

CAP Oral History

Jeffrey P. Guy (A): I'm Jeffrey P. Guy, and I was born in 1956.

Kelli Ramirez (Q): Where were you born and what was it like growing up there?

A: Well, I was born in Phoenix at Good Samaritan Hospital. We moved... We were kind of downtown in a rough area of town, but moved in 1960 to South Scottsdale. So I grew up there next to Papago Park.

Q: Okay. Tell me about your family.

A: Well, I'm an only child. My dad worked for Salt River Project for about 37 years and my mom worked as a buyer at a... It was called Goldwater's Department Store. It's long since defunct now. And she did that for... I don't know, 27 years. Never learned to drive.

Q: Wow. What did your dad do for SRP?

A: He was what they called a troubleshooter in accounts payable. So, he would match up... They'd get an invoice, but they didn't have a purchase order somehow and he would get it all sorted out. When they were building Navajo Generating Station, he had a lot of work.

Q: Wow.

A: Yeah.

Q: Small world.

A: Yeah, isn't that funny?

Q: So, talk to me about your education.

A: Yeah, well I went to high school at Coronado High School, which is where Bob Arbuthnot went. He's the only other person I know here that went there. And then I went to Arizona State University, where I first started majoring in political science. And a buddy of mine, we carpoled together, he was majoring in math and after about a year, year and a half of this, we were talking and we go, "Boy, this really isn't making it."

And he goes, "Yah, we ought to go to the engineering college and check into that." I go, "Yeah, that's a good idea." So, he ended up becoming a mechanical engineer and I'm an electrical engineer.

Q: Bachelor's degree?

A: Yeah.

Q: Did you get any further education?

A: No.

Q: So, after college, where did you start your career?

A: So, I started with the Bureau after college and I was glad to get the offer, actually, because I knew about the Central Arizona Project. It was just gearing up. The construction had begun. I knew this was a really important thing for the state of Arizona and it seemed really interesting to me. So yeah, I was glad to get the offer and took it.

Q: What year was that?

A: 1980. Late '80. And then I started with them in January of '81.

Q: And what was your first position?

A: So, the way the Bureau works, they hire you into what's called your home position, but new engineers are rotated around to different assignments. And typically, this lasts at least a year or 18 months. So, I was hired into the operations division, where I was working on some programs in Fortran, which you may remember, involving the original control system that was called the Programmable Master Supervisory Control. Anyway, I rotated out of there to... I was in construction. I was a construction inspector at Hassayampa Pumping Plant, and then I rotated into what was called power division. And I actually commissioned both cranes. I was involved in it at Havasu, then called Havasu, Mark Wilmer, the overhead cranes.

Let's see, what else? I did contract administration. They gave me a horrible assignment. I had to calculate the concrete volume surrounding the discharge manifolds at the re-lift plants, at Bouse and Little Harq.

Q: Wow.

A: Yeah, it was tedious. And let's see, went to the Denver Design Center and worked on mainly the communications system that was installed that originally supported the SCADA system. So anyway, during those travels, power division wanted to hire me and I thought, boy, that's a good fit. I'd enjoy doing that work. So, I ended up transferring to them. So, operations division had to fill my vacancy and they ended up hiring Tim Kacerek.

Q: That's funny.

A: So, it's funny, huh? Yeah.

Q: I didn't know Tim worked for the Bureau, actually.

A: Yeah.

Q: I don't know about that Jeff. So, what did you do with in the power division then?

A: So initially reviewing lift drawings, kind of a boring thing, but they were concrete pours and we had to review the conduit installations and piping and things like that to make sure that they had it included in the drawings. And then I was assigned along with Alex Cooley, who is also a former CAP employee, that we began working on the commissioning procedures and schedules for bringing all the pumping plants online. One of the things that came up when we were doing this, we were reviewing the contract requirements. The Bureau had a specific process for dealing with submittals because there was multiple different contractors involved in building these plants. And they had to coordinate things. So, contractors had to submit drawings, they got reviewed and approved, then they'd submit, what was called a final, the Bureau would mark this up with cabling information as far as the electrical went. Send it back to them.

