up our own office there for what was left from the operation and maintenance of powerplants, and we did that.

Then it was decided to throw all the control together, put in a common control system, and that control system ended up at Glen Canyon. So the project office for the Bureau ended up at Glen Canyon then, rather than Montrose.

Storey: You went down there '87, so that was after the floods in '83.

Hamann: Right.

Storey: Had all of the problems been corrected from the '83 floods when you went to Page?

Hamann: The spillways had been repaired. The flashboards had been removed from the spillway gates. There was some leftover strengthening of the spillway gate, the operating trunions for the spillway gates. It was found during a review, an engineering analysis, when those spillway gates were put on there that the original arms weren't really quite stiff enough. They needed to have a larger safety factor for just normal operations. So that work was still to be done.

Storey: Was that discovered while you were there or before you got there?

Hamann: That was discovered before I got there. The plans were all made. The contractor was just about to begin work when I arrived.

Storey: Did you have any major projects that started while you were there and that you got funding for while you were there? What I'm interested in is the chronology of what it takes to identify an issue, and then get it budgeted, and so on.

CRSP Operation and Maintenance Issues

Hamann: Gosh, I'm trying to retread my memory to all the problems we were facing at the time. I'll tell you, nothing jumps out at me. The uprating program was still in progress in the storage project. There were some major problems with one of the contracts on the Gunnison River. They were just about to begin the construction at Flaming Gorge.

Storey: Construction for?

Hamann: For uprating. Essentially taking the units out and doing the uprating work.

Storey: What about fish screens up at Flaming Gorge?

Hamann: Those had already been installed. They were working when I got there. We were beginning to experience the problems of the Glen Canyon environmental studies and the transition to the environmental impact statement requirement.

Glen Canyon Environmental Studies

Storey: Tell me about that. What was going on? What kinds of pressures were operating on Reclamation? How did we finally decide to approach it, and so on?

Hamann: Well, the environmental community was leaning strongly on the administration for the impacts that Glen Canyon Dam operations was having on the Grand Canyon. In the early eighties, we had sort of stayed them off with an agreement to do some extensive environmental studies. When we did that, though, we did it exclusively. That is, the Bureau was in charge of the studies, we essentially directed the studies, we interpreted the results, and even though we spent a lot of money and did, I think, credible scientific work on those original studies, they did not have credibility with the environmental community, and when we got all done with them, they said, "That's fine, but let's see the environmental impact statement, because you didn't do this, and this, and this."

We sort of had to step back from it and say, "Well, nothing that the Bureau does exclusively is going to have credibility, so what we're going to have to do is throw open the doors, invite everyone in, and go through a rigorous and open environmental impact study." That's where we got to in about 1989.

Storey: While you were still there.

Hamann: Yes. So then there were a lot of arrangements to get going for that environmental impact study.

Storey: Tell me about who was responsible for what. We have the Region, we have the Denver Office, and we have the Project Office for Colorado River Storage Project. Who was doing what as this environmental process was unfolding?

Hamann: Well, the operations and maintenance arm of the project, which was essentially my bailiwick, I had practically no involvement in the actual studies. That was operated out of the Regional Office, and they had established a field office in Flagstaff to handle that. Denver was more of an advisory capacity, and our field offices were mostly an organizational arm, because there were a lot more folks than just Reclamation now involved with it. We had the environmental community, the Indian tribes, all sorts of people who were being involved in the actual studies, Park Service.

So the administrative direction for those environmental studies came from the Regional Office in Salt Lake City. The storage project just got to pay for it.

Storey: You got to pay for it. How did you budget for that?

Hamann: That was the biggest impact on us as every time there was a new need showed up in the environmental studies for more money, it had to come out of the O&M budget. That was some pretty traumatic times trying to squeeze that budget to get a little more cash every time it was necessary.

Storey: Actually, a fairly substantial amount of money went into that statement, I believe.

Hamann: A lot of money went into that. I'd guess somewhere in the 60 to 80 million dollars.

Storey: And that all came out of your budget there at Colorado River Storage Project?

Hamann: Well, of course, the O&M budget wasn't that large, but it came out of the project revenue stream, and in order to not do an extraordinary balloon on the rate for power, then the money had to come from the O&M budget. Now, there was an increase in the power rates, and that did provide some relief, but we really had to squeeze a lot of things out of the O&M budget that we really needed to do and weren't able to because we didn't have the money.

Storey: The O&M is reimbursable, right?

Hamann: Yes.

Storey: Why does it make a difference whether it comes out of the O&M budget or not out of the O&M? I would guess that either way it's a reimbursable rate and would affect the power rates somehow.

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Glen Canyon Environmental Impact Statement

Hamann: Maybe I can clear that up by saying that the Colorado River Storage Project is set up on a revolving fund, and there is no outside money. It's just like your bank account at your home. If you've got income, you've got money to spend; if you don't, you don't. If you spend more money than you have coming in, you're in red ink, and that is not okay. So to take money out of one facet of the project to give it to another, there's no relief in that, there's no appropriated funds involved, and there's just no shade there. So if you want to spend money on the car, that means you have less money to pay for rent.

Storey: Whose idea was it to do this new approach to the environmental process?

Hamann: That came from the secretary of interior. He looked at what had been done in the environmental studies, he looked at the cacophony in the society, and he made the decision that we weren't going to try to base decisions on a study that almost everyone involved perceived as flawed. Therefore, he inaugurated the Environmental Impact Study.

Storey: Which secretary was this?

Hamann: This was Bruce Babbitt. Wait a minute. My timing has just suddenly gone. Would that have been Bruce Babbitt, or [Manuel] Luhan?

Storey: Mr. Babbitt would have come in in '93, I believe. Maybe Manuel Luhan.[17]

Hamann: Brit, I've just lost that in the sun. I don't know.

Storey: Then so the secretary would have called the commissioner, probably, and the commissioner would have assigned this to the Region?

Hamann: This was pretty high profile. There was a lot of media attention focused on this issue, and it was out there in the society. A lot of things happen without the formal view of the newspapers and that sort of thing, just business-as-usual stuff. This was not business as usual. There was as lot of attention focused on this.

Storey: What does it mean for the Project Office, though? Were you not involved at all, or were you making local arrangements, or how did that work?

Hamann: Well, it meant a continuing period of time of squeezed operating and maintenance funds, and there was some impacts on the project. We were providing space for some of the study people, Arizona Game and Fish, and we were having to make arrangements for operating the river to facilitate those studies. You're releasing water at a particular period of time, scheduling, conditions, so that they could be studied specifically, particular flow regimes, and that sort of thing, they were required, and we were left to arrange that with the power community, with Western, essentially.

Storey: So, provide the money.

Hamann: Make the river behave.

Storey: And make the river behave. Well, I'd like to go ahead, but our appointment was 7:30 to 9:30, and I think I've used up my time.

Hamann: You have? I think Bob's gotten involved in a couple other issues.

Storey: If you want to continue, we can do that.

Hamann: I can do that.

Storey: Okay. Tell me a little more about Ben Wilkinson, who was the project manager who took you down to Hoover.

Ben Wilkinson

Hamann: Ben was a nice guy. I didn't know him before. I knew him only peripherally when I went down there. He had a real centered, level, pragmatic approach to operating the project, and he knew what was needed and he got it done. I know he had seen the

17. Bruce Babbitt served as Secretary of the Interior under the administration of President Bill Clinton (1993-2001). Manuel Luhan served as Secretary of the Interior under the administration of President George H. W. Bush (1989-1993).

problem coming that he needed an operating division, and how much work there was going to be involved in that. I think that's one of the reasons he established that position, the position that I went down there as. But he knew it was going to have some impact on the maintenance staff that was there at the time, because I think Ben had the vision to see that even though we were going to offer the agents' employees employment, that they weren't really going to be able, very many of them, take us up on it, because they had their own retirement systems that they were vested in and needed to finish those careers out with their employers.

