

MANAGING HAYNES GENERATING STATION

1961 - 1990

POE, MOORE AND BOSWORTH

Interviewed by Dick Nelson

One of a series of oral histories covering the growth and development of the Los Angeles Department of Water and Power as seen by the participants - its employees.

Produced by

Special Projects Section
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Los Angeles Department of Water and Power

1990

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Biographical Notes

KENNETH L. BOSWORTH

Born in Pomona, California, April 2, 1942.

Father: Lloyd Omer Bosworth, born in Mishiwaka, Indiana, May 11, 1918.

Mother: Carol Rose Colburn, born in Valley City, North Dakota, August 8, 1920.

Sister: Nancy Jean Bosworth, born in Bakersfield, California, May 10, 1944.

Brother: Richard Floyd Bosworth, born in Bakersfield, California, August 28, 1945.

Married: Jane Ann Whitehead, born in Los Angeles, California, January 30, 1945 at Las Vegas, Nevada, February 8, 1964.

Children: Thomas Lloyd and Charles Floyd Bosworth, identical twins, born in Los Angeles, California, July 3, 1972.

DWP History: Started as Student Engineer June 11, 1964 at Scattergood Generating Station. Presently Superintendent of Haynes Generating Station (since July 1, 1979).

Schooling: Graduated from Taft Union High School, Taft, California, 1960; Taft Junior College, Taft, California, 1962; California State University Long Beach, Long Beach, California, 1965.

Affiliations: Mu Alpha Theta, life member, Mathematics Honor Society; Orange County California Genealogical Society; Boy Scouts of America, Explorer Post Advisor.

Biographical Notes

WILLIAM CHARLES POE, III

Born in Los Angeles, California, August 4, 1908.

Parents: William Charles Poe, II, born in Ohio, June 1882.
Mable DeEtta Metzler, born in Ohio, April 1878.

Brothers and Sisters: None.

Married: Marie Alice Labourdette, October 22, 1932, Long Beach, California.

Children: William Charles Poe, IV, 52, married Marilyn Moore.
Thomas Frederick Poe, 45, married Sherry Hubert.
James Robert Poe, 49, married Paula Wheat.
Sandra Lynn Poe, 43, married Thomas Blumenthal.

Grandchildren: Nine.

Greatgrandchildren: None.

DWP History: Entered Steam Plant Service, January 30, 1930.
Employed at the Seal Beach Steam Plant for seven years.
First superintendent at Haynes Steam Generating Station, 1961.
Retired April 1, 1973.

Schooling: Anaheim High School, 1922 - 1926.
Santa Ana Junior College, 1926 - 1929.
Long Beach Adult Ed., 1930 - 1936 (nights).
Southwestern Univ. School of Law, 1936 - 1942
(nights).

Significant Experience: Assistant Fuel Engineer, Los Angeles Civic Center Building, 1942. (Took over oil wells and tank farm on Alameda Street near Pacific Coast Highway for DWP - Pumped fuel oil into Harbor Tank Farm and first fuel oil into storage at Harbor Steam Plant).

Worked as Plant Engineer at Harbor Steam Plant. Assistant Superintendent, Seal Beach Steam Plant; Assistant Superintendent Valley Generating Station; Superintendent Scattergood Generating Station, 1958 - 1961; Superintendent Haynes Generating Station, 1961 - 1973.

Affiliations: Member of Los Alamitos Elementary School Board, 1933 - 1937; Licensed Steam Engineer, City of Los Angeles, 1943 retirement; Engineer's and Architects Association, 1940 - 1943; I.B.E.W., Local B-18, 1943 to retirement; Life member Los Alamitos Chamber of Commerce, 1950 to present; California State Bar Association, 1947 to present; Registered Professional Engineer (Mechanical, California), 1948 to retirement; Member Board of Directors, Los Alamitos County Water District, 1950-1954 and 1970 to present.

Biographical Notes

MONTY B. MOORE

Born in Memphis, Texas, August 24, 1925.

Parents: Ralph E. and Georgia Aylene (Bogy) Moore.

Sister: Wanda Lee (Moore) Stewart.

Wife: Marie Inez (Barrett) Moore.

Children: Monty Charles Moore (wife, Helen (Couiltier) Moore).
Lawrence Dean Moore (wife, Christy (Rawlings) Moore).

Grandchildren: Four. Wendy Ann Moore, 13; Monty Scott Moore, 8; Michael Shantay Moore, 11; and Megan Ayleene Moore, 8.

Military Service: World War II, 1943-1946, U.S. Navy
Korea, 1950-1951, U. S. Navy

Department of Water and Power History:

- 1947 Entered DWP service as Assistant Steam Plant Operator at Harbor Station Plant.
- 1949 Promoted to Steam Plant Engineman.
- 1954 Promoted to Steam Plant Operator and transferred to Valley Steam Plant.
- 1956 Promoted to Assistant Steam Plant Foreman.
- 1958 Promoted to Steam Plant Foreman and transferred to Scattergood Steam Plant.
- 1961 Promoted to Assistant Steam Plant Superintendent.
- 1962 Transferred to Haynes Generating Station.
- 1969 Promoted to Steam Plant Superintendent and transferred to Harbor Steam Plant.
- 1972 Transferred to Haynes Steam Plant as Superintendent.
- 1979 Retired from DWP service.
- 1979 - 1980 Engineering Management Consultant to work on the "MATEP" project located in Boston, Massachusetts; this was a total energy concept plant built to supply power, HVAC and other services for several large hospitals associated with Harvard Medical School.
- 1981 Employed by Service Master Inc., a large international management organization that supplies management personnel for hospitals, educational and industrial facilities. Assigned to various hospitals in the midwest and California. Major project and assignments were at the Long Beach Memorial Medical Center, Long Beach, California, and Martin Lutheran Medical Center, Anaheim, California.
- 1990 Resigned and returned to a retirement status.
- 1991 Retained by Long Beach Memorial Medical Center as a Project Manager and Engineering Consultant, part-time.

Educational History:

1. There was never enough!
2. It has been continuous!
3. Hopefully it is ongoing.

This is to certify that I have reviewed this transcript and attest that it is true and accurate. Also, by my witnessed signature below, I grant the Los Angeles Department of Water and Power, or its designee(s), sole right to use this material in any way, and for any purpose, it deems appropriate.

Kenneth Bosworth 1/14/91
Kenneth Bosworth date

Jane A. Bosworth 1/14/91
witness date

24702 Pallas Way, Mission Viejo, Calif. 92691
witness address

William Poe date

witness date

witness address

Monty Moore date

witness date

witness address

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Ken Bosworth _____ date

witness _____ date

witness address _____

William C. Poe 12/14/90
William Poe _____ date

William C. Poe Jr. 12/16/90
witness _____ date

4761 GREEN AVE, LOS ALAMITOS, CA. 90720
witness address _____

Monty Moore _____ date

witness _____ date

witness address _____

This is to certify that I have reviewed this transcript and attest that it is true and accurate. Also, by my witnessed signature below, I grant the Los Angeles Department of Water and Power, or its designee(s), sole right to use this material in any way, and for any purpose, it deems appropriate.

Ken Bosworth _____ date

witness _____ date

witness address _____

William Poe _____ date

witness _____ date

witness address _____

Monty B. Moore 1-17-91
Monty Moore _____ date

Margie J. Moore 1-17-91
witness _____ date

15671- Federal St.
witness address _____
WESTMINSTER, CA
92683

(Note: Messrs. Poe, Moore, and Bosworth have reviewed, amplified, and clarified this transcript.)

TAPE NUMBER: 1, SIDE ONE

KEN BOSWORTH

WILLIAM (BILL) POE

MONTY MOORE

GIVEN THURSDAY, JULY 19, 1990

AT

HAYNES (STEAM PLANT) GENERATING STATION

CALIFORNIA

THE INTERVIEWER IS DICK NELSON

BOSWORTH: I'm Ken Bosworth, the current Superintendent at Haynes. I became superintendent July 1, 1979 succeeding Monty Moore when he retired.

POE: My name is William Poe. I was the first superintendent at Haynes Steam Plant and the years throughout its early construction. I came here in September 1961 and retired April 1, 1973.

MOORE: My name is Monty Moore and I was the second superintendent at the Haynes Generating Station. I started here along with Mr. Poe in 1961 as an Assistant Superintendent, promoted to Superintendent at the Harbor Generating Station in

1969 and returned to Haynes as its superintendent in 1973, retired in 1979 at which time Ken Bosworth took over.

NELSON: Okay gentlemen I'm, going to ask some very stupid questions and I hope you'll give me some very enlightened answers and direct me to the proper question.

I guess starting first, why was the Haynes Generating Station located at this site?

POE: Do you want me to answer first? I don't have a direct answer, but I can guess. It's ideally located along the San Gabriel River where there was an abundance of cooling water for cooling condenser water and there was also an availability of land suitable for the construction of a large plant such as the Haynes plant which was important.

At that time there were no other facilities in the general area planned for development of the land surrounding Haynes which might create any kind of a problem relative to the plant's operation. In looking back I see that as the main reason it was located in this area. This is in Los Angeles County, however, where our Seal Beach plant was in Orange County so by moving up here along the San Gabriel River, they did get the facilities located in Los Angeles County. I can see that as a possible advantage in that the City of Los Angeles might not be required to pay taxes on the subject property. So they were tax exempt on the facilities they built here as far as the City of Los Angeles was concerned.

BOSWORTH: The plant's been incorporated into the City of Long Beach so I don't believe we'd be....

POE: The principle reason for this location being selected near the ocean and the cooling water.

NELSON: Why not site it at Seal Beach where they had an existing plant?

POE: As I say that was in Orange County and taxable by Orange County. They wouldn't give the City of Los Angeles tax exemption probably on all of the improvements. By being in Los Angeles County, they got that tax exemption.

MOORE: There was also quite a vocal Orange County political machine, that resisted this type of development in Orange County. I don't know if you remember or not Bill, but that was about the time Orange County Realtors began to push the takeover of land that the Seal Beach Plant was built on. Remember there was a real estate group in this general area that wanted the land the old plant (Seal Beach) was located on.

MOORE: There was resistance from Orange County, politically and community-wise, and yet this particular spot was not far away. It was a good construction site. The access of freeways rail and shipping. So it had many, maybe not primary advantages, but secondary advantages from a construction point of view.

NELSON: Were there considerations regarding how it fit into our distribution system for siting here?

MOORE: I doubt if that entered into it as much as just the fact that they had the land or had access to the land, availability of cooling water, accessibility, and discharge back into the San Gabriel River and some of these factors. Technology had moved along to a point where generating stations didn't necessarily have to be located close to the distribution points. Today, for example, who knows where power comes from? The whole west coast is tied up in one big electrical grid.

BOSWORTH: I don't know how much it was a consideration when the plant was originally planned, but as it turned out, siting a plant in the southern end of the system was absolutely essential for voltage control in the system. The system couldn't operate satisfactorily right now with the large load that has grown in kind of the southeast part of Los Angeles without generation in this corner of the system to hold up voltage stability. Like I say, I don't know whether that was an accident or whether it was planned from day one, but it's a key factor in why millions of dollars are being spent to refurbish the station right now.

POE: Another consideration at the time was that the Department owned the Seal Beach generating station located in Seal Beach which was also on the San Gabriel River and they had a transmission line right along the river into Los Angeles and all the facilities hooked there, such as the dispatching office and everything. So when this plant was sited, they had the

right-of-way into Los Angeles for adding additional transmission lines into the City of Los Angeles. That could have been a good consideration at that time.

NELSON: They weren't able to utilize the existing transmission line, but they had the right-of-way....

POE: Right. They added additional transmission lines.

BOSWORTH: I'm sure that would be a huge economic factor when you're looking at siting a plant.

