

N Reactor opening day.

March 30, 1996.

Transcriber: Susanne Starkweather.

Begin Tape 1, Side A

MS. LITH: I'm Gwen Lith. I'm the director of CREHST. And we're just delighted to have you come here today to commemorate one of the most exciting events in the history of Hanford, the Tri-Cities, the nation, and perhaps the world. A celebration of N Reactor. A monument to progress.

With this exhibit, the Columbia River exhibition of history, science, and technology, as we are now known as CREHST, becomes the premier science and history center of Eastern Washington and, indeed, perhaps the region.

We invite you to follow the time-line today, reflect upon the events captured here, and relate them to your own lives. What were you doing when you heard about Sputnik? Where were you during the Vietnam War? Were you in the audience when J.F.K. helped

MS. LITH:

to break the ground for the Hanford
Generating Plant? How did you learn of
Chernobyl or Three-Mile Island?

As we capture and share the history, we
give roots to our children and establish a
foundation upon which future generations will
be built.

Special thanks and appreciation are
given to John Wagner, the manager of the
Department of Energy, Richland Operations,
for his support; to U.S. Representative
Doc Hastings for providing his support and
encouragement.

And today, as we launch a new exhibit,
the first formal exhibit for CREHST, we have
many others in the community who need to have
special recognition for this exciting and
informative display.

Darby Stapp, who you'll meet soon, the
cultural resources coordinator for CH2M Hill,
a subcontractor for Bechtel, was the
inspiration and the developer of this idea.

It was Darby who wanted to create a
living history for N Reactor rather than to
try to capture the facts in a book only to

MS. LITH:

be stored on the shelf. Thanks, Darby, for your inspiration, assistance, and support.

In addition, a very multi-talented and creative person, Hugh Hall from BSCR, brought life into our history through this display and many other exhibits you see in our facility. Thank you, Hugh, for your tremendous energy, your talent, and dedication.

Many of the interesting artifacts that you see here today come from the Washington Public Power Supply System. We appreciate their assistance. And as everyone knows, it takes an entire team to put this together. And I'm lucky I have one of the best teams you could hope to work with.

Many thanks to all of you. If you have questions, please do not hesitate to ask them, they're all here today.

And now I'd like to have you meet Darby Stapp, who as I said, is this most creative cultural resources coordinator for CH2M Hill, the subcontractor, or one of them, for Bechtel Hanford.

Darby's really no stranger to Hanford.

MS. LITH: Prior to joining Hill, he was with Battelle as the manager of environmental projects at the Waste Technology Center. Mr. Stapp.

MR. STAPP: Thank you, Gwen. Today is about partnerships. In my case, my organization, the Hanford environmental restoration contractor, has partnered with CREHST to help us document the history of N Reactor. As a result, we have cut project costs. But more significantly, we've been able to do things that we would have never been able to do individually.

It was another partnership that emerged 35 years ago between the Federal Government and Washington Public Power Supply System that made possible the construction and operation of what soon became the largest electricity producing steam plant in the world.

And in a few minutes, we'll hear that it is partnerships such as these that will mark the future of Hanford.

I'd like to take a few minutes to explain why we are documenting the N Reactor and presenting this exhibit today.

MR. STAPP:

The state of Washington has gone on record saying that Hanford is an important historic site. And I think we can all agree with that. It was important to the nation and the state and the locality.

In fact, in a few minutes we'll hear President Kennedy claim that the events that took place here changed the entire future of the world.

Washington state has also taken the position that the N Reactor was an important part of the history of Hanford and should be listed on the National Register of Historic Places. And I think after this morning, you'll be able to see why they did that.

Well, what does being on the national register of historic places mean? First of all, it does not mean that N Reactor will be preserved as a monument.

Everyone has made it clear that the structure should be removed and the area made available for other uses. If anything is preserved, it will be the historic B Reactor.

But it does mean that before DOE can demolish the facility, efforts should be

MR. STAPP: taken to document the history, the events, the technology of N Reactor so that this chapter of Hanford history will not be lost.

Well, this has posed a challenge to us, because, as you can imagine, N Reactor is not your typical historic site. Historic preservationists have lots of history documenting log cabins, Victorian mansions, nineteenth century steel mills.

But as far as I know, no one has ever tried to document a nuclear reactor before. So how do you document a nuclear reactor?

What we've done is look at the intent of the regulations and adapted them to Hanford, and here's what we've come up with: First, we want to document the N Reactor story in an unbiased way. We'll document the successes, the failures, the challenges, and the controversies.

Second, we're drawing on all sources of information. We're gathering the key documents that describe the technology and events that occurred, we're collecting the photographs and objects that you see here today.

MR. STAPP:

And because N Reactor is not very old, we have an unusual opportunity to talk to the people who made the history. We especially want to capitalize on this source of information.

So we have instituted an oral history program so that the people who made the N Reactor story can tell us what happened there, tell us what they think is important to remember, and can check over what we are saying to make sure that we get the story correct.

Third, we put this exhibit together at this early stage to attract the attention of the people who work there and who were part of the story. So you'll notice that this exhibit really is not your typical exhibit.

It's really designed to kind of be a working exhibit so that we can bring people in and can kind of point to different events and things like that and jog people's memories and then we can engage in a conversation and tape it and preserve that part.

So if you have information about

MR. STAPP: technology, work life, anything else that relates to N Reactor, please take one of the oral history questionnaires that we have out front and we'll talk to you in the coming months.

Another objective we have is we don't want to just document the N Reactor experience, we want to learn from it.

Some say that future scientific and engineering achievements depend on an understanding of past successes and failures. Well, if that is true, then I think we can learn something from N Reactor that might help us deliver new technology in the future.

As we have come to learn, getting new technology into the field takes more than scientists and engineers: managers, our politicians, the environmentalists, the Indians, the taxpayers, are all part of the process.

Part of the message of this exhibit is that N Reactor wasn't perfect. No pioneering technology is. I'm sure we would do things differently if we could do them over again. But what are those things? That's how we

MR. STAPP: can learn. This is an important goal.

I think we as a society have a false impression of what it takes to make technological advancements. We want new technology to be perfect, but it isn't.

An exhibit such as this can help us remember that developing new technology is a lengthy process of trial and error, learning, and trying again.

We must be willing to accept the costs and risks of failure if we are going to move forward as a society.

I think, in a story like N Reactor, can make us better decision makers. As an example, we can look here to the origins of the spent fuel held today in K Basins.

Most of that fuel originated from N Reactor. And because it is there, it is there because the decision was made to shut down PUREX facility. Was that the wrong decision? I don't know.

But I think it's important that we realize that when we created one problem, when we tried to solve one problem, we created another problem; and we need to

MR. STAPP: learn from that experience.

So I believe strongly that we can learn from past projects such as N Reactor and improve the way we function as a society, especially in high technology settings such as Hanford.

And for these reasons, we don't want to just document the N Reactor and put it on a shelf in an archive somewhere; we want to share it with everyone so we can all learn from the process.

It is important for those who work at Hanford to understand the spirit that allowed Hanford to achieve its great accomplishments in the past. I think those of us who work there today forget that we are just one chapter of a larger story.

Everyone who is part of Hanford should spend some time here in this museum and learn about the roots of Hanford, the accomplishments, the technologies, all aspects of the story.

Understanding where we fit in a larger context, can help us regain this esprit de corps that once existed; and the effect of

MR. STAPP: that on performance can be dramatic.

So this is what we're trying to accomplish. And how this exhibit will enable DOE to comply with federal requirements to document the important historic structures before they are demolished.

By the end of the year, the story of N Reactor will be available for you to read, enjoy, and learn from.

In closing, I just want to point to the value of CREHST in this overall vision: By partnering with CREHST, we are doing things that have never been done before at Hanford. CREHST is an important asset for Hanford's historic preservation program.

And I want to thank Gwen and her staff for helping us be innovative in the way we are documenting this important piece of Hanford history.

We are fortunate to have such a facility in the Tri-Cities. And I know my organization is proud to be part of CREHST's inaugural exhibit.

I urge all of you to partner with CREHST in whatever way you can so that the

MR. STAPP: Tri-Cities can soon have the biggest and best science and history museum in Eastern Washington. Thank you.

MS. LITH: Our next speaker was unable to make it today. I think you are all very well acquainted with Sam Volpentest. Sam has been valiantly fighting for the life of FFTF back in Washington, D.C.

He just returned home very, very early this morning with a very sore back. He called, sent his apologies this morning about not being able to be here. And we do wish him well. Wish he were here.

He played an important role in helping the Tri-Cities achieve N Reactor with Scoop Jackson and our other senator and also in getting President Kennedy here. So please remember him in today's activities. And I'm sure he said that he'll be by later this month to share the N Reactor story.

Darby's going to introduce a very special film now that we can all enjoy. And those of you that were there in the groundbreaking on September 26th, 1963, will recognize some of these scenes. Darby.

DR. STAPP: This film was prepared by the Washington Public Power Supply System after President Kennedy's trip.

And we're going to pick it up midstream in the video and right at the start of the speeches that took place at the podium that day. So Frankie, if you want to start and turn the lights down.

MS. LITH: While they quickly change the video, I will tell you that this video was shot at N. As you'll see, we'll have that on later today; and you can watch part of that. The film that we do want to watch right now is with President Kennedy.

(Film presentation begins).

SPEAKER A: Exactly one year from the day that President Kennedy signed the legislation authorizing the Hanford steam generating plant, he was there.

SPEAKER B: Mr. President, ladies and gentleman, I am now privileged to introduce the vigorous leadership behind the Hanford steam plant proposal, what it was in its darkest hour and when its efforts counted the most.

You were instrumental in creating

SPEAKER B: statewide support for this project in and arousing the Pacific Northwest to battle for this legislation. Even made a personal trip to Washington, D.C., to work on the Hanford project and to seek the assistance of many congressmen and other influential people.

In keeping pace with the progress, Governor Rosalinni (tape inaudible) --

SPEAKER C: ... where we meet again in the 190 of peace. Today, in this quarter of the nation, we meet in America's search for peaceful applications of atomic energy.