The two targets that we did have were the ones who could already retire under their own systems and go to work for us, and the young ones that didn't have very much investment yet in their own retirements systems. So when you took a good look at recruiting capability down there, it was obvious we were going to have to bring in a lot of new folks. That's a lot of work. It's a lot of work to hire folks. You have to write job descriptions; you've got to do a lot of planning in order to be able to write the job descriptions; then you have to go through the recruiting processes, get the people there, then a lot of training. We didn't even have the documentation base to do the training on, so that had to be developed. The amount of work necessary to take over operations was large. I think Ben saw that. But he was a good person to work for. He had a lot of vision.

Storey: Long-time Reclamation employee?

Hamann: Oh, yeah. Gosh. That's amazing, I've kind of followed in his footsteps around my career. He was a mechanical engineer at Grand Coulee for quite a number of years, and he left there just before I came on. He had gone to the Parker-Davis Project. I think he went to the Parker-Davis Project from there and had grown up through the ranks there at the Parker-Davis Project, ending up as the manager at Parker Dam, and then ended up as manager of the Consolidated Project at Hoover.

Storey: While you were up on CRSP, what kind of generation capacity did we have?

Hamann: Oh, my, that's taxing my memory. Strikes me it was around 18, 1900 megawatts.

Storey: So then you moved down here to the Lower Colorado and took over Hoover-Parker-Davis.

Hamann: Yes.

Storey: What kind of generation capacity did we have down here?

Hamann: Well, we were in the process of uprating Hoover. The final number, I think, for Hoover is 2087, and Davis' nameplate is 240, and Parker is 120. So we're looking at 24, 2500 megawatts.

Storey: Your move down here, was that because Mr. Wilkinson retired?

Hamann: Yes, Ben retired, left the position open, and I applied for it and was selected.

Storey: Were you asked to apply for it?

Hamann: No.

Storey: I'm interested in how jobs get filled at different levels in the organization, is the reason I'm asking this.

Applying for New Positions within Reclamation

Hamann: Well, it's a pretty simple process. Wherever the vacancy is, the person who is going to make the selection for that vacancy gets the processes started to get an advertisement out on the street. There's a lot of word-of-mouth communication about what jobs are out, but you essentially take the application off a bulletin board somewhere and fill it out and send it in.

Storey: Is that the same thing that happened when you became its deputy regional director?

Hamann: Yes.

Storey: You applied for a vacancy?

Hamann: No, actually, that was a little different, because this was in the same area, the same geographical area, and it was the same grade. I could just move into that on a reassignment, so that's what we did. I was just reassigned to this job.

Storey: By Bob Johnson[18].

Hamann: Yes. He and I had talked it over, and it looked pretty attractive to me. I'd been at Hoover for about three or four years. The way I look at it is after about three years, you stale out on a job, because the problems that you can fix you have, the problems you can't fix and haven't, you need to step aside and let somebody with a different approach take a whack at it. So I think that worked out.

Storey: As project manager at CRSP, then project manger at Hoover, and now deputy regional director, how did the responsibilities change? How does the universe that you're interested in and that you have to work with change?

Hamann: Well, for the Colorado River Storage Project, it was more specifically operation and maintenance issues. The site issues were typically handled by the Regional Office. The interface issues of Colorado River Storage Project were, to the most part, handled by the Regional Office. At Hoover, the job was still operation and maintenance, but the boundaries were much wider in that direct responsibility for a

18. Robert W. Johnson was the regional director of the Lower Colorado Region from 1995 to 2006, and later served as commissioner of the Bureau of Reclamation from 2006 to 2009. Mr. Johnson also participated in Reclamation's oral history program. See Robert (Bob) W. Johnson, *Oral History Interviews*, Transcript of tape-recorded Bureau of Reclamation Oral History Interviews conducted by Brit Allan Storey, senior historian, Bureau of Reclamation, from1994 to 2008, in Boulder City, Nevada, and Washington, D.C, edited by Brit Allan Storey, 2011, www.usbr.gov/history/oralhist.html.

lot of the ancillary things going on, coordination with Western, coordination with the power customers who were interested in how we spend our money down there, that was all left with that project manager. More or less the external coordination of the project was the job. So that was an expanded responsibility.

Storey: And then as deputy?

Hamann: As assistant regional director, that is expanded by an order or two of magnitude into just an awful lot of the administration of Reclamation's mission and the Region down here. So rather than just operation and maintenance of a powerplant, now we look at the comprehensive job that the Region faces, the watermaster role on the river, coordination with the irrigation systems, coordination with the states and their water functions, more direct involvement with all the environmental issues, just all of that. It's a much, much bigger job.

Storey: But something has changed, right? Down there you did something that you aren't doing up here, that's why you have time to do this other task. What was it that changed?

Learning to Manage Different Facilities

Hamann: The direct involvement with operating and maintaining the facilities.

Storey: What about supervision?

Hamann: That's a large change, too. Down there you were responsible–essentially the head office responsible for–only in the case of Hoover it was around 300 people. Up here the job is much more one of coordination and influence than it is direct supervisory responsibility.

Storey: Did the amount of your travel change?

Hamann: Actually, the reason for the travel changed a lot, but the amount didn't change much.

Storey: Tell me about why the reason changed, what the changes were.

Hamann: Well, when I was at Hoover, I would go to Denver a lot to coordinate operating and maintaining issues. Now, moving up here, I don't go to Denver nearly as often, but I do go to a lot of the other regional offices, and a lot of travel to Phoenix for discussions with Western and discussions with power customers on issues of power contracting, and ownership of facilities, and the administration of the Navaho Generating Plant, travels to the area offices to talk with area managers about whatever the issue du jour is.

Storey: Were you appointed to a lot of committees as project manager and area manager to do work for Reclamation?

Hamann: Oh, a few here and there.

Storey: But not a lot?

Hamann: Didn't seem like a lot.

Storey: How bad is assistant regional director?

Hamann: Probably twice as many. Now, it's probably a lot. But it's more like issue managing than it is the direct supervision, like managing the issue of trying to maintain a design and construction capability, to organize the design and construction efforts that we do have left, keeping our business relationships with the power customers in good stead.

One of the jobs we're trying to do right now is move the Parker-Davis Project off the appropriated budget and into an agreement with the power customers to fund it in advance–advance funding. That's a lot of work.

Storey: How are the customers responding?

Funding Challenges

Hamann: Very favorably. They would just as soon do that. It moves all the issues back to local issues rather than national competitions for dollars.

Storey: But on the other hand, it means Congress doesn't have control.

Hamann: Well, that's some of the controversy around it. However, I don't agree with that statement. We still have to go through the federal process. We still have to go through all the agency budgeting processes and O-M-B [Office of Management and Budget] review and all of that, and right down at the wire when someone's going to sign the check, they're just given a different colored check to sign. But the budgeting process will be the same, so Congress will still have all the oversight mechanism. It's just that the money will come from the contractors in advance rather than a month later on their power bill.

Storey: I understood that Congress was upset because they had no control any longer.

Hamann: Well, there are some in Congress who view that as abating their control, but I don't see it that way at all.

Storey: You mentioned a few moments ago that one of the issues is dealing with the power customers, and I think the way you put it is, "How we spend their money."

Hamann: Yes.

Storey: Tell me more about that issue.

Hamann: Well, for Hoover Powerplant, it's pretty straightforward. They pay the bill directly. This all goes into a special account; it doesn't go into the general fund of the United

States. We call it the Dam Fund. It's in the bank in San Francisco, and the Boulder Canyon Act specifies that all revenues go into the account, and all bills are paid out of the account. So when we spend money on operation and maintenance, it's money that ends up on a bill that Western sends them, and they send us the money, and they know it, and they know where to go when they're not happy about it.

Storey: Is there a lot of discussion about what Reclamation does and when it does it and all that sort of thing, because of that concern?

Hamann: Oh, you bet. In fact, there's a whole facet of operating the system there that is coordination with the customers, the Engineering and Operating Committee, which has customer people and Bureau people who get together, and we go over our plans for spending money and doing the maintenance and operating work down at the dam. They're very attentive.

Storey: Does it affect the way we do business a lot?