They were supposed to then create construction prints from that. It was quite an involved process. And remember also back then drawings were all manual. We didn't have AutoCAD or any of that. So literally the final reproducible they called it was a Mylar print, thick Mylar, with ink on it. And if you needed to make changes, you had to use ink eradicator. And then from that they would print a velum and then use that as a reproducible to make blueprints out of. Anyway, the schedules that we were looking at, based on what the submittal requirements were, they would be... Typically, if they took all the time that was allotted, it would've pushed out some of the commissioning by at least a year and that got some people's attention. And I think the construction engineer, Don Anderson... I watched his interview, and he talked about implementing a construction management system.

And I think that was part of what was driving that because it was like, oh, we can't do that, so let's not make that mistake again. So anyway, that was part of what I

did. And then as the equipment came online at the plants, we were involved in the developing the commissioning procedures. We would start up the auxiliary systems and then when everything was ready to go, we would start up the units. And actually, I don't think people know this, but the very first pump unit that was started on CAP was at Hassayampa. Right? That's a surprise. So how did we do that? So, there was a well near the forebay of the plant and the siphon is not too far away. So, they pump water out of the well and filled up the siphon and the forebay of the plant. And we were actually able to run the unit for 15 minutes or so at a time and then we would let the water flow backwards and do it again if we needed to.

Q: Was that pretty exciting?

A: Yeah.

Q: Do you remember what year that was?

A: I believe it was '84. Yeah.

Q: Were you there when they started the pumps at Wilmer?

A: Some. I did some of the auxiliary stuff and I did drawing reviews and other things. But my first real commissioning assignment was at Bouse Hills and I started up the first six units at Bouse Hills. I was involved in... There's a report in content server about it. On unit five, I was brought in from Bouse to complete the controls checkout, set up the instruments, and run the motor uncoupled for its first run. The reason they brought me in, the test team leader that was assigned there was on vacation for two weeks and they didn't want to hold up the schedule, so they brought me in to do the job and that wasn't any problem.

But when we got ready to... I had everything ready to go and I went to the person that was holding the clearance, as it were, that's the lockout tag out on the unit

and said I was ready to go, and you could release the clearance and close the switch and we can fire this thing up. He was a former electrical inspector during construction and was basically at the plant waiting for a new assignment to open up and really wasn't involved in the day-to-day. He really didn't have any idea what we were doing. But he was holding the lockout tag out, which seemed kind of strange. Well, it turned out that wasn't a good thing.

They went ahead and released the clearance. The person doing the switching was the CAP employee. And when he closed the disconnect switch on the breaker, it exploded. Now, luckily, he wasn't hurt, but it sure did a lot of damage and scared the heck out a lot of people. And as it turned out, the contractor had left what we call a static bleed wire grounding the three phases. They had done a high voltage... It's called a high pot test on the bus and then grounded it afterwards and never removed it and locked up the cabinet and nobody knew it was there. So, there was an investigation and a report about the process and how many mistakes were made and all that. I was not named in the report, but I wrote a little narrative of the event that was included in it. And I was just identified as the test engineer. But it was a good lesson.

Q: Never repeated, I assume.

A: No. No. No. Yep.

Q: Sometimes those are the most important. So, when did CAP employees start coming on? You were still with the Bureau, when did that melding start?

A: So, the first group of employees that the district hired were aqueduct maintenance guys, I think mainly. In fact, I think Dwaine Duvall is one of them. So, he still works here. He's number one now on the list.