A search that must be successful in America and the world if mankind is to 194 create a job and a lasting peace. Ground will be broken today to 196 that cause.

The people of the State of Washington are proud, Mr. President, to have you turn the soil that will support the installation to be built with their public utility funds.

But the people are also aware that all their willingness and desire to build this plant would have been in vain had it not been for the efforts of Washington Public Power

SPEAKER C: officials; public-spirited citizens like Glenn Lee; and for the legislative action of our congresswomen, Julia Butler Hansen, and Catherine May; and Senators Magnuson and Senator Jackson.

And above all, Mr. President, your own foresight and cooperation; and we are deeply indebted to you for it.

This important occasion has worldwide significance in that this electrical generating plant is without precedence. It is conservation in its righteous sense: well-ordered, systematic, proficient.

Yet, our people see today's activity as but one of several steps for the inclusive development of private nuclear industries in our state. They view the future of ²¹⁵ uses of atomic energy as limitless, and progress as ²¹⁶. This electrical installation is a symbol of their ²¹⁷ with the atoms.

With all its uncertainty, we in Washington State prefer the dream of the future to the ²¹⁹ to the past. And with this avenue, nothing shall deny us that future.

And now, Mr. President, it is my

SPEAKER C: privilege to introduce one who has contributed much to the goal of a stronger America and the cause of freedom. ²²³ our own is ²²⁴ and the ²²⁴ Senator Warren G. Magnuson.

MAGNUSON: Thank you, Governor, Mr. President, ²²⁸, ladies and gentlemen. It's a great pleasure, of course, for me and many others on the platform to be able to be here today with you for this dedication.

It is somewhat even doubly so, because on Tuesday last, the United States Senate gratified a nuclear test ban in which they expressed the desire that we would take one step toward the peaceful uses of nuclear energy. So this is somewhat significant for those of us who come here today, particularly from the Congress.

I have been to many of these dedications up and down the Columbia River, but I know of no person who is more appropriately here for this dedication than my colleague in the United States Senate.

I know of no one who has been more dedicated to the evolution of nuclear power

MAGNUSON: both for defense and for peace than Senator Henry M. Jackson. I'm so proud to be here with him today and proud to present him to you.

JACKSON: Thank you, Senator Magnuson, Mr. President, distinguished guests, and ladies and gentlemen. Like Grand Coulee Dam to the north, this project that we now undertake was won only after a long struggle, a part of our own citizen, our own officials in the Federal Government.

We started on this project, my friend, a decade ago. And in 1957, the first funds for the convertible reactor was authorized on an engineering basis. And in calendar year 1958, we authorized and appropriated the money to undertake the construction of the convertible reactor.

Then when the President of the United States took office in 1961, one of his first acts was to amend the federal budget and to ask for funds for the power features for this project.

And from that point on, until the ultimate victory in September of 1962, he

JACKSON:

gave his full support, full-hearted support, to this project despite the fact that it passed the Senate three or four times only to lose in the House.

But with the same determination and the willingness to fight on, as was the case of Grand Coulee, which went on for over ten years, we won this fight.

²⁷⁸ and myself are grateful to the President of the United States; to the Secretary of Interior, Stewart Udall, who was here today, who field marshalled the job with the legislators and the chairman of the Atomic Energy Commission, Dr. Glen Fleeboard who was not able to be here.

But I want to make special mention to the to ²⁸⁴ chairman of the Joint Committee on Atomic Energy, Congressman Chet Holifield, who carried the battle despite difficult odds in the House to a hullabaloo victory there. And to the local citizens, Glenn Lee, and others, we shall always be indebted.

We will have many more fights in the future. And the rich experience of the past, I think will stand us in good

JACKSON:

stead in the future.

We bring here today the people ²⁹². We're proud that just up river, we have the largest hydroelectric power project in the United States. The project that helped make possible Hanford itself along with the rich, cool waters from this great river.

We trust, my friends, that this will be but the bridge step in a time ²⁹⁸ of diversification at Hanford. We want to beat more swords into plow shears.

I know we have the rich talent here to do that job; and with the abled support of the President of the United States, in the future as we have had so richly in the past, we will do it.

It is now my honor and great privilege to present the President of the United States.

KENNEDY:

My old escort, Senator Jackson. My old colleague, Senator Magnuson. Governor Rosalinni. Stewart Udall. Ted ³¹⁶. Congressman ³¹⁶. Chet Holifield. Commissioner. Ladies and gentlemen. This is an extraordinary place to visit as a

KENNEDY:

citizen and as President of the United States, because along this river, men have played a significant role in the last 20 years, which has changed the entire history of the world.

And, therefore, to come all the way from Washington and see this river and see these reactors and recognize their significance in the closing days of the Second World War, and also the role that the men and women who work here have played in the years 32⁷ just to world war in maintaining the strength of the United States, I enter here today and express my appreciation to you.

The atomic age is a dreadful age. But we must realize that when we broke the atom bomb and released its energy, it changed the history of the world.

No one can say what the future will bring. No one can speak with certainty about whether we shall be able to control this deadly weapon, whether we shall be able to maintain our life and our peaceful relations with other countries. I can assure

KENNEDY:

you we do everything we can.

It is for that reason that I so strongly support it, recognizing, as I did, its limitations, but as a step instead of the 340 in the long road to peace that I strongly support it and 341 . But no one can say what will become of all of that effort or indeed of the whole atomic age.

It may well be that man recognizes now that war is so destructive, so annihilating, so incendiary, that it may be possible out of that awful fact, it may be possible for us step by step to so adjust our relation, to so develop a rule of reason and a rule of law, that we may, out of this scientific change, it may be possible for us to find a more peaceful world. That is our intention.

But I want you to know that the effort that you have made 355 . The talents which have been at work here, I think on several occasions, have contributed to the security of the United States, and in a very large sense, the peace of the world.

I'm also glad you've come here today because we begin work on the largest nuclear power

KENNEDY:

reactor for peaceful purposes in the world. And I take the greatest satisfaction in the United States being second to none.

I think it's a good area where we should be first. And we are first. We are first.

It's extraordinary how long it took. It's extraordinary what energy, human energy, was required to get this concept accepted. But as Scoop Jackson said, just as it took a decade to get the Grand Coulee, which of all the extraordinary national assets I've seen in the last two days, is the most extraordinary.

Because it not only lifts the prosperity of this valley, but lately what has been happening here for 20 years, it now leads to this new breakthrough from that action which took a decade to accomplish. And which will pay for itself many times over, and in a sense already has. We have some idea of how important it is that these fights be won.

And this fight was won by the dedicated work of the members of this state, work in the Senate, the Congress, and most

KENNEDY:

of all, I think by the local people, who, when the Congress failed to meet its complete responsibility, took up the slack.

And, therefore, that is a partnership in a very real sense between the national government and the local community for the benefit of our country.

I come from Massachusetts. I come from the other side of the country. But it's a very small country. And I take the greatest pride in what we're all doing here.

I wonder how many people who are sitting here today were born in the state of Washington. Would you hold up your hand? Excluding the children. And now everybody who wasn't born in this state. There you go. That's an important point.

When we developed these resources in the Northwest United States, it's just as well that the country realizes that we're not talking about one state or two states or three states, we're talking about the United States.

Our people move freely from east to west, and once in while, from west to

KENNEDY:

east. But in any case, the country becomes stronger. There's an old saying that a rising tide lifts all the boats. And as the Northwest United States rises, so does the entire country.

So Governor Rosalinni, Owen Heard, Glenn Lee, Don Fudetty, and the others, I want to tell you that you have fulfilled your responsibilities as citizens; and I think that this is going to be an extraordinary development.

And I look forward to coming back here sometime and seeing this at work, because what you are able to do here, I think could be done around the world; so we're going to show them the way.

There are two points on conservation that have come home to me in the last few days. One is the necessity for us to protect what we already have, what nature gave to us; and use it well. Not to waste water or land.

Set aside land and water, recreation, wilderness, and all the rest, now, so it will be available to those who come in the future. That is the traditional concept

KENNEDY:

of conservation. And it still has a major part in the national life of the United States.

But the other part of conservation is the newer part; and that is, to use science and technology to achieve significant breakthrough as we are doing today, that in that way to conserve the resources which 10, 20, or 30 years ago may have been wholly unknown. So we use nuclear power for ⁴²² purposes and power.

We use new techniques to develop new kinds of coal and oil from shale and all the rest. We use new techniques that Senator Magnuson has pioneered in oceanography.

So from the bottom of the ocean and from the ocean, we get all the resources which are there that are going to be mined and harvested. And from the sun, we're going to find more and more uses for that energy for the power that we are so conscious of today.

All this means that we put science to work. Science to work in improving

KENNEDY:

our environment and making this country a better place in which to live. So I want us to stay ahead.

You know that in the next ten years, I hope the people of the United States realize it, that we double the need for electric power every ten years. We need the equivalent of a new Grand Coulee Dam every 60 days.

In the next 20 years, we're going to have put in the electric industry \$125 billion to ⁴³⁸. And when we do that, this country will be richer and our children will enjoy a higher standard of living.

We don't realize that what we regarded as affluence 30 years ago, is now way down the road. Air conditioning, television, electricity, and all the rest, have changed the life of this country; and we're going to find the same extraordinary changes in the next 20 or 30 years.

I think we must do several things: First, we must maintain an aggressive program to use our hydro resources to the fullest. Every drop of water which goes to the ocean

KENNEDY:

without being used for power or used to grow or being made available of the widest possible needs is a waste.

And I hope that we will do everything we can to make sure that nothing runs to the ocean unused and wasted.

Secondly, we can meet our electric power goals by developing new means of making our vast resources of coal more competitive in the generation of electricity. Coal's an old fuel, and we're going to find new techniques for using it, which is going to make it one of the most advanced of all human fuel.

And third, it is well known here at Hanford, we must hasten the development of low-cost atomic power. I think we should beat the world.