MOORE: One of the executives involved in that decision was Floyd Goss.

BOSWORTH: Ben Hume was the head of mechanical design, old steam design and....

MOORE: Statford was head of electrical I believe.

BOSWORTH: Ken Cartwright was the construction manager down here.

POE: Ken mentioned voltage control. It reminds me of one little thing that ties into all this, but probably not belonging here. When they built the Seal Beach generating plant, and built that tall stack on the top of the building, they put flood lights at the corner of the building to illuminate that stack and it was a navigation landmark there for years. The power

that it took to light that stack required the total capability of the Los Angeles Gas and Electric Corporation when they first got an electric system in Los Angeles. The amount of their generation was equal to what it was taking to light that stack. Later on when we got the facilities at Hoover Dam and the L.A. Gas had two units there, it took the total output of the Seal Beach power plant just to energize the line between Los Angeles and Hoover Dam. So the site, the plant and everything, played a real important part in the development of the Department of Water and Power.

NELSON: Haynes sits back, what, about a mile from the ocean or more? But anyway, cooling water is important to these plants. For example Scattergood Generation Plant is located adjacent to the ocean. Were there additional or extraordinary engineering considerations to compensate for the fact that this plant's intakes are further back than they would be on the ocean?

POE: Oh, they work this out because we have open intake canals built here to bring the water from the ocean in to the plant. It is not underground or anything like that. We have open water intake for our condenser cooling water and it is then discharged through Condenser discharges right back into the river so that's the same as practically being on the ocean.

MOORE: It didn't quite occur that easy. The design of our intake water was, I felt, quite phenomenal. Our intake water comes out of the Long Beach Marina, along with the Southern California Edison intakes. Both draw their 200 million gallons of salt water per minute out of the Long Beach Harbor. It is

probably one of the cleanest harbors in the world. In order to accomplish this, the Department has 13 intakes with stainless steel grids, located at the northeast end of the harbor. Then the salt water goes underground into seven tunnels under Pacific Coast Highway and under the San Gabriel River. Then the water flows into the open channel to Haynes. There are I said 13, are there 7 or 13 of those channels?

BOSWORTH: There are seven tunnels at that point.

MOORE: Seven tunnels, but there are 13 grids across them, that's where....but they go underneath Pacific Coast Highway and resurface again in what used to be known as the Bixby Ranch.

POE: North side of the highway there. And come up above ground again into an open ditch. People don't realize that that ditch used to be about 40 foot deep at its deepest point and come into the Haynes Generating Station here.

BOSWORTH: Yes, you're looking at eight pumps just on the first four units and then four more pumps on the last two units, eight of which can operate at 40,000 gpm each. The other four pumps can operate at 80,000 gpm each. That's a lot of sea water coming through this place.

MOORE: You know one of the interesting problems that occurred when they finished that ditch. It filled up with sea water. You'll remember this. It filled up and set there for almost a year before we pumped it through anything, it did two things.

It grew a lot of moss which broke off and decayed and the water became an acid-concentration. We pumped that stuff through the No. 1 condenser which shortened the life of those condenser tubes by at least half. Nobody knew it would happen. But along with that was a secondary problem, all of a sudden the screens plugged with moss, pumps lost suction and the unit shut down.

BOSWORTH: Just one and two are fixed screens.

MOORE: Due to the high differential, the fixed screens collapsed and the cooling water shut off to Unit 1. That was one of the early unit shutdowns. Every man was down there working, trying to unplug the screen. This was operating personnel and construction. Burt Deninger was the preliminary operations engineer. We had to get that moss off those screens so we could get water back into the condensers, but the acidity of that water did a job on those copper alloy tubes and shortened their lives, probably to half of what it would have been.

BOSWORTH: Monty made reference to the tunnels and you were asking, Dick, about the any significant engineering involved in this design. It is really extremely significant. Those tunnels actually go under the San Gabriel River and under Pacific Coast Highway. The inlet circulating water system crosses the discharge so when you look at the layout, yes, there was a lot of fantastic engineering involved to get water into this plant. Once you're into the open channel flow east of Pacific Coast Highway, it is a pretty simple thing, but building the tunnels

so that you don't disturb coastal access and you didn't disturb the natural drainage from the station with just the San Gabriel River channel was very significant.

NELSON: You talk about thermal effects on discharge. Is the water heated quit a bit?

BOSWORTH: We add approximately 20 to 25 degrees fahrenheit temperature rise for the seawater when the units are running. We've done a lot of thermal effects studies at the outfall, and this is back when Monty was superintendent here..within about a one mile distance from the point where the San Gabriel River reenters the ocean, is it one mile away, you can no longer measure any effect at all. The ocean is a huge sink and even though the flow sounds like monstrous numbers coming through the plant, it's just an insignificant trickle when you think of the size of the ocean. So we've been basically the object of many environmental studies involving thermal effects over the years and the Department of Water and Power can call it thermal enrichment now because it's not a problem.

POE: By then it took a long time to arrive at that. My dad..we had to service one of these large Edison generating station on the opposite side of the river right opposite the Haynes Generating Station discharging a similar amount of water into the San Gabriel River, so both plants contribute to that heat going out to the ocean in probably a similar amount and the fishermen in this area are very happy to see that happen because the mullet used to gather in the river outlet here and boy, the

fishermen would have a field day with fish they'd catch in that warmer water.

NELSON: Does Edison intake generally in the same manner that we do? Is their system generally the same?

POE: Their system is generally the same. However, they built their own on the opposite side of their plant. Ours is on east and theirs is on the west of their plant.

BOSWORTH: Yes. The two intakes are really some distance apart in the opposite corners of the marina over there, but that's like Monty said earlier, they act like big vacuum cleaners. We take all the, both plants take their total cooling water flow from the Long Beach Marina, but this goes back to the ocean through the San Gabriel channel. So all of the flotsam that ends up dumped in the water is sucked out by the generating stations.

NELSON: Our Scattergood Generating Station used to be somewhat famous with the "Green Peace" group because of the harbor seals that used to come up in the screen chambers. Do we have similar problems in our screen chambers?

BOSWORTH: No. Because of the grisly's or the grids that are blocking the inlet tunnels at the Long Beach Marina, we get just small debris up into the channel and fish. But the fish remain trapped in the channel and nothing larger than a small fish could come in.

We had a real notable event a few years ago when a whale came up the San Gabriel River channel and we had a whale watch out here by the Westminster bridge. At one point the entire entrance to the plant was blocked by "lookey loos" wanting to see the whale and they had to go out and clear a path. The ironic thing that could happen to us, and it is related to the amount of flow that goes into the San Gabriel River from both the Alamitos station and the Haynes station, is that the Coast Guard has now designated the San Gabriel River channel as a navigable waterway. It's only navigable because of the power plants. If we try to retire this station and Alamitos starts to retire their station, this is going to be a mud flat within the banks of what is the San Gabriel River channel now and it will not be navigable.

MOORE: Either that or we'll have to leave pumps running out here and someone paying the bill.

BOSWORTH: That's got to be something the power companies both have to face if and when the day comes when they want to retire these sites because we don't have the right to dewater a navigable waterway.

POE: The main feature the Scattergood plant has that we do not have is the ability to reverse the flow in the two channels. They can make the intake the discharge, or the discharge the intake, any time they want at Scattergood. We can't do that here. We are limited to our intake discharge as fixed.

NELSON: When did the idea of siting a large steam generating plant come to the fore in Department planning? When did they first start thinking about the need for a plant down here?

POE: I think the Harbor plant was their first plant. The Harbor steam plant in Wilmington. That was located near the water because of their experience with the Seal Beach plant.

MOORE: Harbor Stream Plant was the first department construction endeavor into steam electric generation. I believe the first unit went into service in 1943 and just about all of the power out of the first unit was absorbed by the Aluminum Company of America in wartime production. The second unit didn't go into service until the early part of 1948 because I was there for about six months prior to preliminary operation of Unit II and one unit each year went into service until the plant was completed.

POE: I was telling Dick here a minute ago that the Edison Company obtained an injunction against the City of Los Angeles to stop the construction of the Harbor plant when they had it well under way. So everything just came to a halt and Edison was selling the Department power cheaper than the City could generate it in this new plant. They evidentially proved it when they went to court and obtained the injunction that effectively stopped the Department. The Harbor plant's construction was delayed during a period of World War II.

NELSON: And Edison's contention was that they could sell to the City cheaper than then City could build and generate it? That's interesting I never knew that before.

MOORE: Speaking of interest, the Department was an early pioneer in many technical fields. You're aware, I'm sure, that the Boulder transmission system was pioneering technology in many respects. The first units at Harbor Steam Plant also pioneered higher pressures and temperatures with early feedwater treatment programs. Much of our knowledge evolved out of those units. The whole industry grew from some of the research and studies that were done at Harbor Steam Plant by various companies along with the people of Water and Power.

POE: Yes. I ran a lot of tests on condenser tubes at Harbor and in water, based on our experience at Seal Beach and testing samples of fifteen tubes that we had, to learn what the basic life of a tube would be in the water at the Harbor location.

NELSON: You had a generating station at Harbor, why wouldn't you add an additional unit or two to that rather than come down here and build?

MOORE: The need to scatter generation has two purposes. One of them is security and the other has to do with the location of generation for distribution within systems.

POE: We also made studies of the stacks at the Harbor steam plant. We had a lot of complaints about the stack emissions at

that location in the harbor. That's probably a good reason for moving away from that site to take care of increased stack emissions there.

BOSWORTH: Well the Harbor development was taking place a lot. This was war time when Harbor was being built and I've read some old information having to do with system security--not only from an old electrical system standpoint, but from a national security standpoint. We're still audited by the military periodically now for security of our station to make sure that we could detect intrusion that could threaten generation, but the need to develop the Harbor for shipping .. war ships and commercial shipping was such that to take a lot of additional port space to put in another power plant wouldn't have been an appropriate thing to do. Certainly not in the era when we were at war.

NELSON: I assume there would have to have been quite a bit of retrofit on the intake system in the whole business too.

BOSWORTH: To go to the large modern units, which the Haynes units were, were a big step forward in size and pressure and temperature. There simply wasn't enough space at the Harbor site to do anything -- more land would of had to have been acquired. It would have been new circulating water systems not retrofit to the old ones. It would have been very difficult.

POE: As I mentioned earlier, there was no Leisure World here at the time these plans were finalized and Haynes Generating

Station was almost in operation before they even started the construction of Leisure World. First thing you know we were getting complaints and they still are from Leisure World about the fallout. We even showed them (some of the ladies over there) how to wash their clothes and get the iron oxide spots off of the white sheets and things like that, but we always convinced them that the fallout wasn't from Haynes, it was from trucks along the boulevard and all kinds of things rather than from the plant here.

MOORE: We didn't convince them at all. We just confused them.

POE: Well, we tried. We're still trying.

BOSWORTH: It was very interesting. I went to school at Cal State Long Beach which is just up on the hill and then I worked here as a student engineer before I came to work full time. That's been more than 26 years ago and the plant was in a swamp essentially. If you looked at it from up at the college, there was ground water, I mean what we now call the "Helman Estates Oil Property" over here has been drained a lot since those days. There was no Leisure World. There was no Island Village Homeowners Association. The Veterans Hospital and the Cal State Long Beach that existed in those days were way out on the east edge of Long Beach. They weren't even connected to the City of Long Beach by continuous housing then and this site to the south and the east of the university was nothing but a power plant and some scattered construction taking place. Nowadays, we're not only really captured between Island Village housing on the south

and Leisure World on the east, but we have a new development called "California Shores" that's going to take the Helman Estate land. We are going to be totally surrounded by housing and as Bill was talking about fallout from the stacks is still a problem periodically. The plant is noisy. The plant does a lot of commerce. A lot of shipping. A lot of trucks come in and out and frankly no matter how pretty we try to make it, it is an ugly neighbor. So we're starting to see a real drastic increase in the number of complaints from the citizens and neighbors. Its very hard to be a good neighbor when people don't want you there in the first place and they weren't there first. But that doesn't matter any more.