Hamann: Well, let me say that it has some effects. If you've got a generator that needs to be maintained, you do it, and these customers run their own systems. They're not babes in the woods. So they know the Penzoil rule, "Pay me now or pay me later. Pay me for an oil change now, or pay me for a new engine later." So we have common goals in that arena of keeping the powerplant in good operating condition. But they had lots to say about things like buying computers, and buying cars, and building warehouses, and things like that.

Storey: You came here late seventies, as I recall.

Hamann: Yes.

Storey: Has there been a change that you're aware of in the relationship between Reclamation and the water users and the power users? And if so, how has it evolved?

Reclamation's Relationship with Its Customers

Hamann: There's been some pretty drastic changes there. The power users are getting closer and closer to the powerplants. They're understanding their ability to influence and making use of it. They are taking advantage of Reclamation's attitude that we're customer-oriented. Reclamation used to be fairly standoffish and not invite customers so much into deliberations about things, not asking much of anything. We're getting much closer together now.

With the power [water] users and the advent of the Reclamation Reform Act[19], and in conjunction with Reclamation's customer-orientation approach to business, they see us talking to environmentalists and talking to municipalities and talking to

19. In 1982 Congress passed the Reclamation Reform Act (RRA), which raised the minimum acreage allowed to receive project water from 160 acres to 960 acres, removed the residency requirement, and placed a limit on the leasing of lands receiving government water. With the RRA, Congress recognized that agriculture had become more mechanized and industrialized and that 160 acres was too small for successful farming in the modern world.

them. The water users have expressed some feelings, especially at our area managers' meetings, that we used to be their advocates, and now we seem to have moved across the fence, because we are changing the way we do business, and we are recognizing that we have to make water-resource allocation decisions that fit the whole society and not just a narrow piece of it. The traditional water users see us as abandoning them, so they're much more inclined to be suspicious of us now in what we're doing than they have been in the past.

Storey: What about, for instance, when environmental issues come up? They cost money; it's reimbursable money. Does that cause tensions?

Hamann: Yes, it does. You said it's reimbursable. Sometimes it is. I think we're all getting wiser now. More frequently that question is on the table as to whether it's reimbursable or not. That argument is taking place up front rather than just being presumed that it's going to be reimbursable. But, yes, you're right, it takes money. Where does the money come from? We're facing those as some of the first steps of every environmental issue now.

Storey: Am I hearing that Reclamation and the water users are becoming more sophisticated about looking at this issue?

Hamann: I think so. God, I would hope we're learning.

Storey: I think one last question. The regional directors you've know. Did you ever know a regional director up at Coulee?

Regional Directors

Hamann: Coulee was under the Regional Office in Boise.

Storey: Right.

Hamann: Yes, I've known those regional directors. Rod Vissia[20] was the one I can remember in Boise.

Storey: What was Rod Vissia like?

Hamann: Very smooth, very executive-oriented. He was not a detail person; he was a vision person. Details kind of bored him. He managed by perspective and direction rather than detail. Rod was a good person.

Storey: What about down here then?

20. Rod Vissia was regional director of the Pacific Northwest Region from 1974 to 1980 and went on to become the Assistant Commissioner Engineering and Research (1980-1982). Mr. Vissia also participated in Reclamation's oral history program. See Rodney (Rod) J. Vissia, *Oral History Interviews*, Transcript of tape-recorded Bureau of Reclamation Oral History Interviews conducted by Brit Allan Storey, senior historian, Bureau of Reclamation, in Ocean Shores, Washington, edited by Brit Allan Storey, 2011, www.usbr.gov/history/oralhist.html.

Hamann: Down here, let's see. I was looking at the pictures on the wall in there and deciding that I've know too many of them. I must be getting too old. [Laughter] A. B. West was retired, but Arleigh West was–I knew him because I was in the Rotary Club and so was Arleigh. So we were more social acquaintance than business acquaintance. Arleigh had definite opinions about things.

Storey: So I've heard. [Laughter]

Hamann: I'm on thin ice here now so I've got to–the regional director who was here when I came was Gene Campbell, again, a really nice guy. I missed Manny Rodriguez by just some few months, I guess.

Storey: Manny Lopez, I believe.

Hamann: Yes, Manny Lopez, I misspoke. There were still lots of tales around about him. I understand he was a pretty charismatic person to work for.

Storey: Really. People tended to like him?

Hamann: Yes. Gene was a stable low-key person.

Storey: This is Gene Hinds?

Hamann: Yes. What did I say?

Storey: I thought you said Campbell, but I may have mis-

Hamann: I probably misspoke again. Yes, Gene Hinds. Seemed like I had my head down in the trench a lot, and I didn't really have a lot of personal interaction with Gene, but in meetings and that sort of thing I could see that he was a low-key person. He wasn't a highly directive sort of manager.

Storey: After him would have been–

Hamann: Bill Plummer. Still work with Bill Plummer.[21] Bill's in a consulting role now with some of the water entities down in the Yuma area that we work with.

Storey: I believe he lives in California now?

Hamann: I think he lives in Phoenix.

Storey: Oh, in Phoenix.

Hamann: I believe so. At least he's got an office in Phoenix. Bill was a lot more of a detailed person. He would delve into things a lot deeper than Gene did. Gene would, again,

21. N. W. "Bill" Plummer was the Upper Colorado Region's regional director from 1978 to 1981, and went onto become regional director of the Lower Colorado Region (1981-1985).

manage the issues and the directions, but Bill would get involved in the details. Still does. He gets involved in a lot of details.

Let's see. Then came Ed Hallenback.[22] Hallenback was–oh, I guess I'd have to say he's one of the mentors that I looked up to a lot. Gene was a participative management sort of person, a lot of fun to be with, a lot of fun to work with. Had a sense of humor and didn't mind having a little fun on the job.

Storey: This is Ed Hallenback.

Hamann: Ed Hallenback, yes. Now he works over in California.

Storey: Maybe I'm confusing those two.

Hamann: Ed was there already when I went up to the storage project. So then up there the regional director was Cliff Barrett.[23] Of course, I think everybody knows Cliff. If not, for those who didn't, he was an extremely good person to work for, engendered a lot of loyalty in his staff. A real gentleman.

Then came Roland Robison,[24] and he was the consummate gentleman, and again, a fun person to work with. His perspectives were very enlightening to me. He had worked in several different agencies before, and for him to bring that perspective to the Bureau, and associate our programs and the things we were doing with some of the perspectives of these other agencies, like Fish and Wildlife, and B-L-M [Bureau of Land Management], and things, were very enlightening to me. It really broadened my horizons.

Then, let's see, as I came back down here–

Storey: Maybe Mr. Towles.

Hamann: Yes, Bob Towles was the regional director that selected me. Bob came from the old school in construction.

END SIDE 2, TAPE 2. DECEMBER 15, 1997.
BEGIN SIDE 1, TAPE 3. DECEMBER 15, 1997.

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22. Edward M. Hallenback was regional director of the Lower Colorado Region from 1986 to 1991.
23. Clifford I. Barrett had a distinguished career with the Bureau of Reclamation becoming Assistant Commissioner Planning and Operations (1977-1981) and regional director of the Upper Colorado Region (1981-1989) and served briefly as acting commissioner for the Bureau of Reclamation in 1985. Mr. Barrett also participated in Reclamation's oral history program. See Clifford (Cliff) I. Barrett, *Oral History Interviews*, Transcript of tape-recorded Bureau of Reclamation Oral History Interviews conducted by Brit Allan Storey, senior historian, Bureau of Reclamation, in 1996, in Salt Lake City, Utah, edited by Brit Allan Storey, 2009, www.usbr.gov/history/oralhist.html.
24. Roland Robison was the regional director of the Upper Colorado Region from 1989 to 1992. Mr. Robison also participated in Reclamation's oral history program. See Roland Robison, *Oral History Interview*, Transcript of tape recorded Bureau of Reclamation Oral History Interview conducted by Brit Allan Storey, senior historian, Bureau of Reclamation, September 27, 1993 in Salt Lake City, Utah, edited by Brit Allan Storey, www.usbr.gov/history/oralhist.html.

Storey: This is Brit Allan Storey with Blaine Hamann on December 15, 1997.

You were saying, about Towles.