By 1967, '68, 1970, in the Northeast United States where power rates are nearly double yours, we're going to find atomic power increasingly competitive.

And by the end of this century, this is going to be a tremendous source. Our experts estimate that power from all generated in

KENNEDY:

the United States, come from nuclear sources.

And fourth, we must construct efficient interconnection between electric systems, public and private, both within reach, as you've done so effectively here in the Northwest and between regions as has been proposed by means of a Pacific Northwest, Pacific Southwest intesties. Maybe we can get it for California.

Finally, we must not allow this technology to lead to monopolization, either by the Federal Government or by large combine or private utilities. We should realize the economies of size without jeopardizing the rights of our citizens to be served by the type of electric utility they prefer and also to encourage competition. These are the things we must do and many more.

This great, rich country of ours, prepares for a long unfinished agenda. But it's always had that agenda in creative times. And this is a creative time in our country and throughout world.

All of the trained and educated men and woman who are making our country over,

KENNEDY:

who are building a better standard of living for our people, this is a time when we wish to encourage that release of energy, human energy, which is the most extraordinary of all.

And therefore, I'm proud to come here across the United States, as President, to express our thanks to you; to express my pride in what is being begun here today, which puts the United States, as I said once more, in the lead, in a whole new area which can mean so much to people around the world.

And I think it's very appropriate that we come here where so much has been done to build the military strength of the United States and to find a chance to strike a blow for peace, find a chance to strike a blow for a better life for our fellow citizens.

This is a great national outfit here. I can assure you it will be maintained. And from the work we begin today, I hope the light would spread out, not nearly to those who ⁵⁰⁶ by electricity, but to all the world to realize that here in the United States we're moving ahead and providing

KENNEDY: security for our people and also a hope for a better life in this beautiful country of ours. Thank you.

SPEAKER D: I wish to introduce Dr. Gerald Tape at this time, who will take over now.

DR. TAPE: Mr. President, I think it is, indeed, fitting that the breaking of ground for this particular power facility should be initiated through the use of the atom.

We have a wand here, a pointer, for your use, which in this particular case has on its tip a piece of uranium from the first reactor placed at Hanford many, many years ago.

We have before you a powder, which I hope you will be able to hear a certain amount of the background clicking from the normal radiation which is present in the atmosphere ⁵³⁵, so on.

If you will take this wand, Mr. President, and approach the counter, we will hope to initiate the action of the crane on your left at this time.

(Film over).

MS. LITH: Well, how many of you were there that day?

MS. LITH:

A good percentage. There were 37,000 people from this area that attended that ceremony that day. And we have something besides this marvelous exhibit to show you today.

Thanks to those people who knew then that history was important and that it was important to retain artifacts, we have, and this comes on loan to us from the Washington Public Power Supply System, we have the wand that was used that day.

We're going to keep it in this box. It's a treasure. Some day when we break ground for CREHST, maybe we can use this same wand. We will leave this up here so you can see it.

I need to also ask how many of you attended that day? But I know Wally Ruff, and Hank, and several of the rest of you, worked on N. Could we see a show of hands of those of you who worked out at N Reactor? That's wonderful. Congratulations to all of you.

Our next speaker is one who helped to keep this center alive in the face of drastic budget cuts. He's John D. Wagner,

MS. LITH: manager of the Department of Energy, Richland operations. A position that he's held since July of 1990.

And he came to Richland just after the announcement of the closure of N Reactor. Mr. Wagner has overseen the change of the mission at Hanford from defense production to environmental cleanup.

It's really my pleasure to welcome Mr. Wagner here today; and we appreciate his taking part of this day on this glorious Saturday morning to share it with us. John.

MR. WAGNER: Well, I'm delighted to do this. I'm just sorry that I didn't have a chance to participate in the operating history of N Reactor.

The part of it that I have responsibility for today doesn't appear, especially to those of you who were there at the time of this groundbreaking in the design and construction of this reactor, it doesn't appear quite as exciting and glorious.

The presentation there by the President, I think, was very impressive. It's interesting to hear some of those

MR. WAGNER: themes and to think about what the situation is today with respect to the accuracy of his predictions.

Certainly, we don't find the same desire to utilize every drop of the river's water by many of our citizens today. And we didn't quite reach the 50 percent point for production of electricity by nuclear energy by the end of the century. It's kind of hard to believe that we're so close to the end of the century at the present time.

But I get reminded about this ceremony many times by another person who was there. In fact, I have a picture in the conference room next to my office of the crowd assembled on the platform for that ceremony.

And one of the people who was there was on the staff of the Joint Committee of Atomic Energy at the time the generating plant was started, and is today the chairman of the Nuclear Facility Safety Board. John Conway. And he makes frequent visits to Hanford.

And, of course, today he's on the side of looking at whether or not we are safely carrying out the program of the next

MR. WAGNER: step with N Reactor and the other nuclear facilities here at Hanford.

But he always asks if I still have his picture hanging in my conference room. As a matter of fact, his picture is hanging on the wall at the Tri-City Herald, also, because they have that, together with Glenn Lee in that gallery of pictures, if you walked up to the second floor there of the Tri-City Herald.

The things that we see, from a historical perspective, as we look at N Reactor, is that we see at the point the country made the decision to invest in another production facility here at Hanford, that the importance of this site to the national security was again emphasized.

As we were well into the period of the Cold War having gone from a hot war of World War II, that, once again, Hanford made another commitment.

But at this time, the country was beginning to think differently about some of the aspects of producing nuclear materials. The environmental concerns were

MR. WAGNER: such that it was realized we could do a better job of protecting the Columbia River as we produced nuclear materials for our national security.

And that concern that existed at that time resulted in N Reactor being designed such that there would not be direct cooling of the reactor, and therefore elimination of the direct contamination of river water by going away from the single pass reactors that had been the norm prior to N Reactor at Hanford. This was a major step forward.

And it also led people to work further on other technological developments that were incorporated into this reactor. The envelope was being pushed.

I think it's extremely impressive to compare what the United States did at that point in time with our adversary of that time, the Soviet Union, with the production reactors that they built, many of which were dual-purpose reactors; and unfortunately, many of which are operating still today. And it's also interesting to see that it's the expertise that existed here at Hanford

MR. WAGNER: that is today being employed in trying to figure out some way to improve the safety of those Soviet reactors that are still operating so that they don't represent a significant threat to the health and safety of the citizens of the former Soviet Union until such time as they can get alternative power sources and shut down those power reactors.

We see, again, in the upcoming budgets being proposed for the Department of Energy, a plan to continue to use that N Reactor expertise from Hanford...

(Tape inaudible).

(End of Tape 1, Side A, Beginning of Tape 1, Side B).

MR. WAGNER: ... will be designed reactors operating today; that is, many people have commented, bear an uncanny resemblance to the reactors build at Hanford.

I would urge those of you who are interested in history and who haven't picked it up yet, to read the book Dark Sun by Richard Roads, which details in great detail, not only the published United States history of the development of the atomic and

MR. WAGNER: hydrogen bombs, but also for the first time, reflects his study of the declassified archives of the KGB and other former soviet records to show what information the soviets were getting out of the United States at that point in time.

They don't have too many specifics about who provided the information from Hanford, but the comparison is pretty interesting.

N Reactor represented the culmination of President Eisenhower's program, the Atoms For Peace Initiative, in developing a dual-purpose reactor, and represented an important partnership between the civilian side, the Washington Public Power Supply System, and the United States government at that time, in the form of the atomic energy, as we moved to take a weapons production facility to generate electricity for civilian use.

We can also see in looking at this history in the time-line here, what has happened over time and which is a natural outgrowth of a democratic government,

MR. WAGNER: democratic small DM, sorry Doc, to recognize that we do have an evolution.

We do elect a Congress every two years, we do elect a president every four years; and there is naturally an ebb and flow of government policy over time.

We see that from going from the point celebration of the start-up of the construction of the generating plant in the early '60's, to the 1970's decision that we should shut down N Reactor because we had reached the point that we had sufficient supplies of plutonium for military purposes. That being overcome through the political process.

And then finding in the early 1980's, that N Reactor, again, had an extremely important role to play, to supply what was suddenly a major need to get new plutonium supplies to be able to expand, once again, the national defense during the 1980's.

Suddenly, however, then, by 1987, we see the tides have turned again. The effect of concerns about safety after the accident in the Soviet Union with Chernobyl, ends up

MR. WAGNER: with a decision that N Reactor should not continue to operate.

So we're experiencing that again today, as we go through the process of deciding whether we will be constant and continue the commitment that was begun in 1989, with the agreement between the Federal Government, the Department of Energy, the Washington Department of Ecology, and the Environmental Protection Administration, that we should finish the job, that we should finish cleaning up what are the aftereffects of the nuclear production program. And it's going to take considerable effort over a long period of time.

We very much pretty appreciate the support that Congressman Hastings is providing to that, as we go through the debate, last year, this year, and we will continue to do every year, unless this program is put on to a different funding basis, a longer-term funding basis.

I'm not overly optimistic about that. So I think that all of our attention is going to be necessary. And I think that that also

MR. WAGNER: reflects another part of N Reactor's history; and that is, the public, or the stakeholders as we tend to call the public in many ways today, is extremely influential in the decisions that ultimately get made.

The design of N Reactor resulted from stakeholder pressures. The fight for the Hanford generating plant resulted from stakeholder pressures. And a desire to diversify Hanford beyond strictly a military production mission.

Major studies were done on upgrading N Reactor, and a lot of work was begun to reflect the concerns of stakeholders after the Chernobyl accident. And today, the stakeholder concerns drive much of the direction we go with cleanup.

However, I'm very impressed with the work that's been done by the Environmental Restoration Contractor Team, CH2M Hill, Bechtel, IT, and the other contractors that are working with them to take the N Reactor project today and to get that done with the most conservative expenditure of taxpayer dollars as quickly as possible.

MR. WAGNER:

That project is ahead of schedule today. It has the potential to run well below the original budget estimates that we had for it. And we now see the possibility that, a year from today, the final shutdown of N Reactor in placement in safe storage will have been completed. That's a bit of a stretch, but I think that that is definitely achievable.