And then later came some engineers. I know they hired Jose Luis Castaneda and then I believe after that they hired Dave Valagas who had done a lot of work on

the SCADA system. But they hired electricians. As soon as we got ready to really start working on the plants, which was mid to late '84, they started hiring mechanics and electricians. And these people were integrated into what we called our test teams. And they were heavily involved in doing all the startup commissioning on the testing and everything that we needed done. Auxiliary systems as well as the main units and everything else. And it worked really well. It was very valuable training for those guys. And because of that the transition I think was extremely smooth when the project got turned over because you had people that were experienced with the equipment and knew it to just take over what they were already really doing.

Q: So, what is it easy working with CAP employees while you were still part of the Bureau?

A: It wasn't too bad. It had its rough edges, of course. There was the CAP way of doing things and there was a Bureau way of doing things. So, there was always these differences and different holidays, different pay rates, different pay for performance schemes and all that kind of thing. So that always made for lively discussions here and there, but really, I think it was very successful. All the guys that I worked with were professional and knowledgeable and just did a really good job.

Q: So how long was the overlap where bureau was still here and CAP was slowly...

A: You know it lasted, I would say, probably a good eight years or so. I mean, really-

Q: And you were with the Bureau that whole time?

A: I was with the Bureau until '94, and we were pretty much wrapped up at that point. They were really winding down. We were finishing up work at Waddell Pump Generating Plant and there were a few other miscellaneous things they were

working on. But at that time, they were offering buyouts to... Because they were trying to reduce staff.

Q: The Bureau was.

A: Yes. And the water district wanted to hire me, or CAP wanted to hire me. So, it seemed like a good time to do that. And really the transition was almost nothing because I just reported to a different person who I was already interacting with. That was engineering manager, Cliff Gatlin at the time.

Q: That's a familiar name.

A: Yeah. So, I was still working at Waddell, finishing up, there was quite a bit of stuff to wrap up. I had commissioned the pump generators at Waddell and done what was called the computer-based control system at the time. And there was still a lot of work left to do to get that a hundred percent where we wanted it.

Q: Did you appreciate the fact that you got to basically stay on the project? I mean, you literally have never had a professional job other than working on CAP?

A: That's true. And it's kind of interesting because I wasn't sure about it. I thought, well, we'll see how this goes. I didn't have to leave the Bureau. There was some stuff that I could have worked on, but it didn't look too promising. And I was right. They were working on rehabilitating a generator at Coolidge Dam and it was a slow go because they just didn't know what they were doing. We were working with the BIA at the time on that and they wanted to do it their way. We were like, "Hire a contractor and let's get this done." Anyway. It looked like a much better deal to come over here and it was. But I was wondering... I was not sure about making the transition from construction and the startup to an operations and maintenance type of job, but boy I never had a dull moment.



Q: I was going to say, were you anticipating that the engineering stuff would be all done, and you weren't exactly sure how engineers would fit into a fully completed system?

A: And I wasn't the only one. So, you recall Randy Randolph and John Harrison and there were a few others that have since retired. They hired some bureau engineers and contract administrators and their job was to handle the contracts that the Bureau hadn't quite finished off. It had to do with the cathartic protection completion and I think the siphon replacement, which wasn't originally anticipated, obviously. And when they hired those guys, they told them, "We can't guarantee that this is going to be permanent because once these contracts are done, there won't be anything for you to do." Yeah, right.

Q: That never happened.

A: No, it never happened. It wasn't even close.

Q: What happened after the system was complete that required engineering expertise?

A: Well, things just don't always work, and you run into issues that you can't maintain your way out of. You've got to re-engineer things. Electrically speaking, couple of things. The excitation equipment at Mark Wilmer, this is an example, was originally supplied with a power circuit breaker to function what's called the field breaker. It closes and supplies direct current to the rotor so the motor synchronizes. Those breakers just were really problematic and weren't reliable at all. And we decided to go with a contactor and that needed to be... It wasn't anything like a one-for-one replacement. So that all had to be designed and sorted out. So, there you go. There's one thing. Another thing Mark... It's always Mark Wilmer, right? That will never end, I swear, but.