Hamann: Bob Towles, yes. He really knew the construction business inside and out. He was aware that he didn't know that much about the O&M business, so, as a regional director, he was happy to get people in O&M jobs that did know what they were doing so that he didn't have to care. He didn't have to worry so much. Nice guy to work for. Funny. They always said that he had the itchy foot award, that he had been at the most projects of anybody in the Bureau of Reclamation in the thirty-five-or-so-year career that he had.

Then when Bob retired, Larry Hancock[25] was selected for the job. He was here for two or three years and then retired, and Bob Johnson was selected. I worked with Bob for, oh, gosh, a long time. I worked with him in the annex office over here when I was in the Power Division, way back.

Storey: When you were in the O&M responsibilities before you went down to the dam?

Hamann: I was in the Power Division and Bob was in the Water-Lands Division. They were commonly headquartered there. We worked quite a bit together then.

Storey: When you were working down at the dam, both your first stint as assistant project manager and then subsequently, there seems to be a lot of staff down there. How do they get to work and where do they park and that kind of thing? It's very constricted space down there.

Employee Parking at Hoover Dam

Hamann: That's true. That's always been a real problem. We encourage car-pooling. During the construction of the Visitors Center, we actually encouraged people to park in Boulder City here and ride vans that we provided to come down to work to cut down on the congestion. But, yes, that's always been a problem.

Storey: Where is the parking that's down there?

Hamann: There's no setaside designated parking for employees. It's first come, first served.

Storey: What, that little lot there by the open by the old Visitors Center?

Hamann: Actually, I've got to back up and say, yes, there is a designated employee parking area, and it's the one right on the Arizona abutment.

Storey: On the other side.

25. Lawrence (Larry) F. Hancock had a diverse career with the Bureau of Reclamation being regional director of the Mid-Pacific Region (1989-1991), deputy commissioner of the Bureau of Reclamation (1991-1994), and regional director of the Lower Colorado Region (1994-1995).

Hamann: On the Arizona side, but there's not much space in there. Probably twenty, twenty-five cars is all that can get in there.

Storey: So Reclamation didn't provide a shuttle service out of Boulder City or anything.

Hamann: We provided a shuttle service for employees out of Boulder City during the construction of the Visitors Center, but that was terminated here just recently.

Storey: Now they get to park in the parking structure?

Hamann: I don't know. I'd have to ask Tim Ulrich[26] that. It's a good question of how they're dealing with that.

Storey: Anything else you want to talk about, or you feel you should talk about?

Hamann: No, just to say that, I guess, this career in Reclamation has been a very rewarding career, and I think part of it that's made it so rewarding is working with the professionalism, the professional people, and seeing the professionalism that they bring to the job. It's been really eye-opening. Some excellent, excellent people.

Storey: Good. Let me ask you then if you're willing for the information on these tapes and the resulting transcripts to be used by researchers.

Hamann: Sure.

Storey: Good. Thank you very much.

Hamann: You bet.

END SIDE 1, TAPE 3. DECEMBER 15, 1997.
BEGIN SIDE 1, TAPE 1. FEBRUARY 24, 2000.

Storey: This is Brit Allan Storey, senior historian of the Bureau of Reclamation interviewing Blaine D. Hamann on February 24, 2000 at about nine o'clock in the morning, in the Regional Office of the Bureau of Reclamation in Boulder City, Colorado [Nevada]. This is tape one.

Could you tell me the kinds of things that are going on in the last couple of years?

Deregulation of the Power Industry

Hamann: The thing that occupied a lot of my time was the deregulation of the power industry

26. Timothy Ulrich was the area manager of the Hoover Dam Office in the Lower Colorado Region. Mr. Ulrich also participated in Reclamation's oral history program. See Timothy Ulrich, *Oral History Interview*, Transcript of tape-recorded Bureau of Reclamation Oral History Interviews conducted by Brit Allan Storey, senior historian, Bureau of Reclamation, Boulder City, Nevada, in 2004, edited by Brit Allan Storey, further edited and desk-top Published by Andrew H. Gahan, 2013, www.usbr.gov/history/oralhist.html.

and some of the movements in the private sector to privatize the federal power systems. Bob and LeGrand have been really busy in the intense arena of the Colorado River and its entitlements and the Arizona water bank and the California 4.4 Plan, Nevada's need for more water, ways that that can be done, environmental issues with the storage and transport of water, those sorts of things.

Storey: Tell me more about attempts to privatize the federal hydropower system. Do you have any sense of who's behind it or what's going on generally?

Hamann: I don't think it's any one particular outfit. I think there was just a general feeling a couple of years ago that if the feds were doing something, it could obviously be done better by the private sector. As we have sort of involved them and gotten them closer to the operations and maintenance of the power facilities, I think they're beginning to see that we do a good job. We do a credible job. I think the intense push behind it has kind of tapered off. The Parker and Davis facilities came out best in class in our benchmarking studies. Hoover's not far behind. But there's always some improvements to make in the way we do the operations and maintenance of the facilities, but I think in general the industry has seen that we do a good job.

Storey: How does that translate into rates?

Hamann: For Parker and Davis, probably the cheapest in the nation. Hoover's a little bit higher than that, but it compares well with facilities of its size across the nation.

Storey: How about within Reclamation elsewhere?

Hamann: I think we're close to the top of the list within Reclamation.

Storey: What kind of revenues does Hoover return to the Treasury each year?

Hoover Dam Financial Returns to the Federal Government

Hamann: The total cash flow–of course, this is a zero-sum gain. The power rate is set by how much money is needed to operate and maintain the facility, and that's what sets the rate. So there's no profit margin or anything like that involved.

Storey: And that's what you mean by zero-sum gain?

Hamann: Yes. So some years where you have lots of water, you generate a lot more, because you have a much bigger product, the cost per unit goes down. Some years when you're short on water, the cost tends to go up. So it floats around. But in general, I think, the total cash flow for Hoover for Reclamation is around 50 to 60 million dollars a year, and for Parker and Davis it's around 6 to 10 million dollars a year.

Storey: Let's see. Am I recalling correctly. We built Hoover for 65 million?

Hamann: No. It was 165 million. That's been paid back for some years.

Storey: Yes, quite a long time ago. Now, do we amortize wear and tear and that sort of thing, or do we return all the money to the Treasury, then when we get down and we need new equipment we have to go get funding somewhere? How does that work?

Hamann: There's a variety of ways to do that. For Hoover's first years, there was a fund that was charged per kilowatt hour, a rate that was charged per kilowatt hour. I believe it was two and a half mils, and that went into a replacement fund to accumulate money so that there was replacement money available when it was necessary to do major replacements.

That situation ended in 1987 when Reclamation reassumed responsibility for the operation and maintenance of the plant, and from then on we don't collect and fund an account for operation and maintenance. That is rolled into the annual cost of the power. So if we need large amounts of money to do very major replacements like, for instance, the Hoover uprating that was done in the late eighties, early nineties, we can go to Congress to get authorization for federal funds, which would then be rolled into the amount to be paid back, or we can go directly to the power customers and ask them to fund it up front. We chose the latter route for the Hoover uprating. So the customers of Hoover power advanced us 200 million dollars to do the uprating program.

Storey: That caused a little heartburn in Congress, didn't it? Or did it?

Congressional Oversight

Hamann: There was some angst there over losing the federal oversight, the congressional oversight, but that was dampened out, I think, when the people that pay attention to the fiscal budget realized that even though we got the money from a different source than the federal coffers, that Congress still had the oversight, because we go in with an annual budget that they look at and approve or disapprove or change at will. So there's still a federal oversight.

Storey: But that money coming in from outside, they still have to oversee?

Hamann: They have to authorize us to spend it. One interesting sidelight of that particular arrangement is that during one of the years that we were–one of the early years, even though the power customers had funded the money to be spent, there was one of those years when there was a problem with the budget and they didn't get the budget passed, and we were on a continuing resolution which held steady on no new expenditures were allowed. Even though the money was in the bank, Congress couldn't authorize us to spend it. So on the one hand, there was the money and the job to be done, and on the other hand, no authority to spend. So that caused a little excitement there for a while. Interesting sidelight.