Finally, I just want to thank Gwen Lith, Sharron, and Darby, and all the people that have worked both on this exhibit and on the development of this new concept, to be able to continue to recognize the important history of the site with the development of the new Columbia River exhibition of history, science, and technology. The CREHST project.

So we're going to need your support for that. That is a move to go away from strictly support from the taxpayer dollars, but to expand this concept. And I think all of you who have had such an important part in the history here at Hanford have a real stake in where we go with this.

I'm very concerned that we succeed with it. We've got some wonderful people that

MR. WAGNER: are getting it organized. And I just want to give them all a round of applause for getting this exhibit where it is today and getting this whole effort kicked off. So if you'd join me in that.

MS. LITH: I feel a little guilty. Both of these gentlemen are subjected, oftentimes, to undue pressure and political heat. And I had no intention of putting them under this intense light today.

I know they've felt that kind of pressure before, but they were supposed to have been our guests and comfortable today.

A very special guest this morning has also lent his support in saving this center. He's no stranger to the Tri-Cities. He's Richard Doc Hastings, our Fourth District Congressman, who's been an advocate for Hanford and especially its privatization's effort.

Doc serves on two national security subcommittees, as well as two national resource subcommittees. He's been active in business and public service in the entire Columbia Basin.

MS. LITH:

Doc, we appreciate you're taking time today to join us. And that will introduce our Congressman.

HASTINGS:

Well, it is a pleasure to be here today. I've lived in the Tri-Cities area since 1947. I've always lived across the river in Pasco in the business that my dad started that I got involved in.

We did some business, of course, with the Hanford area over the time and still do; but I never had an opportunity to work out at the Hanford area. But you learn a lot living in the Tri-Cities about what has gone on here over the years.

I was going to ask the question that Gwen asked you, how many we're here in 1963 for that dedication, one of the 37,000 there. At that time, I was at 98 California. Otherwise, I probably would have been part of that 37,000 people here that day, too.

But my being there, kind of ties together, because we were involved at that time in history, if you recall, in a Cold War that we didn't know what the outcome would be at that time.

HASTINGS:

Keep in mind, it was just a year before the time that the president was here that we had the Cuban missile crisis.

The USSR and the crew shift was certainly, at that time, something that we couldn't anticipate what would happen; so the N Reactor, obviously, played a very important role as a dual reactor to provide for us, what I think, were the defenses that eventually led to the demise of the Cold War.

But let me back up talking a bit about that, because in my capacity as your Congressman and moving across the country on a temporary basis to live in Washington, D.C., because that's where the job is, it's also the center of the history of our country.

And I happen to enjoy reading about the Civil War. And it's been said by Civil War historians that you will never understand what our country is about unless you at least have some understanding of what went on during the Civil War.

And I mention that, because every time that I don't come back home, about every

HASTINGS:

other weekend, I try to go out some place around that part of Virginia and Maryland to see a Civil War site, Antietam, Gettysburg. Everybody has to visit Gettysburg at some time.

But there's so much history around there, trying to learn what happened during that difficult time 130 years ago.

And keep in mind, at that time, Washington was only a territory. Oregon was a state, but Washington was only a territory. So it's hard, at least, for me to grasp some of that history because we weren't around at that time.

But I make that point about the Civil War, because it does relate to where we are, then, in understanding the importance that various people played in keeping our country together during that difficult time. And we have gone through other wars, World War I and then World War II.

And I have found, in my time in the Congress, that one of the difficulties we have in talking about Hanford and the role that it played during the Second World War,

HASTINGS:

the difficulty is in direct relation to how far we are away from the Second World War.

And I say it from this standpoint, keep in mind: We're not for the Second World War. Something that we had no control over, obviously.

This part of central Washington, in all probability, would be what it is outside of this area, and be throughout central Washington, a major agricultural area.

Grand Coulee Dam had already been built. The plans were made for the irrigation districts. This Hanford area in Benton County was already under cultivation.

But because of the Second World War and because of the decisions that were made by those in power, we needed to get to a point where we could compete with our enemy on atomic power.

And Hanford was chosen because it was far enough inland where the Japanese couldn't come over and bomb it. And, secondly, we had an abundance of water. So as a result of that, Hanford was built. And we obviously won the Second World War because of that.

HASTINGS:

We're here to talk about the N Reactor. And John alluded to the fact that we are involved in a Cold War at that time. The N Reactor was a dual-purpose reactor. But we won the war Cold War. And we won the Cold War in many respects.

And I think history will look back to say, because our country and our capitalistic system could develop the necessary defenses in order to beat a system that, frankly, couldn't keep up with us.

And as a result of that, when you look at 1991 at Christmas day when Gorbachev resigned, and the demise of the Soviet Union, I think in many respects, it came about because of what happened here at Hanford and other sites. And, certainly, the N Reactor played part of that.

And, of course, the other half of the N reactor was to provide for power. I noted that President Kennedy talked about it in terms of atomic power. We would say that's nuclear power in this day and age. But nevertheless, it's something.

And he also made a statement in

HASTINGS:

that speech, and I don't know that it's accurate in a sense, but he said that in ten years, I think, the demand for electricity would double in ten years.

I think, frankly, its gone up at a higher rate than that.

But the sad fact of the matter is, that since Three-Mile Island here in 1979, there has not been started in this country a new nuclear reactor in order to ride for electricity.

And yet our demands for electricity have grown much, much greater or slightly greater than the population growth. And it will continue to grow, in my mind, because of the change in technology.

The president also said, now keep in mind this was 33 years ago, or 32 and a half years ago, that there would be demand for electricity beyond what we know at that time.

And I noted that, obviously was probably a reporter of some sort, was using not a word processor but a typewriter to type up the story.

And now we're into computers beyond

HASTINGS:

what we needed, computers need electricity, of course, to make that work. We're into the information age. And the demand for power is going to increase.

And I think the farther we get away from Three-Mile Island, the more that we'll understand that we need to get back to nuclear energy, because it still is the cleanest energy. And it's the energy that can take us farther into the future, mixing in with our whole mess -- or not our whole mess, our whole mix, I should say.

But somebody else would call it a mess, but I'm certainly not going to be one to say that.

And so that brings us, then, in a way, to where we are right now. We are engaged right now, virtually as we speak, on saving and trying to save the most advanced nuclear reactor in the country, and that, of course, is FFTF.

We had a meeting last week with Secretary O'Leary. I, unfortunately, because of the demands on the house floor, didn't quite get there in time. But I sent a

HASTINGS:

letter and had a call into her to try to make our point, that if you look at, objectively, about FFTF, it really ought to be continued on. Hopefully, objectively, good science and good reasoning will make that happen.

And I'm frankly of the opinion that the longer we can postpone the decision on that, the better off we are, because the evidence mounts in our favor.

In 1993, when the decision to shut down the reactor was made, I was advised by a number of people, and people here in Tri-Cities don't try to pursue starting that, but I have to tell you, right here without any qualifications, had it not been for individual members of the American Nuclear Society that were talking to me on a regular basis, this probably would not still have some life left. So I hope, objectively, that we can still make FFTF happen.

There are some things that we can pursue legislatively that we're going to do, we're going to pursue legislatively. And I'm not certainly willing to say that this issue is completely done.

HASTINGS:

And finally, let me talk a bit to pick up on what John was saying about the challenges that we face from a budgetary standpoint in building the budget for this area.

The authorization for Hanford comes from the Department of Defense. And yet the appropriations are administered by the Department of Energy. You have kind of a mix together.

I believe, and have always felt very strongly, that one of the primary expenditures that the Federal Government should make at any time, is expenditures in order to protect our country.

That's what, by definition of the United States, to provide for the common defense, to bind together. And even though, with the demise of the Soviet Union, and we now have no one country that is challenging us, I don't think the world is necessarily any safer.

In fact, you have rogue countries around there that always like to take the potshots at the big guy, and we are the

HASTINGS: big guy on the block, so to speak.

So we have to be very cognizant, and we have to provide for the common defense. But with that, you get a squeeze on this part of the budget that funds the environmental cleanup here at Hanford.

And my argument is one very simply: We take care of our veterans, because in many cases, they gave their time, their life, and many of them were injured. And we watch out for them as we properly should.

Well, this area, to me, is, from an analogy standpoint, is very much the same: We were part of that winning effort, and I think is very important. And, indeed, the role of the Federal Government to see that we clean up those decisions that were made in the past here at Hanford. But we still have to fight that battle all the way along.

But what we are doing, and I think a change that is very positive change, is to get away from what used to be the old Department of Defense model of a cost plus. It was okay during the Second World War, that when you needed something, go out and

HASTINGS: build it and we'll pay you.

But we've gotten away from that. The taxpayers demand more. And so as we move more towards privatization and deregulation out here, I think we can decelerate what needs to be done in a cost-effective manner.

And I think as a result of that, and this indeed is the future of our area, is that there will be technology that will be spun off, that can be used in a wide variety of ways that we probably can't comprehend. But as a result of that, that's what the future, I think, of our area is.

So the challenges are certainly very much ahead of us. But as President Kennedy said, there's challenges, our history is made up of challenges, and we always look ahead; but we are, indeed, a creative society.

As long as we can maintain the freedoms that we have, I think that we will certainly go into the next millennium very much in a positive way.

But what we are here all about is that we have to remember our past, just like we have to remember the Civil War, we learn

HASTINGS: from that. We find out the character of our country by understanding the Civil War.

We have to understand what we went through here in our small part of the world and how important role that played.

We are here today to honor and start the remembrance of winning the Cold War and talk about nuclear energy with the N Reactor. But we have to remind ourselves, from time to time, how important this is, as we go into the future.

So, Gwen, with that, I want to thank you very much for having me here. And I want to congratulate you and everybody for taking the initiative to make sure that we can remember what our past is all about here in this area. Thank you very much for having me.

MS. LITH: Thank you, Doc. And I would like to present both Doc and John Wagner with a poster. You saw a great big rendition of it as you walked in. It's our N Reactor poster.