POE: You know you're in maybe the third generation of people that have moved in here since this plant was built and the old reasons for its existence are long gone.

BOSWORTH: I've hosted a number of open houses here for Leisure World residents -- the most recent, just last Friday and these people have been told by realtors when they buy, "Oh don't worry about the plant, it won't be here much longer, they're going to tear it down." We're spending \$40 to \$60 million right now in about a three year period to refurbish our boilers to give us another 25 years of life. When we tell the neighbors that, they're not happy campers.

POE: Well we insulated all of our circulating water intake pump motors out there along the cooling water intake channel so the Leisure World people wouldn't complain about the noise from

the operation of those motors at night when everyone tried to sleep.

BOSWORTH: That worked for units 1-4.

NELSON: There were four large power plants built here by the Department of Water and Power in the basin -- Haynes being the last. Valley Generating Station about 500 megawatt capacity, Scattergood Generating Station was about 350 megawatts prior to unit 3, and is now up to about 500 or 600. Anyway, Harbor was 450 to 500 megawatts with all units, Haynes comes along with 1600 about the size or a little larger than Hoover Dam Power Plant or darn close to it. Why the relatively sudden increase in size -- doubled and tripled, well double anyway. Is there a rationale as to why the large Haynes station was built down here?

POE: Improvement of design was one thing. We have two what they call "super critical units." Our Units 5 and 6 which they didn't have until about the time they designed units 5 and 6 for Haynes. Units 5 and 6 are unique. There are no other units like them in the Department. That is, they operate super critical pressures on the boilers. They don't have any water line in the boiler drums as such, where you can determine a line between the water and steam. The water becomes steam somewhere in that critical pressure period. The boilers, I think, operated at 3,000 pounds pressure, don't they? Something like that? 3,500 or 3,000?

BOSWORTH: Well, the main steam pressure on the super critical unit is 3,500 pounds.

POE: 3,500? So that's the main difference and having the location here when those were designed were entirely to their advantage where they have the transmission lines and everything required in this location.

BOSWORTH: Land still became very, very expensive in Southern California and it wasn't just the Southern California phenomenon, but all over the country the development of land became a much larger cost of the siting and building a power plant than it has been years earlier. You have to put big units in to get the most megawatts out of a site that you could get.

KEN BOSWORTH
WILLIAM (BILL) POE
MONTY MOORE

TAPE NUMBER: 1, SIDE TWO

MOORE: Along with the increased cost of land that Ken mentioned was a tremendous amount of pressure on the Department to build a power plant with a low kwh production cost and if I'm not mistaken, excluding the land here at Haynes, the first four units figured out at about \$118 a kw. Do you remember this Ken or some of these figures? Do you Bill?

BOSWORTH: I've got no numbers.

MOORE: For many years this low construction cost actually set some industry standards throughout the nation and along with that was the efficiencies that were built into Haynes. For a number of years we enjoyed the fact that Haynes ran virtually within the top four or five oil and gas fired electrical production plants in the nation in efficiencies. Bill started this and it came into my era of time and was proven facts as they developed new testing techniques. John Novobilski was involved in this and who else ... Bill do you remember?

POE: Art Buchanan.

MOORE: Floyd Goss. He was real close to it. Also R.C. Alexander.

NELSON: These four plants that were built, they were generally built by Department forces?

MOORE: Contracted within the Department.

BOSWORTH: They were designed by Department engineers. That was a major step forward for the City. The actual construction was done by construction companies who provided the equipment or offered the services to construct, but it was all directed and supervised by the Department employees.

NELSON: The design team for the four plants designed or participated in the design of the four plants?

POE: Yes, all of them. When we acquired the Seal Beach generating station, the Department of Water and Power had no design sections, as such, for steam plants and so they gradually formulated the steam design section in the construction division which took care of the design of the Harbor Steam Plant and thereafter to the Valley and then Scattergood and to Haynes plants. They developed the Steam Design Section at the time in the DWP Construction Division. I don't know what they have now, but there's not much demand for a steam design section right now.

BOSWORTH: Oh they're still doing, you know, the same group of people not the same people any more because most of the folks that designed Harbor, Valley, Scattergood and then Haynes, have retired. But the mechanical engineering section still has what we would have referred to as steam design back in those days and those people did the Intermountain Power Project that was certainly one of the fantastic efforts by any company being built under the predicted time and at less than anticipated cost. It's a showcase. The Department's the operating agent for that plant which we were proud of that.

There are design efforts under way right now for the White Pine Power Project. So there is still a good mechanical engineering section taking the lead in designing new stations and we hope we'll be building some fast. Art Buchanan, who was an assistant engineer here for Monty and Bill is the Division Head of Power Design and Construction Division at the moment.

BOSWORTH: I think the nuclear industry stands a chance of getting a little foothold again in addressing...

POE: It's so late.

MOORE: I agree, but power must come from somewhere. They've got to have power.

BOSWORTH: In addressing the size of the units at Haynes it is really almost an order of magnitude move in the industry. A lot of technology blossomed after the end of World War II. Metals were available that weren't available before the War. Chrome-

Molly, tungsten carbide, metals that could stand more heat, more stress so the designers were able to build much larger boilers to operate at much larger pressures. The capital cost of building a plant was so much affected by the fixed cost of land and development of land and then the basic idea that you're going to build a boiler, it cost a lot of money to build a little boiler and it cost a little bit more to build each extra increment of size then.

So the Department did what the rest of the industry was doing and trying to say, "Well how large a unit can we build so that we don't put so much size and so much capacity in one place that the one plant would lose our whole system and at the same time getting all the megawatts out of one source that you could get to minimize the effect of the fixed capital cost of developing the station in the first place. Units 5 and 6 are rated about 350 megawatts each here. Those were huge in 1967 when the last unit was put in service. Those are very small units by today's standards. 1,000 megawatt and 1,200 megawatt units are common although Bill was emphasizing a little bit ago the effects of the once-thru super critical pressure boiler. Units 5 and 6 are super critical. They're very complex units. They're very, very efficient and there were times during the last part of the 1960's and early 1970's where Haynes consistently did place, as Monty said, one unit in the very top ten in the whole country consistently.

That's changed because of the proliferation of coal plants. Coal is the more efficient fuel and it is pretty much pushed all of the oil/gas fired units right out of the top rankings. The super critical units are so complex and they operate at such a high pressure, 4,500 lbs. pressure or more, that the industry's

moved away from them. They're just not as reliable. Reliability has become more important than cost of production. Both are important, but it doesn't do you any good to produce cheap power if you don't have it when you need it. So the industry has more or less gone back to lower pressure boilers that do operate below the critical pressure with boiler drums. They do have boiling.

NELSON: Why is coal more efficient?

BOSWORTH: As a fuel it just doesn't have the ... it has a very great heating value per pound of fuel. Much more so than oil or gas. Gas is inherently inefficient thermally because you produce water as a byproduct of combustion when you burn it. Thermally, oil is about 5% more efficient than gas and then coal is more efficient than oil simply on a BTU per pound basis. You don't have to handle as much fuel. Much cheaper to produce. Cheaper to mine coal than it is to drill oil.

POE: Well, now the coal they pulverize it, mix it with water and pump it through pipelines like oil. Then heat it and burn it like gas at the site of the plant, but I'd like to throw in here one other thing we haven't mentioned yet and that's the development of stations such as we have at Sylmar AC/DC Converter Station, where we have a low cost DC transmission line with relatively low transmission losses in transmission that are very efficient. Now we can develop anywhere in the northwest or north where we have the wide open spaces and then transmit the power to Los Angeles relatively cheap over these DC lines, where

it is converted to AC. So that's been a big development and they're still working to bring in more power from far away places.

BOSWORTH: The transmission from Intermountain Power Plant is direct current. Converter stations at the plant and then at Adalanto, California makes AC into DC, and vice versa. Yes, absolutely another cost factor that causes you to want to build your power plants close to the load is the cost of transmission as Bill says. That's why we kind of circled the City with the four fossil plants that are here.

POE: That's why I mentioned that Seal Beach was required to use the total output of that plant to just energize the AC line from here to Hoover when Hoover was first built.

BOSWORTH: Long distance transmission really necessitated the development of more efficient ways of doing it and DC has accomplished that to a large degree.

NELSON: You mentioned the Units 5 and 6. In 1967 about 350 megawatts per unit. Were there larger units in the country? Were these pretty close to the largest units that were operating in utilities?

POE: At that time it was about the largest I knew of.

BOSWORTH: The (Edison) Alamitos Units 5 and 6 that started up very close to the same time period are a little larger, but I think at the time, when they were on the drawing board, they were probably as big as any unit in the country. By the time they were actually built, there were some 500 megawatt units in the country, but that was pretty much the top.

POE: What's the output of Scattergood Unit 3?

BOSWORTH: 490.

POE: For the one unit?

BOSWORTH: Yes.

POE: So that's larger than ...

MOORE: To construct a plant from the drawing board, until actual construction can be six to eight years. At the time they were conceived, developed and bought, they probably were some of the largest units in the country.

NELSON: Three years down the line you can't say, "Hey wait a minute, I think we'll change and go for the deluxe model."

BOSWORTH: Well construction. When you're starting a new site like Haynes, from the time you break ground and build a circulating water channel and do the drilling to find out what's underneath you, you've got to do some of that before you can even design the footings. So you're looking at a five year

construction schedule. Basically that's what happened at Haynes. You had almost five years from ground breaking until you put the first unit in operation, but they were starting new construction and, therefore, ultimately new commissioning of the unit ... one a year. The six units at Haynes went commercial 1962, 1963, 1964, 1965, 1966, 1967. One a year for six years, but each one was in construction for five years and then Monty threw a number out of six to eight years absolutely right because you're designing before you break ground and then you're doing more designing when you break ground to find out what the underground looks like and then five years from the time you start putting concrete in the ground so you're making megawatts, yeah, you've got an eight year old unit when you get your first power from it.

NELSON: When Haynes came into the system, it was the most efficient plant on our system or at least fossil plant and it was, I guess, for many years what we call in the industry a baseload plant.

BOSWORTH: I think that's a misnomer.

NELSON: Okay, let's talk. We hear about peaking, we hear about intermediate, we hear about base load. Can you pick up from where I'm going and talk about this?

BOSWORTH: I've been an active participant in the boiler cycling seminars that have been put on by the Electric Power Research Institute every two years. The fourth seminar will be this

December and I will be participating in that. I was a session chairman two years ago at the session in Chicago. The fact is whether a plant is cycling or base load is describing how you operate it. We've gone back to the OEM, the original equipment manufacturer, and we've said, "Are the boilers at Haynes, base load boilers or cycling boilers?" and they said, "What are you talking about?" A huge misnomer and it's the utility industry that's caused the problem in defining those terms.

Boilers are designed for so many cycles of life. Cold to hot and cold again. Turbines are designed exactly the same way. How many cycles from cold to hot and back again and a cycle's even a unit of load. From minimum load to full load to minimum load again is a cycle of life. Basically these pieces of equipment are designed for 100,000 to 200,000 cycles and the manufacturer doesn't know whether you plan to base load it or whether you plan to cycle when you buy it. There's nothing in our specs that tells them that. Some boilers have features that make them respond to load more quickly. That affects the number of degrees of temperature change per hour that you can accomplish and the users tend to take that into account and sometimes decide how to operate based on that capability.

These units, when they were first built, when they were new, they were the most efficient in the country, were operated as much in the base load mode as was possible at the time. Load following every day, and they've actually been cycling units their entire life. If I had to put a name on it, because we've generally gone from minimum load to full load and back again on a daily basis.