Storey: That's interesting. Somehow I was under the impression that Congress didn't really have any control over that money, but they do. That's very interesting.

Hamann: Yes, they do.

Storey: Tell me more about 1987 when we assumed O&M for Hoover. That was after the fifty-year contract was renegotiated, I presume.

Reclamation Assumed Management of Hoover Dam O&M

Hamann: That's correct. There were two major arrangements that were made for the Hoover facility when it was in the planning stages. One was for the disposal of the electrical energy, and the other was a contract called the agency contract for operating and maintaining the generating machinery and equipment in the dam. At the time, the Bureau of Reclamation hadn't really cut its teeth as a power industry, and the secretary of interior was concerned that we might not have the organizational expertise to handle a world-class facility like was being planned for Hoover Dam. So he required contracts for this operating and maintenance of the generating machinery.

Now, Reclamation always handled the rest of the facility, the waterways, the general structure, the elevators, gates and valves, and all that sort of thing, but the generators were operated and maintained by Southern California Edison and the Los Angeles Department of Water and Power.

Now, those contracts ended simultaneously with the end of the first amortization period on June 1, 1987, and at that time, fifty years hence, Reclamation had gained a significant expertise in generation equipment and machinery. So we decided not to renew those contracts, and just set up our own Operations Division and beefed up the Maintenance Division to handle the generators also.

Storey: What kind of political issues came up when we did that?

Hamann: That wasn't a popular decision with Edison and with the city of Los Angeles. They argued with us a bit about that. But in the end, there were no provisions for a renewal. There was no entitlement to a renewal per se, and there really wasn't much of an argument for those entities whose headquarters are on the coast to send field crews at per-diem rates out here to Hoover Dam when the expertise was here locally to do it. So that made a significant cost savings in the maintenance of the dam, about seven million dollars a year.

Storey: How did we staff-up for that transition?

Staffing Up for New O&M Responsibilities at Hoover Dam

Hamann: It was an exercise in dealing with the agents' employees who might want to stay rather than go back to the coast, people who had become connected to Boulder City in one way or another. Some of them stayed. And then tapping our own resources to bring in our own people from other dams, areas throughout the West.

Storey: Were you manager then down there?

Hamann: I was the assistant project manager when that was happening, setting up the

Operating Division.

Storey: Did we have any choice, for instance, about taking staff from these companies if we didn't want them, for instance?

Hamann: Well, we decided that the better part of valor there was to just make an across-the-board offer. For any of the agent's employees who wanted to stay, we would provide them a job. It worked out pretty well. Not very many came. The only ones that it looked attractive to was the younger ones who hadn't been with the agents very long and hadn't gained a significant investment in a retirement account and were kind of low on the totem pole as far as bidding into locations, and would end up in somewhat undesirable spots when they went back to the coast. So we were able to gain a few pretty darn good people that way. But for the most part, it was Reclamation employees that moved to the area for the jobs.

Storey: How big was the office down there at that time?

Hamann: There was about 125 people with Reclamation.

Storey: This is before or after the transition?

Hamann: Before the transition.

Storey: And then after the transition?

Hamann: After the transition it was about 250.

Storey: So that, I would think, put a little bit of strain on the personnel function down there.

Hamann: It did.

Storey: For a little while.

Hamann: It did. That was difficult to handle from all of the infrastructure standpoint of the organization. It was quite a pig in a python.

Storey: How long did it take?

Hamann: We seriously started that in 1983, and it was a transition period where we started out with Reclamation employees working for the operating agents, working under their guidance and supervision, and gradually as our staff built up and we became the predominant–"we" being Reclamation employees–became the predominant workforce, then it worked the other way around and we started having our supervisors, and towards the very end then our supervisors were supervising the agents' employees until the day that they left.

Storey: Were you involved in working out that transitional period with the companies?

Hamann: Yes.

Storey: How did the negotiations go?

Hamann: In general, they went fairly smoothly. There's always potential for a personality problem here and there. No matter whether it's Reclamation employees or anybody else's, you know, you always are subject to a few personality clashes, and there were a couple, but they weren't really significant in the total operation.

Storey: Did we have a labor union down there before this transition took place?

Hamann: Yes, we did.

Storey: So the transition didn't cause any particular issues with the labor unions, for instance?

Hamann: No. I think they looked forward to it positively, because it would mean a lot more employees there and the potential for a lot stronger, larger union.

Storey: A federal union. Federal workers union.

Hamann: Yes.

Storey: What about the union for the private workers?

Hamann: I am not really aware of how that worked with the agents' employees. I believe their unions were centered over on the coast and, therefore, they didn't have a strong local presence as a union office, more or less. But they were always there in the background.

Storey: I have heard stories about union issues that come up off and on, but I have never talked to anybody about it per se. How does Reclamation look at and deal with labor unions in a situation like Hoover, where you have a pretty large powerplant? How does that work? How do you negotiate salaries, and how do you deal with issues that come up?

Hamann: It's really no different than any other labor-management situation, be it in the private sector or public sectors. Management has issues, the union has issues, and you just sit down and just work them out. If you work positively together and maintain a reasonable approach to things, people stay pretty reasonable.

Storey: Do you remember any particular issues that came up?

Hamann: Not surrounding the buildup of maintenance forces. You have a contract, and people tend to interpret certain areas of the contract differently. And so there's frequently some differences of opinion between labor and management over how any particular clause in the contract should be interpreted. That, again, you just have to sit down and work it out, figure out where to go from there.

Storey: Did you ever have to negotiate a contract?

Hamann: We negotiated essentially every year.

Storey: Really? So they didn't go on five-year contracts or something like that?

Hamann: No. It was on an annual basis.

Storey: These are federal employees, right?

Hamann: Yes.

Storey: How does a contract situation differ from a normal Civil Service situation?

Hamann: In almost every other sector of Civil Service, employees don't have the opportunity to negotiate their wages, the amount of their wages. These employees are covered under a pay law that allows them to negotiate wages as well as working conditions. So in most other areas of the government we're talking about working conditions and the impacts and methods of implementation of certain new ways of doing business. Here it's the whole gamut, wages as well as working conditions and contract interpretation, the whole nine yards.

Storey: For instance, does this mean that workers who belonged to a union would tend to be paid higher than workers who didn't belong to a union?

Union Pay Rates

Hamann: That seems to be the way it shakes out, yes.

Storey: In the federal government?

Hamann: Yes.

Storey: So there isn't a limitation, for instance, "You can go no higher than X"?

Hamann: No limitation.

Storey: How does management look at negotiating this and dealing with the fact that these folks are getting paid more than those folks?

Hamann: There are processes to set these wages, and the most common one is the prevailing wage rate in the industry in that same part of the country. So we compare our wages to other large power organizations like Nevada Power, Salt River Project, Southern Cal Edison, that sort of arrangement. There's a band of differences, of course, in how they might pay, say, a power system electrician. We figure out the high and the low and the average, and then we tend to propose the average rate. So as wages tend to creep up, well, then so does our workers' wages.

But it does cause a large problem within our own organization when electricians' wages creep up to the point where they're pushing the wages of the supervisors, the Civil Service supervisor. Not everyone at Hoover negotiates their wages, only the union members. So we have Civil Service supervisors, G-S supervisors, and that pay compaction does cause problems.

Storey: Supervisors can't be members of the union?

Hamann: No.

Storey: Now, in the Civil Service system you have a combination of what you're doing and longevity that determines your pay rate. Is that true also in the unions, or are all electricians paid the same rate?

Hamann: All electricians at one facility are paid the same rate, but not all electricians across Reclamation are paid the same rate, because they're set by locality. So an electrician, say, at Grand Coulee might be making twenty-three bucks an hour and one at Hoover might be making twenty-five bucks an hour, or vice versa, depending on how the wages in those particular areas tend to go.

Storey: So this young guy that comes in at twenty-one is making the same thing as a forty-eight-year-old who's been there twenty years.

Hamann: If he's a journeyman, he is.

Storey: That's interesting. No differential, then?

Hamann: No. No longevity differential.