And for those of you that work there, don't count the dots. I think we're off just a few, and someone brought it to our

MS. LITH: attention the other day. This is a stylistic 1950's poster.

But we're going to have a poster signing celebration right now. And I'd like to give both John and Doc a copy of this poster.

And I'd like to be able to do that for all of you, but as Mr. Wagner indicated, we are no longer -- we are part of a separate nonprofit foundation. That makes it pretty clear. We're selling these for \$4 a piece, and it's actually a contribution to CREHST.

We have them right out here at the table. And, Hank, I hope you'll stay around too, as the designer, that you'll sign some of these. And Wally Ruff, who was manager at N, all of you who played a part in this and who came here today to commemorate this wonderful, historical event at Hanford, I hope you'll stay and sign and enjoy. We'll turn the lights back on so you can actually see the time-line.

Thanks again for coming. And bring your relatives, your friends, and your neighbors back to see us this month.

(End of Tape 2, Side B).

Ask Lee Berger about Spelling for ReComplex

HAS1.2001.024.2

Gary Busslem

ORAL HISTORY

FLOYD FLAKE, G.E. GREGER, WILLIAM M^CCREADY

TOM MARCEAU & ~~2~~ MODERATORS

JANUARY 11, 1996

Michelle Gerber
~~Wrote PDF~~
~~Book~~

Tape is too low to be able to understand the first part of it.

I never heard anything like that. But it was a different process, a whole different process. Continuous flow.

A bunch of the old timers with Bob Dell took, were not happy with the idea. It was just a matter of that radical change. More that they were scared of.

It seems that they had a solvent.

There are no organic solvents. They're not explosive.

But that was a great step up.

It was, yes.

PUREX, every chemical plant in the area and in the world now, separating ah, not only in that material, but in many others

Then we had something else that was different in the power part of it. Ozone generators, and this stuff was deadly. And so they set up a school out side, when they were building REDOX, they had a school and all of our instrument technicians had to go to that school. And it was a different way of thinking.

remove
block →
on Redox
& ReComplex

Yea, yea, that's right. There was a very fundamental difference when you're running something where material is being processed every minute instead of where you were doing in batch by batch where you had control where if you had some problem you could stop that and play with it until it was right. Yea, it was very different.

I would like to go out and get sandwiches for all of you and coffee if you have the time to stay and are interested in staying.

Stay?

Would you mind doing that?

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Flake, Greger, McCready

No

Do you realize we were just warming up?

We are going to do tag team. So everything you said you are going to have to say over again in the right sequence, the right order, the right conversation.

R E D O R I forgot something. I started as a trainee ^{Just trainee} ~~Raydon~~ ^{Raydon}. I'd been in Washington school and like that. And they needed a technician or a mechanic, is what they called them then, on shift. I was working shift and I was nothing but a trainee, by myself. Not when we started ~~Raydon~~ out there, there was a technician and a trainee together working-two men, and they got more complicated then as they got on.

Yea, yea. When something was ^{second?} _____ at every site, you wanted to know what was happening.

Yep. Yep. So that continuous operation was, I don't know the word for it, not threatening to people, but it kept them maybe a little more worried.

Well, yeah. All of the, well, most of the operators started out and never operated any kind of a chemical plant. So all their experience was what they had had in things like TNT?. Naturally that would be different. I'm sure that they were a little bit antsy about it, but I had not thought of it, but that might be true. All of the plants that I have been involved with earlier on, at Dupont, had been the kind that were constant flow plants. I worked at T&B with the first batch operation that I had got involved with. So I was not quite concerned about having a process plant all the time.

There was one building out there, though, that scared me, and I got a chance to go to that building. They wanted me down there. And, I said no way. And that was 2345.

I was going to ask that.

Did you want to start with people stating their names?

I don't know if you already covered that. I'm just now coming into the circle. So I'm not trying to lead anything. You guys are already on a roll, so if something comes up and I have a question I'll jump in.

What was the main fear you had about 2345? How did that really... "I just don't want to go there." What was that reaction from?

We had one part of that building that was called the ^{recomplex} _____, and I dropped my wrench, or, I dropped my pliers. And I always had an operator or two stand behind me, and I'd drop it and go to reach for it, and they would grab me, because the bottom of those _____ were full of slush and mud, which was basically acid. And this guy explained to me, "That pair of channel locks that you just dropped," he said, "in a few

days will be just like ice picks from the acids." He said, "If you ever punctured your gloves while you had it in there, you'd had it!" And it was true, you know. It was scary.

So that was the corrosive chemicals that were _____?

Oh, yea.

It was the plutonium.

Plutonium. This ~~recluplex~~ ^{recomplex}, they're reclaiming shavings and waste from the bomb parts that they made, buttons and stuff. It was pure plutonium. And they had one flare-up down there where a small tank siphoned stuff from the bottom of the hood of a nuclear excursion, three men got out of there, they took a pretty good dose of radiation, and as far as I know they are still around. But they seen the blue flash.

Did you do any monitor work in that building?

Not in the 200 Areas. I had all mine in the 100 Areas. I remember when 200 Area employees were sent to the 100 Areas until the reactor was taken care of. It was really a reactor that was going off and on.

Plutonium will even chill a piece of paper, but you don't like to get it into your body. It is a heavy element. And they use to tell us that 50,000 disintegration per minute, which would be about 1/2 of a microgram or something, if you got that into your bones it would kill you. But they since have learned, over a period of years, it might take you ten or fifteen, since then they learned that it would take a heck of a lot more. There is people still walking around that have got a lot of it in them, so that. It is not good stuff to get in to.

No.

How do they prepare you for going into working at REDOX or some of the other plants? What kind of background training do they give you? What were they telling you about what you were working with?

Well, if you worked like I did in B Plant or T Plant, you knew what you were working with. But, you had to learn the instruments of the new process. And B Plant and T Plant were what we called batch plants. They ship from one tank to another, you see. But in REDOX, it was a continuous flow. The stuff went through columns. And we had what you called an innerphase. You would have stuff coming into the bottom of that column and you would have stuff going down, see. And you would separate the plutonium and it would go off, you know, to another place where it would be reworked. It was what we called a continuous flow. And it was different, absolutely different. We had we called innerphases and specific gravity instruments and it was just different.

Flake, Greger, McCready

Basically, in places like REDOX and PUREX?

Yeah.

Nobody, ever, was in contact with anything. It was all sitting there with six or eight feet of concrete around it. So they knew what went on in there, but they didn't see it, and they were not close to it.

Yeah.

All the samples were taken out to remove things and so on.

And then a long towards the end they built a building towards the end of B Plant. And we took this waste from the tank farms and took the cesium out of it and the strontium and encapsulated it. And you can stand there and watch this through these windows, but these lead glass windows were that thick, see, and put it in these capsules and clean the capsules, they would weld it all with remote control, put it another capsule and weld it up, and then it would go in a pond. You could walk in there and look at these, and these things were glowing in the dark.

That was to control the waste or was that to hold on to it because there the cesium capitulating, they sent that someplace else?

I think what you are talking about-they found some interest and use in strontium a cesium. So this was a, those were natural fishing products that come from the reactor carrying on. So they were recovering those; before they had been just part of the waste stream with all the rest of the waste.

So they consciously selected these elements out having learned there was some value from them, but they didn't do anything with them here at Hanford? They just held them at the site?

Yeah. This was part of a research some place or another. Probably...

Actually, by taking this out of the waste down in the tanks, the cesium and strontium, it made that waste less radioactive. It cooled it.

Yeah. Once upon a time there was hope that there would be uses found for a number of those things, which would really simplify the business of handling wastes.

Cesium, for quite a while, was used in hospitals and other places, too. Also, to radiate food. But people don't like, although a lot of other places, other countries, use to kill the bugs and give it a better shelf life.

Flake, Greger, McCready

How is the reactor situation in the tank finally taken care of? What did they finally have to do to stop it reacting like a reactor? You know what I mean. We talked about in the 200 Areas the tank

Oh, well, by taking that cesium strontium out of it cooled it down a lot.

They were able to do that?

And this pond that they have in this building, that you look in, it's cooled with refrigeration. It keeps that water cold.

Gregg, we haven't talked much about the 100 Areas. Can we kind of talk about when you got there and what you actually did?

Well, I came here because I had a friend in college who had been hired to be here. And he was radiation moderating. And I stopped in to see him and said, "I'm looking for a job." And he said, "They're hiring." I didn't know what that was, but I became one with training. In those days, once you had training on the day shift, each of the shifts on the individual reactors would have one monitor on it. So you had to do a variety of things, check on contamination that might-that needed to be kept in certain conditions. There is one thing was alluded to a little earlier, for example, we have routine surveys that had to be made in the building as well as outside of the building. And there was a period of time when the monitor of the shift, prior to me, told me, "We are finding radiation outside of the 105 Building. We can't quite understand what happened. We thought maybe there was some accident when they were getting ready to bury something." And this went on and on, and further and further, and we began realizing it had to have come from somewhere else. And finally, some monitor had the foresight to take a towel and rub the top of a car and found that there was a reading up there, too. So that was the fallout, I believe, from the Chinese effort.

Oh. Oh.

Which 105 Building were you speaking of?

I think, well I was at 105 after that time. But, it affected this whole area to some degree.

But, what year did you come here?

I came in '50.'

'50.'

So I was after the early efforts you were talking about.

I came in '48.' I left Vermont in the snowstorm of 1947. And, I drove like crazy across the country thinking I had to be here. After having come out of the Army, you know, you have to be here at a certain date. And when I got here nobody cared. They hired me, and I sat in the Water Plant out there for about two months waiting for a clearance.

Were you involved in monitoring for most of your early career?

Yes, about five years.

Did anything change in terms of the equipment used or the things that you were monitoring for? Was there an evolution in the awareness of how monitoring played into protection of workers?