Q: Very true.

A: We had kind of another disaster out there. One of the excitation power transformers failed and it flashed and it did serious damage to the structure of the air housing it's called and the bus work and all that. And when we looked at what the cause was, it was really a kluge kind of setup, to be honest with you. And we redesigned that and implemented a much better bus work design than what had originally been there.

So, there's always stuff like that happening. I could go on and on like I said. There are changes that happen. River Outlet Works was one of the things that I worked on at Waddell that they wanted to... First, we were controlling it and then they wanted to turn it over to Maricopa Water District to control. So that all had to be designed. And I did that and implemented that. And now we took it back a few years ago, so.

Q: Well, engineering is the biggest department here.

A: It is. And it needs to be part... I was part of the effort to... We kind of reorganized them a little bit and we organized them pretty much into their current state, which is a project management group and then an engineering resources group and engineering resources and then divvied up by disciplines and whatnot. And drawing services were there too. But mainly having that project management group was important because it was kind of chaotic. You know Tucson Field office, right? Do you know how Tucson Field Office got started? Because we didn't have a project management group back then.

Q: And they were in trailers down there.

A: Yeah. Yeah, that's exactly right. So, Pam Newman wrote a requisition.

Q: To build a building?

A: Yeah. So, what do we do? I mean, literally, that's what happened because we didn't have a process and an organization to support it to properly do that. And it managed to get done because engineering stepped up and said, "Whoa, we need to do this." Because Randy Randolph and others, Dave Gunn, knew what needed to be done from construction experience, but we needed to organize to make that permanent and that has been very successful.

Q: Well, I guess the reality of the system is it's constantly evolving and changing and needs updating and adjustments and engineering is always key with that.

A: Absolutely.

Q: So, what would you like people to know about the system and the intense amount of effort you witnessed in getting it into operation? I mean, you literally were at the ground level.

A: Yes. The picture of the big red button on the 30-year anniversary, I was at Hassayampa when they were doing that ceremony. The button was just for show. SCADA system was not up and functioning, so when they pushed the button, we got a phone call and said start the unit. So that's how that worked. But don't tell Bruce Babbitt.

Q: Doesn't know.

A: Yeah, I don't know. But yeah, that was Bruce Babbitt and Donald Hodel was the Secretary of the Interior. Those were the two guys on either side of Al Graves.

Q: Yeah, Al Graves of all people.

A: And here's another irony. So, remember I said I started in operations when I was hired by the Bureau. Al Graves was my supervisor when I started. When was the

maintenance... It was called maintenance engineering then supervisor, I hired Al Graves to work as a civil maintenance engineer.

Q: Had he come from the Bureau over then?

A: Yeah. Yeah.

Q: He stayed with the-

A: And I had to fight hard to get him too. I'll tell you what, I ran into some interesting disagreements about it. But afterwards they said no, that was the right thing to do.

Q: Al Graves was always an asset to this organization from what I understood.

A: Oh, yeah.

Q: Knowledge that was incredible.

A: It was interesting that people just don't think out of the box. So, they think of the engineering needs as being mostly mechanical and electrical because all that civil stuff, it never changes, right? Yeah. But we had a \$5 billion project and \$4.5 billion of it was civil infrastructure. So, you probably need a civil maintenance engineer.

Q: It was a wise hire.

A: Yep.

Q: So, when you look back at your experience throughout the entire system, what stands out to you?

A: Oh, that's a good question.

Q: Yeah, it wasn't on the sheet.

A: I think I said this before once where the project was like this giant laboratory that was way better than anything you ever had in college and whatnot. And you got to... I don't want to say play with it but interact with it and learn from it and really see how things worked. And I think that was a really, really great experience for me. I always wanted to get my hands on stuff and understand how it worked and not just be the engineer sitting at a desk with a slide rule or a calculator or something.