Storey: I have heard that the specializations within the unions, I think, cause problems sometimes. Did we ever run into that here?

Hamann: That hasn't been a big issue in the Lower Colorado Region. There are times in other locations where that clash between journeyman specialties tends to be a problem. I remember back to the Third Powerhouse days of construction days at Grand Coulee. It was kind of a rivalry then, particularly between the mechanical crews and the electrical crews. So it could be a problem. Of course, things change with time.

Storey: Something is nagging at my mind, and I can't quite put my finger on it, about the union relationships to Reclamation. Well, maybe it will come back later.

So about what percentage of the workforce down at Hoover do you think would probably be union as opposed to nonunion?

Hamann: I'd say it's probably 40 percent union. That's just a guess. Forty percent is either union members or eligible to be union members.

Storey: So they would be classified, what is it? W-G, as opposed to G-S?

Hamann: The actual designation for the Hoover bargaining employees is B-B for bargaining board. W-G is the blue-collar scale that applies across the board for Civil Service workers, blue-collar Civil Service workers, who aren't able to negotiate wages, and those are standard rates for everywhere.

Storey: For throughout Reclamation?

Hamann: Yes. Throughout the Civil Service.

Storey: Are these B-B employees, for instance, are they on the same retirement system?

Hamann: Yes. Civil Service Retirement System.

Storey: So their retirement gets figured on the basis of these negotiated salaries?

Hamann: That's right. On the high three of their–

Storey: And they're entitled to the health insurance and the life insurance and all of those other things?

Hamann: Exactly.

Storey: It's just that the rate of their wage is set in a different–

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Storey: That's interesting. Let's see. Anything else about unions that I don't know enough to be able to ask you?

Hamann: I could get in trouble here in a big hurry. Maybe I should just keep my big mouth shut. [Laughter]

The Effects of Power Industry Deregulation

Storey: Okay. Let's talk about the deregulation of the power industry. Of course, the politicians always tell us that this is going to get us better rates, it's going to be cheaper and all that. We've watched the airline rates climb out of sight for some runs. How has this worked out in the power industry?

Hamann: Well, it's almost all speculative at this time. There are those that claim they know how it's going to turn out. The ones who claim they know how it's going to turn out kind of scare me, because I don't think anyone knows how it's really going to turn out. But there are some obvious things that you can see shaping up, and that is that for large power companies to split themselves in half, or whatever percentage, and get out of the generating business and into the wires and transmission business or vice versa, it's going to take a lot of capital, because large facilities are going to have to be bought by others.

So there's going to be a requirement for capital, and along with capital comes interest, and along with interest comes rising rates. So when we get all done, in general, the generation of electrical energy, in my view–this is a personal view, but in my view it's going to cost more, because we're going to have to support a new interest rate now that we're not supporting right now.

Who's going to pay that? Well, my guess is that you and I are going to pay that. The big power-users, big corporations, big industry locations, will have the ability, the clout, to swing a good deal with the power companies for their energy, and they may end up in a better position than they are now. But somebody has to pay the freight, and I think it's going to show up on yours and my home meter. So, in general, I think it's going to cost more.

There's a requirement for new facilities. These independent system operators are going to have to have the ability to control what they operate. Those facilities don't exist now and they're damned expensive. Acres and acres of new computers are going to be needed. Many, many more employees are going to be needed in the industry to operate new facilities. So, in general, I think it's going to end up costing more. What else to say? Give it about fifty years and we'll see how it turns out.

Storey: We'll see how it works out.

Hamann: Yes.

Storey: What were the major issues in deregulation? First of all, for the whole industry and the political arena and, second of all, for Reclamation.

Impact of Deregulation on Reclamation

Hamann: Well, the power industry was a monopoly situation when this deregulation started, and the whole point of Frick's [phonetic] what they called the meganover [phonetic] for Rule 888 and 889 was to eliminate the monopoly situation in power generation and transmission. There were some predatory tactics going on, companies who had large systems both in generation and transmission. Smaller outfits that surrounded them that needed to transport energy from one place to another ended up paying some pretty exorbitant fees to do that, because the monopoly that owned them could set whatever rate they felt like setting, and so they set them to be advantageous for themselves. So the whole point is to break up that monopoly.

I think that it leaves Reclamation in an interesting position. We used to sell the product, megawatt hours, with a lot of benefits buried in them, embedded in those megawatt hours. The black start capabilities, the generation control, the voltage control, the inertia, the stability in the systems, all of those things were just not recognized as products; they were just within the megawatt hours.

I think what's going to happen with Reclamation, if we seize the opportunity, is to recognize that our new product are these things called ancillary services, and we'll be ending up selling black-start capability and stability to the system and voltage

control and generation control as the product, and the megawatt hours will be free. That's kind of a radical thought, but I think that's really what we've got to sell.

The megawatt hours that we sell, you know, sixty billion kilowatt hours a year, is really not that big a lump of energy. There will be the Enrons of the world that will sell that much a month. So our market's going to change. But I think the future is bright. I think that we won't have any trouble meeting the bills, because we're the only ones who have got those great, big hunks of rotating steel out there.

Storey: On the hydro projects.

Hamann: On the hydro systems that provide the stability to the system. We have high-class generation control, the ability to black-start, the ability that can rapidly ramp up and ramp down and move the power system out of dangerous situations. We're about the only ones that do. So even though our lives are going to change, I think the future is going to be very interesting.

Storey: So it's the nature of the hydropower that gives Reclamation a special role in the western electrical industry?

Hamann: Exactly.

Storey: And, I guess, to a limited extent perhaps the Corps?

Hamann: Yes. Anyone with hydro will find that hydro very, very valuable. Hydro's always been the glue that holds the system together, because it's the part of the system that's very, very controllable. The big powerplants, you know, the big coal-fired or gas-fired thermal plants, you have to depend on a thermal cycle of, you know, getting the fire hotter or colder in order to control the generation. You're looking at days to increase and decrease significant amounts of generation. We can do it in seconds. So that's going to be very valuable to handle the unexpected in the power system. So we'll be holding the system together while the Enrons use the system to transport power from New York to Dallas or whatever. The Reclamation facilities will make that possible, if we can figure out how to charge for that.

Storey: Enron is E-N-R-O-N?

Hamann: E-N-R-O-N. Yes. The big energy company. They're buying up large amounts of energy resources, gas fields and–

Storey: How far does Reclamation's ability to assist with this kind of stabilization and so forth extend? Is it just limited to the western grid? Is it limited to parts within the western grid? I don't quite understand how all that works.

Reclamation's Role in the Western Power Grid

Hamann: Of course, Reclamation doesn't have a presence in the East, east of the Mississippi, so we're not very effective there. Maybe a little bit along the transition between

power systems in the West. Maybe a little bit with Canada. Maybe a little bit with Mexico. But generally in the western U-S.

Storey: As I understand this western grid, so called, it's a huge interconnected system of transmission lines feeding out of various power sources. If you're going to control that, you know, you sort of envision this huge control room somewhere, the control room in the sky managing this western grid. How does it really work?

Hamann: There are several big control rooms in the sky that do that, and they interact with each other. Basically the way it works is a large control center. Let's pick the Phoenix Control Center that Western [WAPA] operates. They take a certain geographical area, and there are transmission lines that run into and out of that geographical area, you know, essentially operate by putting the measurements on all of those points so that you can tell what's going in and what's coming out of that particular area. You know what's going on inside, because you've got your eyes and ears on all of the measurement points within that geographic area as well.

Then you just balance it so that you don't have any shortages anywhere. You know how much is going out and how much is coming in. You know how much you need to operate your own area. That is all fed through computer systems that generate what they call an area control error, which is the difference between what's needed and what's being generated. It could either be positive or negative, and you can measure that very easily, because if the system is beginning to incrementally speed up, it means you're generating too much. If it's incrementally slowing down, you're generating too little. And you use that error to generate control signals that go to the control sources like Hoover Dam to either increase or decrease generation. That's the simplistic way of looking at it.

Storey: So then Phoenix would be connected, say, to Sacramento?