There had been a lot of changes from the start-up to then because some of the early instruments were very heavy and awkward. The Beckmans, which were many pounds to carry, when I was involved the principle monitoring instrument was the 'cutie-pie,' the CP, and that was the one that we did most of our measuring of radiation levels. The one, which I thought might be of interest, we have alluded to it a little bit here, as we were saying in the late '50's, there begin to be an extreme push for maximum production. And the technical people began looking at the situation where, if a reactor shut down and it was kept down more than about 20 minutes, then it had to be down for at least 24 hours. And they began worrying about all that loss of productivity. So they thought maybe they could devise a way in which the offending tube that had a swelled slug in it could be discharged in that 20 minutes. And, that was fairly tricky. You had to have your crew dressed at the door of the rear face but not in, and the front crew on the front elevator, and then the reactor would be shut down. And then we would go in, and we would know the header it was on. But the monitor had to go down the row and find the tube nozzle that had the highest reading, and that should be it. And if that was it, and sometimes they were hard to find, but usually quite easy, then the water pressure had been taken down. And all this communication had to be verified very closely because this was fairly critical.

All this was in that 20-minute window?

Oh, yes. And, they had designed a special, instead of the usual tip-off, which would just take the slug and drop it down, they had kind of a big funnel that we put on. Then we unscrewed the cap, got out, closed the door, and then the front face would open that one and charge dummies to push this out, if possible. And if they got it out, then we would go back in, put the cap on, and it would start up. Many times they made it.

Now, a technical question. What kind of a walky-talky or telephone were you using to get the communication?

They had pretty good communication. They weren't radio. They were, ah...

We had phones. We plugged them into the wall.

Right. You know more about that than I do. They were fairly reliable.

So the facility was wired. You just had tap-ins that you took this phone to?

Right. The chief operator, in the rear, always had the mike. And, he had to keep up communications. And that, of course, was very important.

Ok, now, I heard one story about you guys in the 100 Areas. You were back there, on the back of the reactor doing something, and you run the elevator up and all of the radiation alarms went off. So you run the elevator down and go out of there. They come back in and look around and there is nothing. You go back in and get on the elevator and start it up and everything goes off and it gets hotter than heck. Well, the engineers had a garbage can tied to the bottom of the elevator with a slug in it, and they were running tests on this. When you guys went in there to run the elevator up, you brought that slug up with you.

I'm glad to say I wasn't involved with that.

When you would be doing the quickie?, would the people in the rear faithfully dressed, like in masks, or were they....

Oh, yeah. Double suit and masks were recommended. And, most of the time we did. If everything went well, you come out and everything was fine. And the start-up, having been down that short of time, was relatively fast, and within a couple hours could be back to the same level they had been. So there was some attraction for doing that. Speaking of your kind of situation, I was involved in one. One time they had a rupture, a swelled slug in one, and they couldn't push it. So one of the techniques that was done was; let's get rid of all of the other slugs behind this one by going in the rear face. Having that tube open, going in with a spline, which would fit between the two ribs and it had a little catch thing. This little catch would go in front of it, and they would begin to move it a little bit, and then they would get out and pull it remotely with ropes and what-ever. I came in on swing shift, and we were told that they had been working on that all day, and it just didn't work. They were going to take it down. We should go back there and retrieve the equipment. I was monitoring there and the operator grabbed this spline, which was still in, and began pulling it out rather quickly. And all of a sudden my instrument went off scale, first scale, second scale. We headed for the door to get out. They had left this situation with the spline under a slug, what they had been trying to do all day. I got my weeks exposure in that evening.

How about the regular checks, what would you go around and do regularly, every shift? There were certain areas related to the front face and the wash-pad of the area where work was being done, at very low levels of radiation, so you had long time limits. And when people are inside, they are wearing SWP clothes, but when they step out they change. So we would have to be checking the step-off pads, and the corridors, which should be cleaned, and periodically the lunchroom needed to be checked. So those kinds

of things went on continuously, whereas if you had a special job to do, then you went with the people and either stayed with them, as you would during an outage, or if the situation was such that it would not change, you would give them a time to look for the duration of the job.

What about outside? What would you check outside the building routinely?

To be sure that no contamination had been spread. So if it was a cement surface, you could wear clean shoe covers and walk across it and check them. Or you might even bring in samples of whatever it was. There was a fair amount of varying into burying into burial trenches of contaminated waste. And those operations needed close checking.

Yeah, you guys would go around and check all the hand counters and foot counters and every person of the shift. And then I would get notified that this needs fixed, this needs fixed.

The hand and foot counters were kind of an interesting improvement, because the person could go in an step on this thing, put his hands in and trip it, and he was counting both your feet and your hands. And they had a few surprises. People coming from home, checking themselves, and finding a reading they shouldn't have. I think that was the case of the patrolman who had inadvertently picked up a wrench where he shouldn't have.

Was in that of May 1951, that patrolman?

Probably, about then.

That was sort of famous, wasn't it? That was in the Tri-City Herald, wasn't it?

Yes.

What did happen?

Well, they threw this wrench out in the garbage or something behind the building. It shouldn't have been there. It should have went to the contaminated waste and went for burial. But he picked it up, "Oh, it's a nice wrench. I'll take that home."

Oh, I see, a little scavenging.

Yeah.

And it contaminated his carpet and his home and everything.

Right. I took a tour out there about two or three years ago. And we had some people from Exxon, not Exxon, it was Exxon, but I forgot the name of it now. And when we got into B Plant, and the guy came out he ran a scale, and they knew he was contaminated.

And they held the bus and the people and they took his shoes and through the processes they knew they decided it was uranium. And, they knew he didn't get it there. And so they just kept his shoes, and he went the rest of the trip without any shoes. But he had it and brought it from that Plant, brought it out with him. And he asked about getting a new pair of shoes, and they said ask your own management. We didn't do it. I don't know if he admitted it when he got back or not. He must have got out of the Plant and called Exxon.

If you were doing this for five years, what did you start doing after that?

I was being a supervisor. And then when General Electric ended radiation monitoring, and then General Electric came in and there was a big shuffle, we were talking about others, and I was given, or offered, a job working for Bob Vail when he took over the K Areas as his measurements specialists. So I began doing more administrative work in a reactor plant. And then when they began shutting them down later, I went into data processing downtown, which I should have done sooner.

Knowing what you know now. If you had known that earlier.

The processors improved fuel because the fuel that they used in the reactors weren't very good to start with. They just cast the material and then machined it down. The size of the crystals wasn't uniform and stuck them in the reactor and got heat and everything and it would start to get bumps all over them. But with the proper heat-treating worked later on they were able to improve the fuel elements.

One of the very first basic elements of data processing I was involved with, I was still out in K, that they decided that we really ought to know all the tubes in the one reactor that were charged with the same batch of memo. So that if you begin getting one or two failures in one batch, maybe you better discharge off that batch. The way to keep track of that was kind of crude. But they had data cards, IBM cards, with all of them punched with the batch number, and then when that was charged, a tube was charged on the front, the chief operator was supposed to write the tube number on that card. So therefore, we could associate the two and get them into the machine and finally have some good information. That is pretty crude in data processing.

Now days they go to computers, automatically pumped in. Lots of cards.

Right.

I'm going to suggest, since the food is here and everyone is kind of looking at the table, we'll take a few minutes and...

We are going to make some more coffee.

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I think as an instrument man, we got to travel all over out there. Our _____ did, too. But we got to go places that they didn't need an _____.

Incidentally, Tom Barsole is the archeologist here. And he has done a lot of work with the Indians and Pueblos and all different sites as back in Wyoming and Mexico and other places.

He run the golf course out there in west Richland.

Uh-huh.

And I would go there and eat a lot and talk to them. But I never did, after I left the lab, I never did know what happened to him.

Are either of you associated with the rather serious accident where the man got very seriously...

McClusky?

Yes.

Yeah. A week before that happened I tried to get him to transfer. I was down there at Recouplex 2345. And I had worked with him in B Plant years and years ago. And I says, "Mack, get out of here. Transfer." And he says, "Oh, Floyd, it would take me a year to get out of here." And he says, "I'm going to retire in a year." He was real close to retirement.

He was 87 years old when he died.

Yeah.

So he had a tremendous burden of radiation in him.

Yeah.

In fact it blinded him, almost blinded him. He survived it and died a reasonably natural death.

But, I guess he was probably right. If he put in for a transfer and they didn't want to let him go, they would have stalled him and stalled him.

I'd forgotten. I knew at one time what had happened. He was working in a....

Well, we had been on strike. And this column had set there quite a while. And these columns down there were glass. You could look through the hoods and look at them. And this is where they collected their plutonium, on these little buttons or things they had

in there, saddles. Well, when they get it all collected on there they would put some acid in there and flush it off. And that's how they would get their plutonium that they were reclaiming. And then they would concentrate it down and then they would melt it into buttons, pour it into buttons, see. And it, that building, would give you the creeps, that 2345. It was a place that anybody that had been out there very long didn't want to work.

Did you understand what happened? In his case, what went wrong?

I don't know. Whether they put their acid in too fast or.....I heard it was too concentrated at the scales.

They also said the iron exchange had broken down by setting so long.

Uh-huh.

And maybe it should have been changed earlier, too.

Yeah.

Back to that other case we had been talking about, where the tank became, in essence, a reactor. What fascinated me, it was apparently right at the critical mass. Because when it would go on it would heat up, it would expand just a tiny, tiny bit, and it was no longer critical, and it would shut down. So it was yo-yoing. Is that your understanding?

Yeah. And picking that stuff up, that was over flowed, into the bottom of that hood. And one of the guys that was on shift that day, had just changed the charts. We had to go down there, from REDOX, and change the charts in Recouplex. And he got out of there and went back up to REDOX and that thing happened. He went on vacation, and we didn't think he was coming back. He went on vacation and used three weeks of his vacation.

You didn't know if he was taking a dose with him or not.

Uh, no. I think he was looking for another job.

Well, it is harder for people, for maintenance to work in a facility like 2, 3, 4, or 5, or in a laboratory, because the laboratory people didn't have to prepare this stuff. And they were pretty well in a routine of their own job. Then when you had something go wrong, you got two guys and so if you were just working there it wouldn't bother a person too much. It was when you got in trouble, it was getting someone else to take care of it.