NELSON: Cycling to a layman is kind of a simmer?

POE: I've never heard it expressed like that, but I guess the biggest battle we ever had that I can recall in these steam generating plants is when a dispatcher started assuming control of our plant loading and he was cycling us every day for base load to stand by and it didn't matter how much we complained. They were interested only in the output and their system control. But for maintenance that was killing us every time, Seal Beach particularly, because they didn't have water cooled bricks in their furnaces. You would heat up those bricks and that furnace would be red hot, then you'd cool it off every night. Then you'd heat them up the next day again to start up your units. You were under maintenance all the time trying to rebuild those boiler walls. All kinds of problems caused by heating and cooling the brick surfaces.

MOORE: Sometimes when we think of a unit in terms of cycling or base load or swing units or whatever they wish to call them, we only think of the turbine and the boiler and like Ken stated, these things were designed and built for so many life cycles, but what we lose sight of as we'd go along is the fact that along with this other equipment all of the auxiliary equipment that has to support these major pieces. Okay they go through this same cycle and their life cycle might be 50 or 60 or 100 cycles, you know, but they are key components on the unit and each has the ability to shut a unit down if it fails or as it fails.

POE: For this auxiliary equipment we have to have stand by equipment for all these units. Auxiliary units so that we can maintain continued operation. When one of the units fails we usually have a stand by of an auxiliary.

MOORE: This is the reason they put in like three half load pumps or to supply feed water to a boiler or three half load fuel oil service pumps. But this equipment is going through this same cycling type of life that your major components are, without the benefit of the metallurgy, or the long term design and study.

Predominately, and in the early days, auxiliary equipment failure is what shuts your unit down, more than your major equipment.

BOSWORTH: Parts of the industry, well the whole industry was moving so fast from the early 50's up to the ... or the late 40's and the early 50's and the 60's and that sort of thing, but components needed within the total picture of power generation would be lagging behind. Maybe the boiler and the turbine would be way out here ready to meet these demands at this point for whatever was required, but the things that supported them weren't there yet. I sometimes think that that was true particularly with 5 and 6 as we got into the super critical units and the high temperatures and metallurgy and things like this, and one particular thing that comes to mind is feedwater heaters, Bill. What a time we had over there with high pressure feedwater heaters.

POE: I don't know if you remember or not the battle I had with Floyd Goss when we started up here. I was superintendent of the operation and maintenance of the plant and during construction the design and construction people were in control and in charge of the construction, but, when they finally decided everything was ready to go, the Design and Construction Division would turn the unit over to the Operating Division and that's when I stepped in. I figured I was responsible for the operation and maintenance so one of the first things we had was a feed water heater on Unit 1. I undertook with my own personnel to retube the heater and Goss raised Cain. He figured I should have farmed it out to one of the other divisions. We battled. I said, "Okay, as a matter of policy, let's give all of the plant maintenance to somebody else." I told him that I would be happy to be responsible only for operation. We worked things out and the plant superintendent continued to take responsibility for operation and maintenance. It was understood, of course, that I could assign work to other divisions if my personnel was inadequate.

MOORE: It's gone through the same evolutionary process of all of industry. There's a tendency to privatize and to go out to contract for temporary help. The steam generation business has done this also. I think right now that they contract custodial and housekeeping. This is something we never did. We had our own laundries and the whole bit for many, many years.

NELSON: Well it had a battery shop at Main Street. That probably dates to the teens of this century.

POE: Going back. When we had, when the City bought the Seal Beach Steam Plant, we were self-contained. We didn't ask anybody for any help. Our machine shop foreman assumed the responsibility for the overhaul of the turbines and had a maintenance foreman to handle the boilers and auxiliaries using our own employees. We didn't ask for any help unless we needed a contractor or manufacturer to supply some help, but we were all self-contained and we didn't ask anybody for anything.

When the Department got over to the harbor, they ran into that because that was the first plant they built and they borrowed Frank Menagee, our shop foreman at Seal Beach, to represent the DWP in the assembly of the first turbines at the Harbor plant. It's been an evolution from being a self-contained operating facility to where it is.

MOORE: It's interesting to note, also that along with the development and the evolution of the steam generation section, there were other departments within the organization that changed and grew up underneath that same umbrella. Station maintenance for one, the relay test sections. Even though they existed, the real demand, the need began to grow and expand right along with the steam electrical generation. The general plant division, I don't know if they're called that anymore or not ...

BOSWORTH: General Services Division.

MOORE: But really developed as a separate entity just to take care of this major overhaul work that we used to go out to contract with.

POE: Well they go to Boulder too. They're steam and electrical facilities.

BOSWORTH: Historically there's been a real shift from 26 years ago when I started here. The idea was to staff to your peak load and so you had people around to help you when your workload was the heaviest, supposedly to get that work done and you utilized those people perhaps in less pressing ways when you were not at a peak load period.

As we moved into the late 60's and early 70's, there was some destaffing that took place and we, in fact, were told to kind of average staff for the average workload so that you knew you couldn't meet some of your needs during the peak. You still had some people you had to find work for during the real slow period of work, but you averaged out having roughly the right number of people for the amount of work you had at all times.

The strategic plan that was introduced by Mr. Nichols is a real different approach. It's saying, you staff for the minimum of amount of work you have within a given time and contract everything that peaks. That is really what is driving us today, forcing us to contract out a good deal of the work that we might otherwise do. With the potential of deregulation of the power industry, we have absolutely gone and looked for the least expensive way of doing business so that we remain competitive in any commercial evaluation and it's driving us to do that right now. Cut staff and define areas which we can contract areas in which work for which there are capable contractors out there.

NELSON: Are there capable contractors out there? I would think that when we need them, our competitors need them too.

BOSWORTH: There are some very capable contractors out there. We have some real problems with the restrictions that our purchasing arrangements made on us, of matching, getting those people in house at the moment where we really need them.

There are some real innovative purchasing ideas being thrown around nowadays. We do have the ability to set up more and more annual contracts so that we have contracts in place at all times, but Dick, you're absolutely right. There are times when we would call a contractor and say we need you here tomorrow," and they're going to say, "Well I'm sorry, we're busy across the river at Alamitos and we'll get to you when we can. This has happened.

KEN BOSWORTH
WILLIAM (BILL) POE
MONTY MOORE

TAPE NUMBER: 2, SIDE ONE

NELSON: Okay let me go back to a comment that was made. I always thought load dispatchers took care of meeting the systems needs. Apparently at one point, you had more control over your plant.

MOORE: Basically, let me kick this off a little bit - the load dispatcher in my era of time always had the responsibility of providing the necessary generation to keep the City lit. The superintendents responsibility at each station was to provide whatever was needed for him to do that with. The line of distinction had to do with all he would ask for is megawatts. How he got them, was the superintendent's responsibility. This has changed and evolved to a point where computer technologies know more about our equipment than we do. So he hits a button and the computer tells him, "Take your next block of generation from a coal fired plant, or take it from a hydro plant, or get the next block from Haynes because we've got a little thing cranking into the picture here that has to do with voltage control in the south end of the system. No longer was it just a decision between a load dispatcher or a superintendent. This era kind of closed out in its entirety, I think, when Bob Moore, who

I spent much of my career and management career working with Bob Moore. We worked into the late hours of the night planning generation for next day many times.

I'm sure some of it still goes on, but not to the extent that it once did.

BOSWORTH: The difference today is that some of the concerns are different. We had economic dispatch for many, many years so when Bill was superintendent, you still tried to start the most efficient units and load the most efficient units and shut down the ones you didn't need based on efficiency. What's happened since then is, not only is the energy control center look at heat rate curves for each of the units to determine where the most economic loading is, but they have built in NOX curves. The environment has taken over. We now dispatch load to a fairly large degree based on NOX emissions and we update our heat rate curves quarterly, we update our emissions curve monthly. So we are making every effort to satisfy the environmental needs of the community. At the same time making the load we provide as economical as possible, but efficiency doesn't drive power production totally any more.

The significance of this is that in Monty's time and Bill's time the Energy Control Center would tell us how many units they wanted on and how much total megawatts they wanted, but they wouldn't necessarily tell you which unit to put on. In effect we guarded that as superintendents. That was our province. We had to plan maintenance. We knew which were broken or unhealthy and which ones could run reliably and that was strictly up to the superintendent. It's not that way any more because they

know which unit produces how much NOX and they're going to tell me whether they want Unit 2 or Unit 3.

I have a little bit of something to say between Units 1 and 2 since they are a pair and they are very comparable to one another. I have a little something to say when the decisions between Units 3 or Unit 4 or between Unit 5 or Unit 6. But between pairs of units, I have very little to say. I'm told which units they want, which unit type, because they are different.

MOORE: At the period of time when unit efficiencies or cost of generation was really what dictated most of it. Haynes was the most efficient plant in the system. System meaning the steam power, the generation part of the system. And they pushed us, for production. I guess that's a crude way to put that, but 60 - 70 hour work week was the normal here for myself and most all of the people in maintenance, engineering and technical. It really boiled over into one hell of a mess, but in order to try to resolve these problems and lower accident rates and injuries that were astronomical. I could hire general plant people or whatever was necessary to keep this plant on line.

I've seen the time when we worked 72 and 80 hours without a break; just to be on time restoring the unit to service from a forced outage or shutdown.

POE: You know the thing that amazes me is I'm not changing the subject, but it has to do with the same thought. When I retired in 1973, my top salary as superintendent of this plant after 12 years, was less than the lowest paid man being employed in the

operating division in the steam plants now. I never could see that. If they needed a little money, the heck with efficiency or anything else, just generate the power without any emissions or anything else, whatever it cost, that's all right, but they never had any money for labor until recently. Now they are doing a little better.

MOORE: The same evolution we're talking about technically was also taking place in personnel administration. The environment was changing, technology was changing, personnel administration was changing. The evolution of the 60's, the impact was beginning to come in in the early 70's. I guess the pendulum always swings continuously but there was an awful lot of good that came out of that era. As much as I cussed it, or didn't like it, there was a lot of good growth and a lot of good things that really came out of that time in our life.

POE: The policy that I worked with when I went to work for the Los Angeles Gas and Electric in 1930. I replaced the man that started at \$140 a month then in two years he quit and went to Pacific Gas and Electric for \$175 a month and he was getting \$175 a month. That was his starting on the other, but he went from \$140 to \$175 in two years so I thought I was giving myself away when I agreed to go to work at Seal Beach for \$140 a month. A little bit later the NRA came in in 1937 and I was cut to \$132.50 a month. A cut from six days a week to five days a week, cut our salary proportionally. I would just barely work my salary back up to the \$140 by the time the City took us over February 1, 1937. That was about seven years wasted there and

then the same thing, I spent 12 years here and then boom, I retire and everybody starts getting paid what they're worth, maybe I don't know.

MOORE: I never thought I did, Bill.

POE: Ken probably doesn't think he is. All I know is I don't mind putting this on tape. I've been retired for nearly 17 years now and my life expectancy when I retired was 12 years, so if it hadn't been for the retirement fund that we live under, I'd have been down the drain a long time ago, but now I'm living good and I don't have any complaints at all on that retirement plan. I just hope they don't go broke. It's a wonderful thing.

NELSON: Back there in the late 60's after Haynes had come on we had all four plants operating, the four steam plants were meeting about 60% or 70%, of our daily load in the City, right?

MOORE: That's correct. At one time we were actually up in the high 70% for periods of time when it came out of Haynes.

NELSON: Now that has pretty much flip flopped and IPP, Navajo and purchase power, provide the bulk of our needs...