Q: Well, you succeeded, I think. What do you wish the public knew about CAP?

A: Well, I think it's getting out there more, but the fact that we are the biggest power user in the state. I remember a few years back... How long ago was that? Maybe five or six years on a project that we were doing. And we had some prospective bidders that we were touring at... I believe it was Salt Gila. And we were showing them the equipment that we were replacing. And several of them remarked that, "Wow, this is a big pumping plant," and, "Man, you guys got a... Is that a transmission line? What voltage is that?" That kind of thing. And they didn't realize how much energy we use and what it takes to push that amount of water uphill. So that may be the thing.

Q: So, what was so interesting about water and CAP that you spent your entire career working here?

A: Well, certainly I mentioned that when I got hired by the Bureau, I was very interested in working on this project because I knew it was a very important thing for the state. And I think that's certainly true today even with the potential cutbacks and the amount of water we're going to deliver. I think that's going to be temporary. It won't always be as low as maybe what it's going to go to, but we are always going to have a very important supply of water to provide, and that mission... You can't do better than that really.

Q: I don't disagree. Are you surprised about what's happening in Arizona water over the past 10 years? What has been happening?

A: Personally, no, because I think we knew that there was this structural deficit where the amount of water that had been allocated was really more than what the system normally provided. Now we had a number of wet years and things were... Literally, we had a flood, I remember in '83. They were releasing water and spilling water on the Colorado and the newspapers were making fun of the Bureau. How come you can't predict the weather or something? Yeah, right.

So obviously, the reservoirs were full then. And then I think in '92-ish, same thing. They were worried about Glen Canyon Dam because they were spilling water and there were big chunks of concrete and boulders coming out of the spillway tubes that scared them, which I can understand that. So, everything was full and you're thinking, well what's the problem? Well, okay, those are unusually wet years and now we're back into... I don't know if you want to really think of as it a drought or more as here's how it normally is going to be, and you got to hope for some wet years to replenish things a little bit. But you got to live within your means.

Q: I think that's wise advice. So, what do you see happening in the world of water in Arizona over the next 10 to 20 years?

A: Well, frankly, I would expect the price of water to go up. If you want people to conserve, make the price match the supply and the demand kind of thing, and it'll just magically happen. I think really what will probably happen also is a lot more cooperation is going to happen. You're going to have to get through the struggles, but eventually, people are going to realize that they can't. They're going to have to cooperate and work together and make this work for everybody's benefit. You can't just say, well, I'm going to benefit and you're not and too bad. That's not realistic and it won't last. And I don't believe that's what will happen.

Q: I like the optimism.

A: Yeah.

Q: I don't think it can. I think we have to be in it together. We can't be selfish.

A: Yep, exactly.

Q: 100%. So is there anything else you'd like to add about your career at the Bureau, CAP, the transition, the system?

A: I feel like I'm very lucky to have had the career I've had and it has never been boring and continues to be a challenge and it'll probably be a challenge till September 1st when I call it a career.

Q: Is that weird to say out loud.

A: A little bit. I knew people weren't going to be too happy to hear it, but.

Q: It's a lot of expertise you're taking.

A: Yeah, and I've struggled with how do you pass that along? And I think I've done about as best you can. I think everybody is in pretty good shape and they'll make it. There are a lot of smart people that work here and we've set up processes and systems and things to help keep it going and help the new people coming in to learn it and understand what we're dealing with and it'll work.

Q: You're one of the last Bureau to CAP people?

A: Yeah, I guess I am. Who else is around that was-

Q: What's your employee number?

A: 564. But yeah, after Harrison left... Let's see. Who is left?

Q: Oh, yeah. I don't know anyone.

A: Oh. Oh, my gosh. I lost his name. Power guy. Brian Young.

Q: Oh, Brian.

A: Brian Young was a... He was a Bureau guy and then he went to WAPA.

Q: And then-

A: But he worked for the Bureau for a while.