What kind of a turn over rate was there at a lot of these Plants? Was there a fairly high turn over? Did people stay in the same place for along period of time?

Oh, yeah. I think they stayed.

Well, I worked in the fuel group, I worked in the reactor's building, I worked in the chemistry group, and I went to Battelle when they put me in finance. So you could change a lot. And I didn't know where the debits went on the left side or the right side of the book. But I had been involved in time-lining construction for N Reactor, and I could do pretty well as far as the estimating concern in _____ charting and all the things they did. And so when I got to Battelle they said we were selling our work as much as we can. And the estimates, engineers and all of us, under estimate costs just to get the job. And, then of course, Battelle, if they couldn't do the job at commercial outfit they would have to eat the cost. They said you belong in financing. You work with the engineering group there. And sometimes go on sales trips. And then the main thing they told me was that they had to 10% all their estimates. So you could move around a lot. Once you got pretty well adapted and excellent areas, like your areas, they couldn't bring anybody in right off and replace them without _____.

And then when I'd get called to the lab, I'd have to work on things that I had never seen before. So I'd third degree the people, the operator or the lab technician. A lot of times I would just luck out and I'd say, "Hey, you got a fuse blown here." And we would put a new fuse in. Or maybe it would be something simple. And I'd say, "Oh, look. You aren't plugged into the wall."

You liked those kinds of problems.

Well, yeah.

When you come to do a job, the person that's in the job, he can give you enough information, sometimes, to make it a lot easier. And that is where in the Air Force when ever you got out of an airplane you had to write out a form that told every little thing that went wrong or didn't work right. And then the guy would come along and he would know what to start with, at least. And if you didn't fill out that form, you were in real trouble.

I got my introduction when I was in training in H Area, very quickly, the first week. In one of those situations where in charge of discharge. I think maybe tried to remove a ruptured slug that was a slug loose on the front face. We would walk down the corridor from our office and put your instrument out and then go off the first scale. They finally resolved it by putting a lot of lead shielding on one of the trans-stackers's high-lifts. And moved on up with a long pole and was able to get it and drop it into a barrel of water. *Give it some shields anyway*
This took several days to get to that.

But when they had the weapons section down at 2345, and they were machining the buttons and the bomb parts and stuff like that. And I had a top-secret clearance. I would go to work down there and they would put me to working on an instrument. And they would say, "Instrument technician, we are going to dinner. It's our lunch time." So I would keep on working. But they would leave and I would walk around and try to figure

out how in the heck they were using these things to make a bomb, you know. And now they would never, never leave anybody alone in that place. They would have a patrolman right behind you.

They have ~~no rule now~~ ^{a rule now}. Nobody can be in the presence of plutonium alone. It has to be a buddy system, see.

When did that begin?

When did that change take place, from you being a lone in the room, when the guys left you alone, and that it wouldn't happen anymore? What caused that change?

I think it started happening when China began to become a power and we decided to keep on making bombs so we could fight two wars. It probably was in the '60's. And they just, you know.

Well, you see you were cleared and had the level of training, they probably had enough confidence that you weren't going to go in there and steal plutonium or something. So you were probably not too much different than the normal workman that worked on the line.

Yeah.

What were the concerns? For you personal safety or for stealing plutonium? Where do you think that would apply?

Probably stealing plutonium, you know.

That is one of the concerns that brought on some of the heightened security. So I was curious if there was some point in your careers when you noticed the shift between 'well, we use to do it this way before and now we can't.' I'm trying to figure out what....

You know now security has been relaxed so much so that you can bring contracts and subcontracts with others to do the job. But what anything they want to protect they put in a double exclusion area, plutonium included. So that has opened up a lot of the Plant, too. You can go just about anywhere.

You know I'm trying to write some of the history of the PFP right now, and I have noticed that they are having equipment breakdowns all the time.

They have always had trouble with that.

It is just like constant. And you think, "How did they ever get anything done?" It is always something. The reports that I'm reading, half the report is the stuff that broke

down that week or that month. Well, is it the intense radiation field that these things are sitting in? Is that causing them to fail? What is going on?

But, you go buy a stereo now, unless you pay an awful lot of money for a new stereo, you are not going to get anything but junk, even though you have spent quite a bit. And you look at it and turn it over and it's made in Malaysia and like that.

Oh, yes.

And I bought an IBM computer for my grandson and myself. And I turned it around and I thought, "Well, I had better get the serial number and everything off the back of this for my insurance records," and all the parts were made in Japan and assembled in this country.

Of course, a lot of this happens.

And almost anything you buy now, it's made in China. And I don't understand this most favored nation that China has. I don't understand it.

It seems like there should be some opportunities for people who know languages and stuff. I'm sure you had the experience of reading the instruction of some things made there that are badly done.

Yeah.

In their translation to English.

Some of them are just comical when you start reading through them, the way the instructions are translated. Didn't they have an interpreter or an editor someplace when they were going from whatever language to English? Or you buy something now and the instruction booklet is 400 pages long but it is 100 pages of English, 100 pages of German, 100 pages of Spanish, and it's made for an international market.

I'm 72 years old and I own a Nintendo set. And I play that sun-of-a-gun. And I never cease to be amazed at this Japanese that thought up this Nintendo and this Mario I and Mario II and Mario III, because I love 'em.

I've never played it.

You never played it. You can get hooked on that.

There is more computing power in those Nintendo machines than in your earliest computers.

Oh, yeah.

Just to play a game, there is more power and more logic and more computer...

Oh, when I was at Battelle they had a computing room and they had to refrigerate system under the floor. And all the machines were huge machines and they had radio tubes in them and they had to cool them. My God, I've talked to Guthrie and they said you could probably do the same thing now with the computer you got on your desk, you know. And Wang computers, for a while, were tied in to a central system. But that was where you take turns using them. But by the Boards Old Wang kind of went down the tube because they came out with the self-contained units that you put right on your desk. You didn't have to tie into a central system at all.

Now the big push that is getting the attention is, of course, the equipment that is going into the network.

Oh, yeah. Yeah. I don't know about that. I'm resistant about that.

I don't either.

They are beginning to put a stop to them. People went crazy. They are beginning to feel a little more realistic. They are not going to use much advertising or access as they thought.

A new market apparently is, assuming you will hook this into a PC you already have, there will be some less expensive PCs sold just for that.

To get you back to where computing was, about 20 years ago when we had a mainframe and you had remote monitors, which were dumb monitors. All you could do is tie into that mainframe, and you could do anything but... and external port.

But that mainframe that you are talking about Internet is a hell of a mainframe. Yeah, when I went out there, you had all these computers that went into a central processor. And if there were three or four people on, you had to take your turn.

I first began using computers in the early 70's. Everything was done through punch cards. There was no interaction. You brought your control deck down to the operators. They submitted it for you. You never saw the computer. You knew this was a room with doors that you couldn't get through. And keypunching was the only way to communicate with the machine. And then when they brought out the deck writers which was....

I don't think there is much keypunching done anymore.

There is no keypunching done anymore. If you have a set of keypunch cards, you probably won't find a reader.

No.

That can handle those anymore. Because that has all become obsolete.

They use to keypunch all over the damn place. By the time I left, they had a lot of them.

When they went from keypunch they went to deck writers where you could type it on the typewriter. You had no string; you typed a line and received a line. That was an advancement. Now you were interacting with someone.

Even in the old reactors, to get temperature readings and other things, they had to plug in an old telephone system. But then they came along with a typewriter that would make a map, you know. And now they are so sophisticated the whole damn reactor is run, you know, by computer system.

The 100 Areas did their production planning with data cards for years there. Frank Furweather was the supervisor. I use to occasionally have need to get a lube job done. And he commented once and said he was looking for a new employee. And he said, "You know when I interview a new employee that is going to be working at our shop handling cards, one of the things I look for is somebody with big hands so he can handle, hold in one hand, a half of a deck of cards.

And dexterity, too, probably.

Yes. That's what they were doing all day.

But buying that computer to teach my grandson and I never did get very good at it.

I bet he knows about 10 times what you do about it.

Yeah, he does.

You know, those kids can catch it in a hurry.

They catch it in a hurry.

How old is he?

He's 13. But, I got my two daughters into it. And one daughter went and bought her own. The other daughter, her husband went and bought one for her and my grandson. And the one I had at the house, I ended up giving it to my son. He works at Staveley Instruments. So I got them all into the computers.

And probably, your daughters are pretty good. If they have been secretaries they seem to have a little knack, at least at getting the information.

When I left Battelle, we were just putting computers on the desk. And I had a youngster named Charlie Stone, who's dad was a teacher over in Kennewick, and he had been

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brought up with them, and he was a whiz. See I had been out of there since.....TAPE ENDED-FIRST SIDE.

I understand that there was a facility built, I think, called 100 North made to store fuel.

Yeah.

That ~~was~~^{wasn't} used for long, is that right?

Never was used.

Never?

There were, I think, three of those buildings. They were about half way between the 100 and the 200 Area. And each one of them were just a concrete storage basin. Not the _____.

I wonder what change that they ah.....

Ah, apparently what change was is they found that it was not difficult for them to store this stuff in the basin, discharge basin, and keep it separated enough so that it didn't mix the things up. And I think that was because there was never any problem about the reactor output exceeding the capability of the _____. So as a consequence, they just eliminated one of the storage steps.

I wonder if they are still there?

Well, I'm sure. Because the, you know, they are concrete basins in the ground. And I recall a concrete block building up above it. So they are probably sitting there. Whether or not there have been any cracks in them over the years, I don't know.

You should get a sack and bring it in here.

That might work.

Instead of carrying it to the sack.

I was reading recently about somebody in Ramsey where they were accessing and finally selling some of the old missile sites. And he bought one and converted it into a home and workshop. It's underground. He's got an elevator down there.

Probably would be pretty snazzy quarters, really, yeah.

Heating and cooling is relatively inexpensive.

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Where is this?