BOSWORTH: Basin steam provides 20 to maybe on the high side of the 30% of our energy and load today and that is simply because of the large coal plants -- Mojave, Navajo, Intermountain and also the Palo Verde Nuclear Plant -- takes a little bite out of us. I guess it's a flip flop. Steam was up to 80% of the

City's energy at one time and you remember that at one time Hoover Dam was 80% so as growth takes place and a newer more efficient or cheaper forms of energy are available.....

POE: The environment is a big factor now.

BOSWORTH: Sure, but you're going to shift. You're going follow what you have to do to make the energy as cheaply as you can; so Hoover diminished from 80% of the City's energy down to 5% or something like that, not because it was inefficient. Simply because the power growth and a new role. It put out the same amount of energy.

MOORE: We enjoyed, what was it, a 10% per year growth period during most of that time?

BOSWORTH: Don't forget, postwar economy was going crazy-- that was a good time of life.

POE: Building houses like

NELSON: Today in the City the unit that is the most efficient and also probably environmentally the most acceptable would be the Scattergood Unit?

BOSWORTH: Scattergood Unit 3, yes.

NELSON: And that's probably the steam unit that's getting the most work?

BOSWORTH: It still can burn only gas fuel so during some times of the year where we have gas fuel curtailment, it is not operating.

POE: They were trying to swap weren't they? Capability at Harbor for capability at Scattergood.

BOSWORTH: The unit has been upgraded. It operated for many years under a special air quality rule that kept it at 315 megawatts maximum gross output and it's a 490 megawatt unit, it can be operated up to 490 I believe, or awful close to that now. In fact they're putting a big auto transformer in so they can tie those 230 kv output of the Scattergood Unit 3 to the 138 kv system that ties the rest of the west side of the City together. So there was not enough transmission line capability installed for Unit 3 for the unit to be operated at full capacity.

MOORE: Ken was that a regulatory restriction that Air Quality placed on the unit?

BOSWORTH: Absolutely. That's been negotiated now in exchange for retirement of other units, but at this point, you've got an underground transmission cable that can only carry 300 megawatts so you have to have the Unit 3 service a 230 kv system, whereas Units 1 and 2 at Scattergood served a 138 kv system.

So by putting in an auto transformer to permit generation from Unit 3 to go into the 138 kv system, you can now run Unit 3 at its full capacity. That's real important to the City. Unit 3 would be our preferred unit to operate in terms of efficiency

and in terms of emissions. Units 5 and 6 at Haynes are extremely good units in terms of efficiency. Their reliability has been reestablished through retubing of the boilers recently, but they have very high minimum loads. Right now the lowest load those units can go to overnight, for example, is 120 megawatts each. The conventional drum type units can operate down to 40 or 50 megawatts.

MOORE: See, you're back into this auxiliary equipment type of problems we talked about.

BOSWORTH: But when you've got a high minimum load during off-peak hours, that means you're displacing cheaper energy just to keep the units on the line.

POE: That's what I'd say, but first we had to convince the dispatcher that that was the situation, otherwise he'd take us below that 120.

BOSWORTH: You betcha.

NELSON: When Haynes went into operation in the late 60's, it had the capability of burning either oil or gas. Was it predominately one fuel and has that mix changed over the years?

POE: While I was working, we always burned gas when it was available as a preferable fuel not ...

MOORE: I think that's still pretty much the rule. I know it is out in private industry at this time. There was a time frame in there where low sulphur fuel was the big thing on the horizon. From a regulatory point of view and availability and it was cheap. Not cheap compared to what it was in years past, but cheaper than gas at one point.

POE: We used to limit the sulphur content of our fuel oil that we bought. We wouldn't buy any unless ... we even got down to 1/2 % at one time.

BOSWORTH: It's 1/4 of a percent now. There's a new regulation by the way. By the end of 1993 we must burn oil with sulphur content of less than .05%.

POE: I think we've developed processes where they can remove the sulphur from the oil. Costly, but they can do it.

MOORE: From AQMD (Air Quality Management District) that point of view the cost doesn't even enter into the ... You know that brings up kind of an interesting point too, when I retired in 1979 and then went back to work later on, one of the interesting things that I found was the regulatory agencies that we'd been dealing with for fifteen or twenty years, had just recently turned their efforts around to the smaller private industry-- the hospitals, the schools, the cleaners, and the manufacturers. They have almost created a regulatory situation that will cause many to go out of business.

NELSON: Well zeroing in more on Haynes directly, Bill when did you get out here on site?

POE: Well I arrived from Scattergood September 1961. Big mud hole. This office building had been built. They were working on Unit 1 and it was surrounded by mud. You couldn't drive a car around here when it was raining. That was September when I came so I was there that first winter. I brought the chief clerk, and one stenographer. I don't remember, did you come with me Monty at the same time?

MOORE: Yes, also Bill Barton, our first Maintenance Foreman.

POE: We started to plan a training section for our operators who were to staff and operate the first units. What the plan was originally was to bring about 1/3 from Harbor, a 1/3 from Scattergood, and 1/3 from Valley; kind of mix it so we'd have good thoroughly trained mixture of personnel for our start up. It worked out fine that way.

MOORE: When did we bring a foreman over here Bill?

POE: As soon as we started working on the instruction books. We had the office here and that made it easier. Early 1962.

NELSON: What were you working out of originally, trailers?

POE: No we worked out of trailers at Scattergood.

MOORE: We used that system at Valley, also. We worked out of quonset huts and trailers.

POE: I think we had to provide the office furniture and things like that and get it and start work on the personnel. Our first problem was to see who we were going to get here first.

NELSON: Did you have an opportunity to have a say on who came over?

POE: Oh, I had all the say pretty near. By taking one third from each plant, we did not cripple the personnel remaining at the other plants unreasonably.

MOORE: The superintendent at the new station had the full authority.

POE: Over the other superintendents too. They had to yield to our requests. We were working for the good of the organization. All of us.

NELSON: Sometimes when there's an opportunity to lose a person or two, you don't often send the best person. You got good people?

MOORE: There wasn't that much of it in the steam side of things. There was a strong fierce competition between the

superintendents and they would develop people. But they also had a common goal and it had to do with the over all development of Power Operating and Maintenance Division. Most of us all came from the same pod; as we branched out and moved into the different responsible positions in the generating sections; we continued to work together.

POE: I picked Monty Moore as the assistant I wanted here at Haynes. He probably regretted it. The plant engineer at the Valley was one step ahead of Monty on the Civil Service list for Steam Plant Superintendent, but Monty had a lot of operating experience and I had a lot of experience on the other side of the management, but not too much in the operation. I'd had some but not like I felt would be of an advantage here in training and starting us up, so Monty was a good assistant for me because he'd had all the operating experience where the plant engineer at Valley didn't have that either, same as me.

NELSON: So how did you actually go over these lists or whatever? Did you sit down and look at names?

POE: With the Engineer of Steam Generation, yes. He was my supervisor too and it was with his approval.

MOORE: Was Floyd Goss your boss or Russ Alexander?

POE: No. Goss was Engineer of Generation above Russ. Russ and I worked together at Seal Beach for about 20 years and I was really over him. It wound up in some shuffling around that he came out ahead of me in the end, anyway. He went up to Valley as the first superintendent and I didn't want to go to Valley. I didn't want any part of it. But they worked on me a long time to get me to go to Harbor in place of Russ so that he could go to Valley. It worked out good, but anyway I'm real glad I had Monty and Monty was a real help to me. I never had any regrets.

The plant engineer at Valley, that we passed up, got mad and quit. So the Department lost a good man there too. It was just that for my purposes here at Haynes, Monty was a better assistant for me than the plant engineer would have been.

NELSON: Ken mentioned some time ago about not getting Navy men in any more. Where did your people come from? Did a lot of them come in the steam generation?

POE: At Seal Beach location. We have a training section now. We have a facility over at Scattergood where we actually have mock training facilities for would be operators to be taught to operate a unit before they ever get their hands on .. it's a what do they call it? They've got a name for that training facility Ken.

BOSWORTH: It's a simulator.

POE: Simulator. That's it. So they could operate boilers without actually blowing them up. So we train all of our people there now I believe.

NELSON: Well back in those days,

POE: Well they did not require training because the operation here was quite similar to Valley and Scattergood so the operators we brought here initially had the experience. We did bring some though that had worked at Seal Beach because we still had that plant to start with and so from Haynes it was standby plant, cold standby, but we had to have enough people so that in an emergency we could rush a few people over there and start it up.

MOORE: Wait a minute, Bill. You've forgotten. The first six months that we were over here, we were running that old plant. Every morning and every night and I used to go over there at 5 o'clock in the morning to help open those big steam valves. Then I'd come on over here.

POE: That was while we were training and getting started here while we were building Unit 1.

NELSON: Talking about operators, you guys have collectively been at several stations, did each of these stations and each boiler have a mind of its own; do these things have personalities?

POE: We finally developed ... we used to have superintendent's meetings almost weekly and at least monthly where we'd all get together and exchange problems. Carl Tamaki was a great one for that -- for organizing it and getting it initiated. We had even

the superintendents from hydro participating too when I was still here. We went up in Owens Valley and we went to Boulder and we went all over about once a month and had these joint meetings and it was beneficial to all of us -- learning more about the system, in a system operation.

NELSON: But each of these plants and each of these units has its own characteristics; its own mind?

BOSWORTH: They don't all have the same equipment. The plant in the Valley is an inland plant. It uses cooling towers for condenser cooling, Scattergood is a sea side plant.

MOORE: We spent a lot of money on Scattergood. It was a beautiful plant.

BOSWORTH: A lot of money was spent to make Scattergood a reliable station. Monell water boxes. The F2 machines, the General Electric F2 turbine generators that were installed there probably the most-produced single type of machine in this country. Very dependable. Front fired CE boilers probably again one of the more dependable boilers ever built in this country. When the technology started changing, a lot of chances were taken. There was a lot risk using new metals and going to higher temperatures. Scattergood was built in an era where it was a known technology. A very dependable station.

NELSON: Haynes came after Scattergood so there were differences in ...

MOORE: One difference that I recall were air preheater materials. They were sacrificial in this plant. Humongous big pieces of equipment, essential and very necessary to the low cost of generation. They were put in here and allowed to be a sacrificial material. We eventually evolved out of that.

BOSWORTH: Well Scattergood was installed ... when that plant was built they put in auxiliary heaters so that the air preheaters wouldn't be sacrificial. So you could elevate the incoming air temperature enough to stay above dew point and keep corrosion from occurring. Haynes was built with no auxiliary heaters. Ultimately the industry turned away from preheating in favor of efficiency and recognized it was cheaper to use up the air preheaters than to protect them and so the heaters were removed from Scattergood, but at the time Haynes was built, it was pure economy. Built with as many megawatts as you can so you get the cheapest dollar per megawatt that you could get.

MOORE: And then run it until it breaks.

POE: When I retired I was experimenting with putting in divided metallic sections in the air heaters and trying pure stainless steel metals at the hottest site for durability and continuation because with this load fluxuation that they were starting, why the heaters were really suffering. I don't know what's happened since but I did hear at one time, I think, that they were going to all stainless steel.

BOSWORTH: They all are stainless now.

KEN BOSWORTH
WILLIAM (BILL) POE
MONTY MOORE

TAPE NUMBER: 2, SIDE TWO

NELSON: Okay, so you came out here in 1961, Bill.

POE: September, 1961, in the mud.

NELSON: You and Monty - what was the initial purpose out here? You didn't have units to run?

POE: To build an operating organization so that we would be ready to operate it when the first unit was constructed. We were trying to time it so that they'd come together at this spot at approximately the same time. We had to have operating personnel, however, to individually operate these units as they were constructed. In other words before we were able to tie all of the plant together and actually transmit power to Los Angeles, we had to test each unit as it was constructed. For example, the boilers, had new metal that must be cleaned. We had to put atmospheric exhausts on the boiler, fire them up without all of the other equipment, but the auxiliary equipment and everything, we operated and we had to blow out the steam headers before we put them in operation in the system to clean

them. So we made a racket here 24 hours or more at a time just blowing steam into the atmosphere to clean the metal. Leisure World was here by the time we got ready to do that so we put out bulletins all over Leisure World to tell them don't get alarmed when you hear all of that noise because we're getting out unit ready to start up and we're blowing boilers.