Hamann: There are transmission lines between Southern California and Phoenix, and so you monitor those and you see how much is going to Southern California, and they also send signals to Phoenix to say that we need more or we need less. The Phoenix Control Center then divvies that up among all the generators under its control and tells each one of them to do an incremental change.

Storey: Is this done mostly automatically, or does this require the operators to do something?

Hamann: It's a supervised function, automatic generation control. That is, you can turn it on or off. But in general, once it's on, it's an automatic system. It works on a two-second basis. Within two seconds it runs around and measures everything, figures up where the pluses and minuses are. It sums them and comes up with an area control error and then divvies that up and sends it to the generating control points. And that's all automatic.

Storey: I can see before computers this would have been a lot tougher job.

Hamann: It was. It didn't work quite as well. It was an analog system then. The original ones

were even partly mechanical. In fact, the first automatic generation control signal was invented for Hoover Dam by the Northrop Company, and it involved some very precise clocks that were down at the dam, and those clocks measured the system time and then used the error in time to generate an error signal that went to the generators and to boost them up in generation or reduce their generation.

So when Hoover Dam was radio, that is, it was only connected to the Southern California systems, Hoover Dam was controlling the time in Los Angeles. That was an interesting system. It was mostly mechanical with a little bit of primitive electronics built into it.

Storey: Do you know when the transition took place, by chance?

Hamann: Into computers?

Storey: Well, the transition where we began to expand and expand the grid, and I presume at the same time we were getting computer control. But I'm wondering if that's true.

Hamann: That was an incremental thing that happened throughout the electrical world, just a slow growth that happened almost everywhere. As growth in an area–human growth, industrial growth–occurred and more power was needed, the existing transmission lines would tend to start to get overloaded, and so you'd build another one. The power systems, the power-generating plants, would start to get overloaded, so you'd build another one. These were the responsibility of the monopolistic systems to look forward and plan for, pay for their own load growth, so they were looking forward into the future and building new generating plants and building new transmission lines based on what they projected the growth in the area to look like.

Now, that was the responsibility for these utilities. Reclamation is not a utility, so we don't plan load growth or anything like that. Our plans were only built to serve a particular function, usually a Reclamation project, and then any energy that was excess to that project's needs was then available for sale to the rest of the world. But we in no way have the responsibility for utility-type planning.

Storey: But do you have a sense of when this transition into the grid and into computers–did it coincide? Was the grid expanding before computers? How did that work?

Computerization of the Expanding Power Grid

Hamann: Oh, yes, most definitely. I'd say we started talking about interconnected power systems probably in the early part of the century, and that growth, as it incrementally took place, caused new transmission lines to be built, and things that were good enough in the beginning turned out to be needing even some improvements along the way.

The old electromechanical automatic generation control that was invented for Hoover Dam soon became inadequate to handle the job, and so improvements were under way constantly along that. Pretty soon vacuum tubes became more prevalent

and engineers figured out how to use them and figured out how to use them to do specific things like improving automatic generation control. That just went along incrementally, too, as the systems became inundated with the job they had to do. Then they had to be improved and that forced some kind of improvements in engineering to go along with it.

Transistors came into the picture in probably the early fifties. Pretty soon everything was transistorized. By the mid-sixties, that technology was well under way. Probably in 1975 or so, transistors kind of got washed out of the picture by integrated circuits, and by 1990 here we are with acres and acres of computers.

I can remember when I was going to engineering school in the late sixties, the university had a huge computer. It was a IBM 360/40 with 64,000 bytes of memory. You can get that much in a pencil now. I mean, you don't even talk about thousands of bytes of memory; you talk about it in megabytes. Anybody's desktop computer had more memory in it now than probably existed in the world in 1960.

So all that technology allowed us to sharpen the systems, to build better control systems, and we're firmly into the digital world now with these systems. It allows us to do a better job with less, allows us to do jobs we couldn't even do before. So those things all happen as technology improves and as the world changes.

Storey: Tell me about the 4.4 Plan.

Hamann: You know, I'm not the best person to talk about the 4.4 Plan.[27] I think probably the world's expert at that, I would say without a doubt, is right up there in the Regional Office, Bob Johnson.

Storey: What has it meant to Reclamation these last few years?

Hamann: Our job in being watermaster on the lower Colorado [River] is a very difficult one of trying to find the balance between extremes, extremes of supply, drought versus floods, extremes in the political sense, extremes in viewpoints, trying to strike a balance in there where everyone can live. Environmental issues keep cropping up that are changing our lives. It's a difficult job.

Storey: Tell me about the environmental issues connected with the hydro at Hoover.

Environmental Issues and Hoover Dam

Hamann: Well, when Reclamation builds a dam, it ends up with a reservoir behind it, and we see it as a reservoir. Other people see it as a lake. And there's quite a difference in that. Reservoirs are meant to go up and down. Lakes are supposed to hold still. So the people that tend to see it as a lake tend to say Reclamation is doing a lousy job because the lake went down ten feet. Reclamation says it's doing the job it was

27. The 4.4 Plan is set up to assist the state of California to manage its water needs within the apportionment established in Boulder Canyon Act of 1928 of 4.4 million acre-feet from the Colorado River.

intended to do. It only went down ten feet, and everybody's still getting their drinking water. So it's an arena that has just lots of different viewpoints.

Then new laws come along like the Endangered Species Act, and there are plenty of people in the environmental camp who say, "What a minute. When a species is declared endangered, then the federal job is to do everything within its power to recover that species, regardless of what it does to the intention of the facilities that are being affected." So we're being asked to raise water levels at times when it makes no sense to the water world, and to lower the water when the same is true, to provide water for purposes that were never even envisioned, at the expense of the projects and the people for which those systems were intended to serve, without regard to what that impact is. And that's difficult to reconcile when there's such a demand for water, of taking it away from the people who it was intended for and giving it to purposes that recover a fish or a bird or something like that. So it's a tough job. It's a tough job for Reclamation to reconcile itself to, and it's a tough job to do.

Storey: What about issues like the willow flycatcher? Do we have fish issues also?

Hamann: Colorado River squawfish, razorback suckers, bowing tail chub, all of those endangered species are changing the way that we operate the system. The flycatcher, many endangered species, the Yuma clapper rail, just to mention a few.

Storey: Any specific issues that have come up that you recall?

Hamann: In general, we're finding ourselves the target of a variety of lawsuits for a variety of species usually saying that we're not doing everything within our power with federal facilities to recover those species. So those lawsuits are difficult to deal with. They take a lot of time, take a lot of money and distract people from work.

Water Banking in Arizona

Storey: What about Arizona water-banking? What has that meant to this Region?

Hamann: Again, Bob is the better expert to speak on that. I think it's the potential solution for the Las Vegas area. In times of a generous water supply to be able to store it in the ground somewhere and recover it later is going to allow Las Vegas, I think, to continue growth for some time.

Storey: We're thinking of storing it in Arizona?

Hamann: Yes.

Storey: And then when the river goes down, say the water supply goes down, Arizona pumps that and lets Nevada have extra out of the river.

Hamann: Right. That's the scheme.

Storey: This is the way it works?

Hamann: So the Arizona water bank, if it's to be tapped, then would be supplying what the Colorado River supplies right now to Arizona, and in lieu of Arizona taking that water out of the river, it would be available for the people upstream or downstream, either way, to take that water out in place of Arizona. That's the scheme behind it.

Storey: Do you know who thought this one up?

Hamann: No, I don't. I believe it was an Arizonan.

Storey: Another question for Bob?

Hamann: Yes. Another question for Bob. I believe it was an Arizona initiative, Arizona concept, but I'm not certain of that.

Storey: Have you worked on anything else? Any other big issues in the last couple of three years?

Arranged to Fund O&M from Power Customers

Hamann: One other issue I've been involved with in these last few years is the arrangements for funding Parker and Davis operations and maintenance directly from the power customers rather than from congressional appropriations that then get repaid by the power customers later.

So we have worked out a contract that allows us to get the money directly from the customers in exchange for a lot closer involvement with how that money is spent. I believe it's unique, at least to this point, unique in that it covers the maintenance and replacements as well as operations.