We'd actually make a lot of noise to clean the facilities up then we'd put it back together. We put this together unit by unit, auxiliary by auxiliary, individually until we got them all ready and tested and then the final time we'd have all of the operating personnel there who had participated in the initial preliminary operation who would start up everything all at once and put out some power. We had to be here ahead of time along with the construction to get everything tested and checked and see that it was ready for operation.

NELSON: Did the designing team ask for your input? Did you have input in the layout of the control rooms or something based on your experience?

POE: Yes, but I had a big argument over that for Haynes, but I lost. As long as we were combining units two at a time in the control room and it was taking more personnel and we were trying to limit personnel. I said, "Why don't we build our control room in the middle of the six units and tie all six units into one control room and have personnel that were trained for all of the units. The only argument they had was for safety in case of a war attack or something, more units would be subject to attack with one control room, which would put the whole plant out of

service, but the other argument was that the controls themselves from each unit would be more extensive longer and not as reliable as they would to have shorter hookups with the control panel. So that was their argument, but I would have still liked to have seen a big control room. I know they've got them, I've never seen one yet, but I know they've got them.

MOORE: With respect to the major components of the plant and the units, these decisions were made at a higher level than what we were working. They involved high dollar contract awards and were made by upper management. When it came to the subsystems and the operating aspects of it, some of the auxiliary systems. I think we were pulled into the picture more for that. Decisions that entered into heat balance and efficiency were pretty well dictated by design and what they wanted to do and at what cost.

POE: During this preliminary start up, we had usually an operating foreman assigned to design that worked right with the design engineers who were assigned to operation and they worked together real close regarding the planning and the start up of these different units. Our operating foreman who was working for them, worked with us then to see that we had the personnel available to do whatever operation was required of all this equipment as it was assembled.

MOORE: We became an arm of the design section during that period of time and I think they paid for our services too, didn't they Bill?

POE: I don't know. They were still on our payroll.

BOSWORTH: I thought they were part of the capital cost as a budgeted type of thing.

POE: When Wayne Hague went to Valley, he was still on the design payroll; he was the start up engineer like Burt Denninger was here, Wayne Hague went out there in that capacity.

BOSWORTH: The start up foreman here was on the PD & C payroll and you provided who, Adam Griffin ..?

MOORE: Yes, Adam and whatever else that Adam and design needed to do the preliminary operation.

POE: George Beam was the first foreman in that start-up job, before Adam Griffin.

BOSWORTH: Those people were on the Power Design and Construction payroll, but the superintendent of this organization was Poe. This is roster one. This is the first plant roster that Haynes ever had you might want to take that with you, Dick, just as a souvenir.

POE: We've got a maintenance foreman for pretty near every unit now and we only had one maintenance foreman when I was here for all of the units.

MOORE: Right, and you only had one assistant superintendent too.

BOSWORTH: We were talking earlier about how duties have changed and that's one of the frustrations that goes along with this is in reality in the eleven years that I've been a superintendent, I can speak to that -- you guys can speak to what happened before that, but the nature of the job is totally different today than it was eleven years ago. I just do not get involved in day to day plant operations any more.

POE: Well they used to say you should learn how to delegate, you know.

BOSWORTH: Well you have to these days. Don Heiter is the operations superintendent today. Don Heiter runs this plant on a day to day basis. I'm involved in budgets, staffing, qualified worker and authorized person and "right to know" training having to do with hazardous materials, emergency evacuation plans. The types of things I spend my time doing, Monty and Bill didn't do. Not the same things, not the same way. And that's the frustration again, off the record I was talking about how things change and how you become a dinosaur, where you get into a job as I became superintendent in 1979, I loved this job, I loved the business of making power. I loved

the people that you run into in a power plant. You've got everybody -- operators, mechanics, technicians, electrical people.

It's an extremely rewarding job to see this wide variety of skills and talents combine into one effort to run a power plant and frankly the administrative load has removed me from that. The job isn't as much fun as it used to be. I still love power plants, I still love the business I'm in. The DWP has been a fabulous place to work, but this isn't the job I got hired into eleven years ago.

There is really some frustration that goes along with that and maybe that's what drives people to seek changes -- to retire or to take an exam to get promoted or whatever.

MOORE: First change that I see right now, is, there's no operating division personnel in DWP management.

BOSWORTH: Well in fact, with the departure of Norm Nichols we have all civil engineers. All four of our top ... all three system heads and our general manager are civil engineers. Which is the first time that's ever happened in water and power. The actual general manager has actually been kind of rotated. They'd pick them out of the power system, pick them out of the water system because the water system was usually mostly civil engineers. The power system was almost always electrical engineers, but in the years gone by, the last 20 years because you do have civil and structural engineering within the power system, it just so happens that the people that have emerged as leaders have been promoted from each division now have been civils.

It was interesting anyway recently at a breakfast meeting to realize that all four of our top managers were civil engineers.

POE: John Novobilski was up there. He knew what steam plants were all about when you were up there. We don't have anybody that I know of that's up there now.

BOSWORTH: Times are so different. When I started at Harbor Generating Station in 1965, I had started here, Bill, for you in 1964 as a student engineer, I graduated, I went and served at Harbor in 1965, I did a lot of test work. I can remember standing in the control room and having Richard Fife, was the operating supervisor and Jess Bailey was the superintendent. We were trying to run a test on a little house unit on number two and the operator synchronized the thing about ten degrees out and it jumped a little bit, you could hear it. I was friends with this guy and I thought it was sloppy piece of synchronizing and I told him so jokingly. Anybody could do better than that. Well Jess Bailey spoke up and said, "Alright Bosworth, you're going to do it, belly up to the board, take that thing back off the line, Bosworth's going to synchronize it. We would no more put a young engineer on the board today than the man on the moon. Times have changed. The superintendent was still almost God in those days. He's not any more.

NELSON: These four power plant superintendents were similar to the Department water districts. These were little kingdoms, really in which the individual superintendents had a great deal

of clout and called their own shot and as long as they produced, they were pretty much left to their own devices. Is that how you operated?

BOSWORTH: Monty became a superintendent here at Haynes in 1973. That was the year, I believe, of the first strike in modern day times. There was one way back when, but the fact is that in 1974 then we had our first MOU's, (memorandum of understandings), where we had negotiated labor agreements with the Union. That was a whole new era.

Talk about the change and how things effect management, where a superintendent had very independent control of certain employee benefits, such as personal time off rules. That started to end with that 1974 MOU. It's still evolving, being every year negotiations, or every two years, depending on the term of the agreement. Management gives away a little more every year. Negotiations don't go backwards. You don't reach the point of saying take away this and trade it for that, it's what do I get in addition to everything I've got up till now.

So here we are sixteen years later and its becoming the superintendent's ability to function based on his judgement of what's fair and what isn't fair and what's right and what's wrong is just totally impaired compared to what it was sixteen years ago. We can argue the moralities and the rights and the wrongs -- I happen to think that there was a time back somewhere

along the way where we were better off than we are today. I honestly believe that we have helped to feed the lack of dedication to work with the constant giving of benefits that don't produce anything. We maybe have entered almost a social environment where work has a social obligation to the employee as well as providing a means of income.

I find that a little frustrating. I am still a work oriented person and I think people ought to give us eight hours of work for eight hours of pay and the rules say that's not true any more because you automatically get some time off with pay that you don't work obviously. I don't begrudge anybody their vacation, but there are some other times I think I still do begrudge a little.

NELSON: How were your labor relations? How did you manage Bill?

POE: Well I sort of fit in with the employees more than I did with management. It's funny how that developed too. When I first went into the ... after the City came into the picture from the Gas company, I joined the EEA (Engineers and Architects Association) and I belonged to them for quite a while. In the steam plant I got nothing from management as a representative of the Engineers and Architects Association. Local 18 had control of the personnel in the steam plants so when I went to Harbor, everybody over there, pretty near belonged to Local 18 and no one belonged to the Engineers and Architects Association in the plant. That's when I went over there as plant engineer.

I dropped out of Engineers and Architects, and joined Local 18. I said, "If you can't whip them, then join them - be one of them." I still had 20 years to go until retirement and Local 18 had a pension plan there too. As a result I get \$40 a month mailed into my bank account now, as I retired a member of Local 18. But things are different now. Plant Superintendents cannot belong to Local 18 anymore.

NELSON: Had you belonged to Local 18 through your retirement?

POE: Before Engineers and Architects, but I dropped out of Local 18, IBEW, because I wasn't an operator. I was working in the laboratory and not considered an operator, you see, so they didn't do anything for me either.

NELSON: When you were superintendent here you were a member of IBEW?

POE: Yes. We had supervisor's units in Local 18 then.

MOORE: The Department really had a sweetheart deal with IBEW. It was kind of a thing because a lot of the middle management and some upper management had evolved out of the rank and file and moved into this supervisory unit of IBEW 18. You didn't go to a lot of meetings and you weren't involved in the rank and file Union business. But you were still carried on the books as a member of IBEW. This fact came home to roost very definitely in 1974 during a labor dispute in which the Department employees walked out. Steam generation superintendents stayed in the

plants with operating foremen. We managed to drive a wedge between the operating foremen and IBEW at that time which I think later was resolved, but we kept the foremen in the plants with us. The foremen remained in the plant.

Out of a sense of loyalty. Loyalty to a superintendent and to the fact that we were a service group that generates power. That's what we did. We're not walking away. That feeling was a general attitude. I think that was one of the first strikes by operating personnel since right after the War wasn't it Bill?

POE: I was out nine days on strike when I was still at Seal Beach.

BOSWORTH: I think the strike was in 1973 and the first MOU was in 1974. I'll correct that. It was July 1974 was the strike. I just changed that earlier.

POE: Well I wasn't in management when I went on strike. I was an employee and the Army took us over.

MOORE: Bill, I've never said this before, but one of the things that disturbed me about that strike (1974) was that you showed up out on the picket line with a sign.

POE: I wasn't a workman here during that strike. I was retired. I did not carry a sign.

MOORE: People undergo a change during a strike and I wouldn't have missed that for anything in the world. I wouldn't want to

do that again as long as I live. People that you'd known for 20, 30 years suddenly become someone that you don't know. We had a number of incidences during the night, we were parked back here in the sheds, sleeping in campers or in bunks and we had food brought in that we cooked. During the night our tires would get slashed and our wives would get threatening calls, things like this would go on. There was no way that we would or could walk away from these units and shut them down. The people of Los Angeles would have been hurt very bad if there had been a blackout.

That was a period in time that impressed me the most in my entire career. It was a traumatic experience and yet it was a very rich experience. The people you worked around and with for this seven or eight days underwent changes of personality, frustration, emotion and everything else that we had to cope with. We were locked in ... and our wives were being harassed at home with telephone calls and that kind of stuff. It was an interesting experience.

NELSON: Were you able to keep the plant operating?

MOORE: Yes. All six units for six days with twenty-seven people.

POE: That was one thing that employees never would do, shut a plant down because of a strike. I'm sure of that. We always had control.

BOSWORTH: The strike that occurred in 1980, I was superintendent here, and two of the operating supervisors walked into my office early morning of the walkout and simply informed me they had taken control of the station and they were going to shut all of the units down and at that point I relieved them of their duty and told them they were no longer supervisors. They were free to leave the station, but they were not in charge and I sent the assistant superintendent to the A control room to take control of the station. At that point we were notified that all the crews were going to walk out and leave us with a number of units running and really no way to manage them safely. So we picked a pair of units that we wanted to keep running and asked the crew to stay and shut the other units down safely and we did relieve the crews from the units that we wanted to keep operating and we put supervisors who were not walking out in that control room to keep two units running. But the employees did remain in the station, they shut down the other units that were running, they did it safely, they didn't leave until every system that could be shut down was shut down and the few systems that had to keep running were intact and they showed the remaining supervisors what was running and how to take care of it. Monty touched on the dedication of the people. This was really amazing when you think of a strike and a walk out. These people took care of the equipment. They were very firm in their resolve to shut us down, but they only shut down what they were permitted to shut down and then they did it in a totally professional manner.

Like Monty said, you end up after the strike is over with very different feelings toward everyone. The people who stayed

in with you, worked with you in a case like that, really almost become lifelong friends. There's a bonding that occurs there. It's hard to explain. Certainly it's not like a war. Certainly it's not like some of the natural disasters of living through a San Francisco earthquake, but it still is a traumatic experience for the people who are involved and you share it and it creates a bonding that does not go away.

At the same time, there is a loyalty to the people that are on the picket line. As a manager those are my people out there and I can remember Ray Burt and Ken Miyoshi flying into the plant on a helicopter and making critical statements of the people on the picket line and I said some very rude things to those people. They're my bosses today, they're capable people, but I wasn't in the mood to hear anything bad about my folks' just because they were on the other side of the fence. I think they understand that today.

The fact was when the strike was over we still all had to get back together, we still had to learn to take orders from each other and follow the guidelines that it takes to run a plant and that's not painless. There's a wedge driven there and over a period of time most of it goes away, but it never completely goes away. It really doesn't. Yes you learn a lot. I've been through two of those strikes. I worked at Scattergood during the 1973 strike and here during the 1980 strike and one was enough, two was one too many and I don't ever want any more.

NELSON: Was the Department better able to cope with the second strike than the first?

BOSWORTH: It's hard to say, Dick. The first strike the operating supervisors stayed in the strike in 1973. In terms of operating a station, you can't find better people. They're the people that came up through the rank and file, they know the units, they know the plant, they know the rules, they know the procedures, because the operating people run this plant, 75% of the time when managers aren't here, they are the managers and they know how to run a steam plant. 1973 was a comfortable strike because you had the right people in. The 1980 strike the operating supervisors went out, the maintenance supervisors stayed in. Now most of those people had had some operating experience somewhere in their early career, but it was much more difficult. We had more people who stayed in actually in 1980 but we weren't able to take care of the equipment quite as well. When we started up again, I believe we lost ...

NELSON: Less qualified?

BOSWORTH: Less qualified? Let's say not less qualified, less knowledgeable about the operating systems. But the fact is we actually lost a unit with damage to a generator and we started up a unit and put it on the line. That was a marvelous achievement with people who hadn't done that for 15 years. We took great pride and that was part of this bonding that goes on when you're living in and you do something that nobody thinks you can do. When Unit 2 went down, people on the picket line were cheering. When Unit 4 went on they were saying much less complimentary things. They didn't think we could do it, but we did.

MOORE: They also had the vandalism in 1980.

BOSWORTH: We had a couple of people beat up. We really messed
up

KEN BOSWORTH
WILLIAM (BILL) POE
MONTY MOORE

TAPE NUMBER: 3, SIDE ONE

BOSWORTH: I'm not sure where we left off, but talking about the work stoppages situation where we in the 1980 strike actually had a couple of our employees beat up. Not tremendously seriously, but punched around a little bit. The people that did the punching were some of the finest people that we'd ever had working for us. It was very frustrating. But we had made a very serious mistake where we forgot to take the power off the stop log on the San Gabriel River circulating water discharge stop logs.

The operating people on the picket line knew they could shut down the plant by just running those stop logs closed. So they started to do that. We saw what was happening, we were able to cut the power and protect the units and then we sent some people out to the stop logs to get them back open again and restore things to normal and that's when they got punched around a little bit.

We called the Long Beach Police Department because we're in Long Beach and they refused to respond because we're a City of Los Angeles facility. We called the Los Angeles Police

Department. They refused to respond because we're in Long Beach. The trauma of that evening for me was I ended up with a Los Angeles Police Captain in my office and I was probably as rude and nasty to him as I had been to anybody in my entire lifetime. The net result was that he did listen and he understood the dilemma and he did bring a car in and park it at the entry and park it at the entry from then on.

But it is a dilemma we face every time we have the threat of a work stoppage because we are in a funny jurisdictional situation.

NELSON: In that case the Los Angeles Police Department (LAPD) went into this other jurisdiction?

BOSWORTH: LAPD came into Long Beach onto Los Angeles City property.

MOORE: This wasn't the first work stoppage.

BOSWORTH: I'm talking about 1980. The second one. You had a similar thing in 1973. They were here around the clock. We reminded them ... see when we planned for the 1980 stoppage, we leaned on the planning that Monty had ... he wrote books. We had guidelines on how to handle the next one if it ever happened. We met with both the Los Angeles and the Long Beach Police Departments. It was up to the Long Beach Police Department to see that the pickets on the street were behaving themselves. They couldn't drink beer, for example, on the picket line legally. And that was up to the City of Long Beach

to police because the street was their territory and if the Department was to have police presence, it would have to be inside the fence on the City of Los Angeles property by the LAPD.

As Monty said they had LAPD on site during the 1974 strike we also had that at Scattergood even though we were in Playa Del Rey or right behind El Segundo, there was a mixed problem then, but L.A.P.D. was on site. In the 1980 strike they decided they weren't going to be on site. They didn't want to take sides, they were having their own labor dispute at the time and they didn't want to be present at another labor dispute. So they would not join us.

MOORE: I don't know about the 1980 strike, just how the dispatching offices were set up, but in 1974 we weren't too sure what the load dispatcher was going to do. These people had the authority to order a lot of things. In 1974 the superintendent took total control of the plant. I mean generation or whatever. I presume this pretty well followed that here didn't they? We put these units on the line and brought them up to the minimum loading situation and established them as safe as we could get the unit and just told them, here comes the power, you do something with it. We're not changing load and we're not running these units M.W. load up and down.

BOSWORTH: One of the funny experiences during the 1980 strike, echoes Monty's comment about authority, the ECC functioned normally. They did not go out on strike in 1980. My boss was

Art Buchanan, engineer of steam generation. He was assigned to Haynes for the strike. The superintendent was established as the authority in the station for the strike and in a very real sense as long as the pickets were out front, Art Buchanan worked for me and Art had a little bit of a problem with that until one day when it was made very clear. Bobby Moore (Load Dispatcher) called down to request that we do something and Art answered my telephone and Bobby refused to talk to him. "I don't know what you're doing during the strike, but you give the phone to Bosworth and we'll do business." So I took the orders and we went about whatever we were going to do and had a good laugh. We're friends fortunately. We can have a good laugh over the fact that as long as the pickets were out front, Art was not going to conduct business for Haynes. The ECC held firm to that.

After the strike was over, it was funny because Bobby called back and he says, "Ken, is Art still there? I'd like to talk to him now."

NELSON: I imagine those two incidences have been the most traumatic in regard to employee relations and that sort of stuff.

MOORE: We had a situation also that I guess it was simply because I was inexperienced in it and mishandled it. It occurred during a period of time where generation was so critical out at Haynes, we were forced to work people around the clock and many hours. We set up a ten and four rotating maintenance type of shifts schedules that literally blew up all

over everything. Wound up in Labor Relations Court and all sorts of things. That was sort of a gut busting detail.

POE: Are you ready for me to tell you about Seal Beach, the one I was involved in for nine days? I was just a laboratory man at that time. Tested boiler water and we serviced instruments and things like that, but when the union called a strike, there was no shortage of power, there was no interference of operation or anything. The union staffed the operating personnel in the plant and the Union sent in cots at every operating station. It provided a place for the operators to sleep on the job and provided stand-by help for them so they could get sleep, but they didn't provide any relief for the operators. In other words the union decided if and when they were going to get relief and otherwise the trained operators were on the job all the time operating the plant without any curtailment in operation or of any supervision of operations. The Union controlled the personnel on the job to keep the plant running.

The Assistant Superintendent's wife came to the plant and set up a kitchen in the laboratory so that she could cook the food for the operators that were working so they would be fed. The Union provided all the food so the operators on the job were fed on the job. There was really no ill feelings and no interference with operation. The Union was having a meeting every day at the Shrine Auditorium in Los Angeles during this strike and on the ninth day the army, (this was during World War II) came on the stage at the Shrine and said all you guys go back to work, the strike's over. And they assigned a Captain to Seal Beach Steam Plant that came into the plant and he happened

to be a guy I used to go to school with. We were good friends and did have some real good visiting while we were operating after the strike was over.

But that was the end of it. Everything happened and we got some kind of a ... I don't remember even now the circumstances, but we didn't get right then we were, I think, arguing for money or something, I don't know what the argument was about even, but whatever it was, it was settled by the Army.

NELSON: How long did the Army stay in after the strike?

POE: Long enough to make sure everything was under control. Maybe until the thing was settled. I don't remember, but there was about a week or something like that. There was no problem at all.

NELSON: Monty go back and elaborate on your 10-4. What were the main deals of that?

MOORE: It was a maintenance schedule change. Maintenance had traditionally worked (5 + 2 days) in all steam plants and other parts of the system this was the common practice that had been established for a long time. Payroll, overtime and maintenance costs were high, injury rates were high, people were working 50, 60, 70 hours a week continuously. The unit loading was low on the weekends and high during the rest of the week. It was during the weekends that we had to do the work, repair these units and get them back in service by Monday morning.

What we did was, established three or four shifts. I don't remember exactly now where the people rotated through, they would work ten days straight and then they'd be off four days in a row. It was like an operating shift schedule. Many of the people actually liked it. Many of them hadn't done it before, it was day work and it gave them some time with their families that they hadn't had for a long time. Like I mentioned before, I thought I had covered the bases. I asked a lot of people for inputs to this, even the Union was working with me on this new schedule. Suddenly this plan went to hell. Everyone involved or impacted was against it. They refused to cooperate in any way.

BOSWORTH: I wouldn't describe it quite so badly as you described it in terms of ...

MOORE: It had to be done.

BOSWORTH: I came over to work with Monty just before he implemented, basically, let's call it weekend coverage. It was a maintenance schedule that provided maintenance people in the plant seven days a week and because the loading was absolutely as Monty described, planned load low on the weekends compounded by the fact that we weren't doing any steam lancing in those days and we're burning a lot of oil. You had to wash the boilers every six weeks or so so you had to come down for a couple of days to wash the boilers so that you could get rid of fouling that would keep you from getting the full load in addition to doing the repairs that you had to do.

Monty had surveys and questionnaires, everything, to set up the kind of a weekend schedule that would meet most people's needs and he implemented them. He was the only plant that had weekend maintenance on normal time. People kind of seemed to accept it at first, but they grew to hate it -- that's just the bottom line. But this went to arbitration. It was grieved and it went to arbitration. He won. Of course they don't describe it as a total disaster. Management and the arbitrator looked at the situation and said, "Monty did things for the right reason in the long run and that he was meeting the needs of the Department. There was some criticism of the method of implementing it. I think that's what you were referring to. So we're not polished people managers, sometimes, but the fact is we had to do a tough job and Monty did it.

I ultimately was able to go away from the weekend coverage only because the system loading and the loading pattern in the system changed. It actually got to where we needed the units on weekends more than we needed them during the middle of the week. So then it didn't make any sense to stay on the weekend coverage, but we issued documents when we went back to the normal 5 and 2 maintenance schedule preserving managements right to return to weekend coverage if we needed to. That was an important thing to maintain that right.

NELSON: Did you have as management, top management's support throughout this whole thing?