Storey: Why would that be an advantage to our customers?

Hamann: For one thing, it's cheaper. For another, it's immediate. And the third is, it gives them a lot more voice in what's done.

Storey: In the way we do the O&M and the way we do operations?

Hamann: Yes. Not nearly so much as operation. Where we cause them the most problem is when we have large swings in the power rate that they haven't anticipated, because we have some large maintenance expense that we hadn't anticipated.

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BEGIN SIDE 1, TAPE 2. FEBRUARY 24, 2000.

Storey: This is Brit Allan Storey with Blaine D. Hamann on February 24, 2000.

. . . might jump up unexpectedly.

Hamann: Yes, and that caused problems in their own business. This allows them to, first of all, get a lot closer to the maintenance schedules and functions and see what's going on. It gives them a better voice in how that's happening, and it gives them a lot more long-range insight into what those expenditures are. So that's a real advantage to them.

Storey: Now, you said also that–what was the second item you mentioned? I didn't write a note down. Let's go on to how many area offices are there in Lower Colorado? There's Yuma, there's Phoenix, Hoover.

Regional Area Offices

Hamann: Southern California. Seems like I'm forgetting one. Well, there's the Boulder Canyon Area Office.

Storey: The Hoover one.

Hamann: Yes. Well, no, no, there's Bill Renney's [phonetic] operation. That's called an area office. It covers the Boulder City, Nevada, territory.

Storey: Oh, it does?

Hamann: Yes. The Lower Colorado Dams Facilities Office is just responsible for the three dams.

Storey: Hoover, Parker, and Davis.

Hamann: Yes. But it isn't responsible for land and that sort of thing.

Storey: Does that mean that the Hoover Facilities Office reports to the Boulder City Area Office?

Hamann: No, both of those managers report to Bob.

Storey: They're independent?

Hamann: Yes.

Storey: I was interested to see the area managers switch between Hoover and Yuma. When? In the last year or so?

Hamann: Yes, I think that was in about the last six months.

Storey: Can you tell me what was going on there?

Hamann: I think it was an advantage career-wise for both of those managers. Jim Cherry [phonetic] had been the deputy down at Hoover and had come from Yuma several years ago, had a strong sense of the mission in Yuma, and had been at Hoover long

enough that he had pretty well absorbed the power picture of Reclamation.

Gary had started out at the Regional Office in planning. He spent some time as the manager over in Temecula. He spent several years as the manager in Yuma, and for him then to swap with Jim gives Jim the career growth of being an area manager and getting a view of the world from an area manager's position. It also gives Gary the ability to get a look at, get comfortable with power, river operations, and to see that side of the business, too. That makes them both very saleable, let me say. They could just about go anywhere they wanted in Reclamation when positions come open, because they've got it all now. They each do.

From Reclamation's standpoint, it makes a lot of sense, too, because, gosh, I know that when I would move into a new job, I'd see some things float through the in-basket that I could fix, and so I did. But after about three or four years, you know, and those things keep coming through the in-basket, if you haven't fixed them by then, you probably aren't going to, and it's time to let somebody else take a fresh look at it.

Storey: What else should we be talking about, about your last three or four years here?

Retirement

Hamann: Gee, I don't know. I look at things with such a different perspective now that I'm retired. I keep kidding my wife that this is so much fun, I should have done this twenty, thirty years ago.

Storey: Why did you decide to retire?

Hamann: Well, golly. I've got other things I want to do. I've done this for long enough. I want to go do some other things.

Storey: How long have you been doing it?

Hamann: I think my career was like thirty-four years long. A little over three of that was in the military. So, you know, figure nearly thirty years of doing a lot of interesting things in a lot of different places, but essentially being an electrical engineer managing power systems, building control systems, just doing engineering, and I was looking forward to some changes.

The way I put it to a few folks is that, gosh, the day you go to work for Reclamation, you don't know anybody, and then as time goes on and you broaden out what you're doing and change jobs a few times, pretty soon there in the twenty-year bracket or twenty-five years, or something like that, you look around and you know everybody. I don't know what it is. Maybe you get your head down in the trench too deeply and don't pay attention or what, but a few years later, you look up and you look around and you don't know anybody again. And then it's time to go.

Storey: So you have plans, I guess.

Hamann: Oh, yes. Oh, yes. You can see that freight container out in the front yard.

Storey: What are your plans?

Hamann: That goes to Alaska in two weeks, hopefully to get transported to the homestead. From what Annie's working on right now, it seems to have run into a hiccup getting from the Anchorage docks to a freight company that we're dealing with. Little wrinkles to work out.

Storey: Why Alaska? I mean, that's quite a change from here.

Hamann: Yes, it is. The issues are the same. It's surviving in spite of the elements, just on the different end of the spectrum. But I was born and raised there, so that's really going home for me.

Storey: You were? I had forgotten that.

Hamann: Yes. I was born in Anchorage and raised out in Matanuska Valley. So I told the commissioner I was going to go fishing. I was going to fish until I got bored with it. That would take at least a decade. So if I'm still kicking after that, well, I'll think of something else to do.

Storey: You're going to be in Palmer?

Hamann: Yes.

Storey: Where is Palmer?

Hamann: It's about forty-five miles northeast of Anchorage.

Storey: And you're not planning to do any electrical engineering or anything?

Hamann: Not as a profession. We've talk about maybe setting up some kind of a mom-and-pop business, but we'll see. Our only real deep-rooted plan is to not plan too deeply, just sort of have some fun. So we'll spend a lot of time in that camper out there, sitting on a river bank, chasing the fish up and down the creek.

Storey: Tell me your overall assessment of having worked for Reclamation for thirty-four years.

Hamann: Oh. Well, I tend to get a little emotional about it. It was a great trip.

Storey: Well, you know, with all those salmon waiting for you. I have a cousin in Anchorage. You probably may have heard of Stewart Fota [phonetic].

Hamann: Oh, yes. For heaven's sake. That's your cousin?

Storey: Well, my dad's cousins.

Hamann: I'll be doggone.

Storey: Went up before the war and got stranded there by the war and never bothered to come back after that.

Hamann: Well, isn't that interesting.

Storey: It's beautiful country.

Eklutna Project

Hamann: Yes, it sure is. There was some old Reclamation stuff around there, too. Reclamation built the Eklutna plant.

Storey: Yes, the Eklutna Project. We disposed of that, I think, about '68 or '69 or something. It may have been a little later than that.

Hamann: Yes.

Storey: Well, it went to the Alaska Power Authority, which was then ultimately transferred out.

Hamann: Right. That would have been probably in–I think E-P-A was in '77. I'm not sure when Reclamation pulled out of the Eklutna plant. I did meet the manager from Eklutna, Klell Vaughn [phonetic], was the operations supervisor at Grand Coulee when I went to work there. I'd gone to high school with his kids. That was kind of interesting. A classmate of mine ended up as the manager for the Aklutna site when it was Reclamation and made the transition to the Alaska Power Authority when that was created. I think he's still working there now. The plant manager agency right now is the Matanuska Electric Association, and they operate it as the operating agent for all of the interests there, Matanuska Power and Anchorage Power.

Storey: Well, is there anything else you'd like to talk about?

Hamann: Well, no, I think that about covers the territory. I was going to say, you know, about working for Reclamation, the work was very good, very satisfying work as a career, but I think the people is really what makes Reclamation a stellar outfit and just one hell of a good place to work.

Storey: There weren't any changes or anything that triggered you to retire?

Hamann: Oh, no. No. I've always looked forward to change, so changes that were occurring were of more interest and opportunity to me than they were terrible and necessary to avoid. But, no, it's just a desire to change, move on, and do some other things.

Storey: Well, I certainly wish you luck. And I'd like to ask whether or not you're willing for the tapes and the resulting transcripts to be used by researchers.

Hamann: Sure.

Storey: Good. Thank you.

Hamann: If questions pop up, you'd be welcome to give me a call.

Storey: At H03 Box 8086?

Hamann: Yes.

Storey: Okay. Good. Thank you.

END SIDE 1, TAPE 2. FEBRUARY 24, 2000.
END OF INTERVIEWS.