MOORE: Yes. As a matter-of-fact top management or upper middle management really won that case when it came to the Labor Relations Department.

BOSWORTH: Kathy Richards handled a lot of the work on that case and she did a marvelous job in labor relations on it.

NELSON: Who is this? Is this Jim Mulloy?

MOORE: Mulloy was the general manager.

BOSWORTH: Hi Rudin was involved during that.

MOORE: What's the guys name who's in command over the Power System?

BOSWORTH: Eldon Cotton. Dan Waters is Acting General Manager.

MOORE: Ken Miyoshi was the one that went through the "logic of change" with the Labor Board.

BOSWORTH: He was the Assistant Division head at the time.

MOORE: That probably took place about two years before I retired didn't it?

BOSWORTH: That's right. When I came back from Scattergood in February 1978, you were holding your group meetings in the lunch room back here to explain the program and, in fact, you asked me to make one of the presentations for you. I got indoctrinated very quickly when I came back then it was implemented just within a few months so that was maybe a year and a half before you retired or a little less than a year and a

half. But it was a very ... maybe that's one of the factors that said, "It isn't worth the battle any more," and retired because you can. But we stayed on the weekend coverage for a long time after that until the loading pattern and the system changed and the need changed.

NELSON: How about personnel? Did you have difficulties acquiring personnel over the years here? Is this a good place to work according to people in the system?

POE: I never had anything to do with that. While I was here my recollection is that it was all done uptown. Right through civil service.

NELSON: So after you did the initial staffing here, you pretty much showed up on the morning and took over.

POE: Somebody else provided the help, yes.

MOORE: Early help, what I mean by that is we would actually recruit Navy people that were already trained and we would guide them through the examining process.

NELSON: These were all boiler people?

MOORE: Turbine, electrical, and boiler.

POE: Or somebody that needed a job real bad and wanted to work.

MOORE: Or if they walked in off the streets with some experience. It doesn't take too long to sit down and talk to a man to know whether or not he's got the experience we need. Russ Alexander sent me to San Diego a couple of times, down to the separation centers and I'd pass out handbills and talk to Navy personnel as they were discharged.

BOSWORTH: That's the thing. There's no such thing as steam plant tech anywhere. Where can you find any line of work where people operate and maintain turbines and boilers? and its on board ship. That's it.

MOORE: Hands-on training is now conducted at Scattergood on the assimilator.

BOSWORTH: I really believe that we've lost a lot.

NELSON: Sante Fe Railroad getting ..

BOSWORTH: No. The Navy, Merchant Marine shipboard experience, wherever it was, but that's the most like the plant.

POE: Practically all the personnel at Seal Beach in those early days came from the Navy. There you had to fire a boiler by the seat of your pants. They didn't have all this fancy instrumentation. Firemen had to go around and look in a peephole with his eyes to see whether he had enough air or fuel or whatever the situation was.

BOSWORTH: One interesting thing in terms of staffing that I believed started again when Monty was here and it just discontinued but, you talked about the long hours and the overtime. That hasn't gone away. Haynes is still the largest plant in our basin system. It's still the most efficient plant in the basin system. It's needed very badly for voltage stabilization in the south end of the system and so when a unit goes down here, it's hard to spend enough overtime to make it a bad deal. The generation is worth so much you need to get it back quickly whereas normal system overtime might run seven or eight percent, we're running twenty per cent. That's a lot of overtime. We don't hire a lot from the outside. I guess what I'm trying to say, we don't interview off of Civil Service lists nearly as often as other plants do. Almost all of my vacancies are filled by transfer requests. A lot of people want that overtime. It's worth a lot of money.

MOORE: Also there are more advancement opportunities.

BOSWORTH: Opportunities -- people historically who have experience at Haynes end up on the tops of lists for promotions in all of the plants and it's because it hands on, do it, learn it experience.

NELSON: The steam's side is kind of like Hoover used to be on the hydro side. If you had operating experience that was a very big plus.

BOSWORTH: Right, but when we hire journey level operators, when we hire maintenance mechanics, when we fill the system control operator jobs, the higher level journey classes, it's very very rare that we go to the list. It's always someone from another plant who wants to come to Haynes and nine times out of ten it's somebody who left Haynes to get promoted to that level and they want to come back. Overtime at Haynes is worth \$20,000 a year to the average employee and that's a lot of money.

NELSON: What about downtown management involvement in your operations? Has that changed over the years? More? Less? None? You only call if something goes haywire? Do you hear from the regularly? Is this a loaded question?

MOORE: I think it is and I really think Ken shouldn't comment on it.

POE: I had it the other way where they didn't interfere very much with our local management when I was around.

MOORE: I came through both sections of that. As my career was ending, there was beginning to be more and more involvement. There was a trend in City management, not just water and power who thought that they could put anybody with managerial or administrative abilities in a job, and they could run it. It didn't make any difference what their experience was, they could run any kind of a business, a steam plant, training section, PR section, and they began to shove that down our throats. We were choking on it. This was a part of the time where they began

to move decision-making back up into committees and this gets to be frustrating because committees do not make decisions that carry responsibility. The superintendent is the responsible person still in any business or at a comparative level. When the decision making process is moved away from him, then it becomes a little bit frustrating. Not just a little bit frustrating, it becomes a lot frustrating.

POE: The only frustrating thing I met was when Russ Alexander and me were real good friends, worked together a long time and when he became engineer of steam generation. When he went to Valley steam plant as a superintendent from Harbor somebody came down with the edict that all management had to live within 12 miles of employment of the plant. Whether that was his rule or somewhere else, but he bought a house in the Valley and moved there. So when I got the job at Scattergood, Russ said, "well you've got to live within 12 miles of Scattergood." So I didn't move, but I went and bought a house trailer and parked it near Hermosa Beach in a trailer lot and had a telephone and all the hook-ups and everything and I stayed there during the week, but I went home on weekends. I never moved my family and I got away with it, but I don't know who shot that down, but finally somebody said well that's not legitimate. I don't know how far Ken lives away, but he hasn't had to live within 12 miles of the plant.

MOORE: That just evolved out. I don't know. I bought a home in Garden Grove first and then relocated later to Westminster early on. I also moved to the Valley in 1954 and returned to Torrance when Scattergood was built in 1958.

POE: So I don't know where that originated, but Russ told me I had to ...

BOSWORTH: There was none of that kind of rules. There weren't any freeways in those day, Bill.

POE: They didn't have to have freeways when I was at Scattergood. And I had 55 stop signs between my house and that.

BOSWORTH: I drive 28 1/2 miles one way to work and I bet I drive it in less time than you drove to Scattergood.

NELSON: How fast does a horse go?

POE: I never had any problems at all. As I say Floyd Goss and I used to argue a lot, but that was ...

BOSWORTH: I was the last superintendent ordered to move by the way. I was told to move. When I was promoted to Assistant Superintendent at Scattergood, I lived in Laguna Hills, I was told to get my fanny in closer to town and I moved in as far as Huntington Beach and I just figured if that was going to cost me the job, then I'd be plant engineer at Haynes again, but I wasn't going to move into Los Angeles. I like Orange County. Haynes is on the Orange County line. I can live two blocks from Haynes and be in Orange County so I thought the rules regarding living in L.A. were a problem.

POE: That's the only problem I had with reference to residing near the plant and being on call.

MOORE: I don't know. There was a lot of good came out of those arguments though. This was a new plant and a new concept and new ways to do things. You modified your thinking and Floyd would modify his, we'd grab it and down the middle of the road.

POE: I didn't want any part of the Valley steam plant. My home was down here, you know, and I wound up in Valley steam plant for three months on my way to Scattergood and I drove 55 miles each way as I recall something like that.

KEN BOSWORTH
WILLIAM (BILL) POE
MONTY MOORE

TAPE NUMBER: 3, SIDE TWO

NELSON: To wrap up this session, what's in the future here for Haynes and maybe I should even expand that to the other fossil fuel plants in the basin. You've heard of repowering, we've heard of all sorts of schemes, what do you think, and it's probably more directed to you, Ken, what's happening here with the generating station in the basin?

BOSWORTH: You mentioned repowering. I think the most dramatic change will be at the Harbor generating station where we have retired Units 1 and 2 and we're in the early stages right now of a project to retire Units 3, 4 and 5 and replace them with a 240 megawatt combined cycle plant. It will be repowered, that should be on line by 1993 so that will be the largest change in the in basin sources of generation.

At Haynes we're in the second year of a three year program to spend well over \$40 million retubing boilers, replacing feed water feeders, basically upgrading component equipment to make this plant reliable for hopefully another twenty-five years. We need the in basin generation. I was very pleased yesterday in a Manager's meeting where Ray Burt indicated that the improvement

in reliability already experienced at Haynes and having retubed several of the boilers, is sufficient enough to delay construction of any new projects by two years. So just the availability of the units is a really significant item. The boilers aged and they weren't reliable. We have a lot more than tube leaks, lot of down time, and that generation wasn't available so we're replacing it by doing good repairs and maintenance rather than building new plants.

The Valley station is a candidate for repowering project also and that may happen. If it does, it will be some kind of a trade off based on lower NOX for the basin in concert with AQMD's activities. We're either going to see the Valley retired or we're going to see it replaced with a repowering project combined cycle unit like at the Harbor. One of the two things will happen fairly soon. Scattergood will be around for a long time. Certainly Unit 3. Unit 3 is the newest steam unit on our system and the lowest in air emissions.

I have also seen a proposed repowering project for Scattergood Units 1 and 2 so it's not completely out of the picture, but it's certainly less likely than going out to the Valley I would think.

NELSON: What will be the fuel source future here?

BOSWORTH: The AQMD is working very hard to limit us to gas fuel. By 1993 current regulations require us to switch to fuel oil less than .05% sulphur. It appears at this moment that that will drive us to a light diesel. We'll be burning diesel fuel rather than fuel oil as we know it now.

POE: How much fuel oil storage do you have here now at Haynes?

BOSWORTH: Three million barrels.

POE: That's a lot of oil.

BOSWORTH: We've got storage capability of three million barrels of oil if we had all of the units running at a fairly high load factor, we could burn 50,000 barrels a day so there's still a lot of storage area.

POE: Big capital investment.

BOSWORTH: Yes.

POE: I was going to say one problem would be to try to schedule burning it all up before they limit the ...

BOSWORTH: Well we're allowed to burn what we have. Anything that's in the tanks before the new rule takes effect, is legal fuel so I'm sure there's going to be folks looking at the cost of the .05 sulphur oil and looking at the present cost of the .25% sulfur oil and they'll do whatever's going to allow us to produce energy for the least cost.

NELSON: Well there continues to be difficulty in obtaining a natural gas from the supplier during certain times of the year.

BOSWORTH: There were curtailments almost at any time. We've been advised that we will be curtailed before the summer is over so we expect to burn oil during the summer months. That poses a problem that the law doesn't permit us to burn oil on an EPISODE day and practically every day is an EPISODE day throughout the summer months so we're a little bit concerned.

POE: Right now with all these hot days we've had, I'll bet they've really been having some peak loads on the system with all the air conditioners going.

BOSWORTH: We've hit an all time peak, I believe it was on June 27th, of over 5300 megawatts which was about a 10% increase over the previous all time peak. But I think we had five days in late June and early July that exceeded the previous all time peak so yes, the hot weather, but we're seeing an inordinate jump in the peak energy, peak power that we have to make.

NELSON: Well gentlemen we're about out of time here. Any final comments?

POE: Not for the record.

MOORE: Well I'd just like to thank you for the opportunity, Dick, to come together and talk to Bill, Ken, and myself.

POE: This is way over due. We should have had it about ten years ago.

BOSWORTH: Well it was kind of fun. I can't think of any other facility that's been around as long as Haynes has been here that's had so few managers. The three of us represent thirty years.