In Kansas. He doesn't have to worry about cyclones. Good ^{cellar} ~~seller~~.

He probably got it for a song, too.

I remember my dad telling me about that B-17. ~~They...~~ ^{Days Pay}
He was here? Did he work here?

Oh, yeah. See he was a carpenter out there. And then when he was finished he went into power. And they took him a lot of the guys, carpenters, whoever they could get and made... ^{power operators out of them.}

LOTS OF OVERLAP TALKING GOING ON. SEVERAL DIFFERENT CONVERSATIONS GOING ON AT ONCE.

We had some other places besides 200. We had about five people from one family, a dad and four sons, they had been shepherders.

Really.

They stayed around and worked here. And all of them were excellent workers.

But I came home and I wanted to ^{get to} and go to school and get a better education. And I started working for Mohawk Wrecking out there, one dollar an hour, tearing buildings down and stuff like that. Went off to school for a while and then came back. ^{Dad} And my ^{dad} talked me into hiring in out there. And I did. I wasn't going to stay. I was going to go on back to school. But I never got away from there. But I went to that ~~do~~ ^{deal} with Addie Murray, and I was sitting by this black girl, and we got to talking. And she said, "My dad was a carpenter out there. And he wanted to stay here. But they told him they couldn't hire any black guys." It was because they had a lot of people from the South and they just didn't want no trouble or no hard feelings. Well, we have come a long way since then.

We had someone else here earlier who was talking about that subject, that there were black workers here. And there was really heavy segregation between white workers and black workers. Was this later, then?

No. They had a lot of black workers out there building the place, and they kept them separate in a fence around their place.

This was within the construction camp?

Yeah, at Hanford. But the first black people that I saw out there usually were janitors. Then they wanted to hire a black instrument man. And they came around and asked us

how we felt about it; was it ok? I said, "I don't care. If he can do the job." It turned out that he was an electrical engineer, and they hired him as an instrument technician. And I met him when we had that deal at 2345, recouplex went critical. I had to go to 100 B and work for a week. I met him over there. He was a heck of a nice guy.

Do you recall what year this hiring was done?

I can't remember when it was done. And then, years later, when we started PUREX up again, I met him again. This time he was a lot older and he finally had made it up to engineer. He should have been an engineer to begin with.

To start with.

We talked a little bit, at lunch, about the roll of women out here on the site. And do you recall at what point that broke down so that there were women monitors, women engineers, and women researchers?

Well, I noticed that when we started PUREX back up again, having women operators, and just before I left B Plant to go up to PUREX.

And when was PUREX brought back on?

Oh, '83.'

Oh, probably '76, '77.' That was when I started noticing the operators come in. Most of them did their job, and we got along swell. The only trouble some of them had was lifting, heavy lifting. Some of the guys would say that, "Well, she's an operator. It is her job to lift those sample carriers. I'm not going out and help her." Well, it would have been bad that he couldn't lift it and the other guy would go out and help her.

What were some of the other early computer applications? When you got into data applications, what were some of the other early applications for the computers here on site? You mentioned that you were using them to track batch numbers for fuel rods.

I guess the one I think of is in the subsequent years when I was at K Plant, there was a system written, which we called critical maintenance system. So the critical pieces of equipment, which are critical from the point of view of 'if they fail the Plant goes down.' Most of those, like the big pumps that pump the necessary cooling water, would have to go through rather elaborate maintenance periods. Shut downs for maintenance: maybe annually. But the question came up, 'how do we know that annually is the right level?' So what this system would do is begin to gather information when you had an outage and had the piece of equipment down. You would report the condition of it so that if it turned out to be in excellent condition maybe that system could be lengthened. So it was a changeable maintenance record you were establishing for a critical system items. And I think that was kind of a key for getting a maximum production in the K Plants.

I was going to ask about preventive maintenance on instruments. Was that kind of a back burner issue? Or how was that done?

Well, we use to laugh about that in B Plant and T Plant, back in the early days. We would have a bunch of cards come out: different instruments that had to be gone over, our ~~leads~~ *Leads* and *Nor Thrup* recorders and our ring mounts instruments. They told us the specific gravity for the height of the tank. And the guys would always joke when we would get these; "Is this the month that we wipe the grease off the gears or is this the month that we put it on?" Because if they were done right, and everything was adjusted right, they would go for months, yeah know. It was kind of a 'keep busy' job.

Oh. Ok.

Mac, were you ever involved in PFP or Plutonium Finishing Plant? What was your....

Oh, 2345. Well, it was part of the Plant, yeah. So it was under my supervision, yeah. It was fundamental. It was no different in terms of its operation and its safety. It emphasized different things. The main thing about it that people kept focused on, at least in the days that I was there, was cleanliness. If you had any kind of a spill or such like, it was something to be, all else stopped and that was cleared up. Simply because that made for sure, safer, and more comfortable operation. The people who worked there obviously liked it, at least during the period that I was around. I can't ever remember having heard of anybody wanting to leave 2345 for some of the other jobs. Maybe part of it was if you were working in the big building you were on the run a good bit of the time, there was a lot of territory to cover. By contrast, 2345 was rather small, and mostly you would stay in one place while you were working there. I don't recall that they had too much concern about it. They were aware of their situation and the significance of it. So, well really, that concern was built into all the equipment. So it was automatically up front in their minds.

Was it true throughout the '50's that people still did not go home and talk about their work? Or was that only during the war?

No. That was only during the war. As soon as the headlines came out, then that disappeared.

Ok.

Was there a 'I knew it' kind of a talk?

Not very much. There were a few of those that came out. I remember one of the common comments from a number of the wives was that they were really sorry that that had happened, and it had been enjoyable to go through that year or so of social affairs when men couldn't get off in the corner and talk business.

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All right.

I also heard that a lot of the conversations were monitored; that they had people circulating through the Plants. What was that aspect of security? I mean, what was that?

If there was any such thing going on, I never was aware of it.
Maybe it was that man that you said asked you all those leading questions.

Testing you.

Maybe so.

Can I just mention some names and you, just maybe, make a few comments about your memories about that person?

If you can think of the names, maybe I can think of the person.

Frank Mathias?

Mathias? Well as you know, he was the man in charge. So if you were working out in the areas, as we were during the period that he was here, the odds are if I saw him once every two or three months that was it, while he was chasing through with some of his people looking at something or often times, simply looking at some specific something. So no real contact ever, that I would consider.

How about Dag Norwood?

Oh, yes. As I have mentioned earlier, Dag Norwood was doing business as a Plant doctor at the Dye works as I was hired in. He did my physical when I was hired in. And he lived in the same region, of course, in Penselgrove, as we did. So we came to know the Norwoods quite well, socially. He went into the war effort sooner than I did. So he had left the Dye works a couple of years, I guess, before I did. And, then when I got out here I found out he was here, because he was the first medical individual that came in for _____. He was here physically trying to get the hospital all set up and functioning when I showed up. So he continued to be a close personal friend. And there was not much of any contact that I had with Dag that ~~I had~~ professionally. Nominally, the what they called HI in those days, health instrument, which was the radiational detection activity, was under Dag's overall management. But it was under Herb Parker. Herb was a qualified expert in the field. So Dag didn't involve himself with any significant degree.

That was my next person I was going to mention was Herb Parker. What was your impression? I have heard lots of different impressions of what he was like.

Yeah, I'm sure you would have. Well, once again we have to start off with the fact that I came to know him when he arrived at Hanford. I think he came in June after I had got

here in April. And in the normal course of events we talked and looked at things together. And I can't trace through the details of it, but we were always very comfortable with one another and on the Plant. And by the time, it really wasn't until the Plant was completed and operations for a while, but we got to know the Parkers socially. That is to say I had been... we had been comfortable with one another on the job earlier than that, and it wound up that the Parkers were probably one of our closest sets of friends in all the periods that ensued. Herb, as you know, died about 10 years ago. For quite a while my wife and I took Margaret to lunch at least once a week. Since my wife's death, I still take Margaret to lunch. So, Herb was an individual who had strong opinions. He was fairly consistently objective, I always thought, in his professional life. He was really quite a brilliant man. And he, he didn't suffer fools gladly and as a consequence he was kind of, and he was quick with his tongue, so he was kind of nasty with some people sometimes. So I'm sure you got a great many mixed opinions about him. But, so far as I'm concerned, I have always had great respect for his professional confidence. And his ability to run his kind of activity up to and including the very successful period around the entire research outfit here. And as an individual, socially, I found him very enjoyable.

I have one more name, Dick Foster, the guy that ran the fish biology program.

Oh, yes. Well, he was one of Herb's boys. And I didn't see him nearly so much of as Herb. I never had any social contact with him. But I saw him more or less regularly one way or another on the job. And I liked him, and I respected his capabilities and his ingenuity frequently: some of the things that they managed to figure out, ways to do things, were quite interesting, I thought. There was another one in that group and I can't remember his name. He was a PHD. When he left here he went back over to Washington State and was on the faculty there.

Leo Buestead?

Yeah, Leo, yeah. I saw Leo, more or less, regularly, not for any particular reason, but he was always one of the most enjoyable characters that I could ever remember having to run into. You could sit or stand and listen to Leo for hours on end and it was a joy.

I was kind of wondering about mentioning, a while ago, about salaries and what something cost. What salaries were like when you first came on and whether that kept pace with inflation or how that worked out over the years? How difficult really that was to get ~~from~~ promotions on site, some of the personal economic aspects?

Well, the best I can review it and think about it and sort of kind of compare it in the past, I think that the Dupont salary pattern was what you would call industrially competitive. When I first went to work for them a few years before, I had an opportunity, I had three opportunities, to get a job. And the job that I took was Dupont. It paid me 35% more than the next best job that I had offered. So I think they were always a bit above the industrial average for chemical work. And as far as I know, from the way things went at the time, they continued to be in that pattern. Of course now, we are talking about a

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relatively short period out here. From the time I came out until they left was just a couple of years.

So you are still not talking about much money, though. A Patrolman out here got a buck, a well trained technician a buck and a half, but it showed what inflation is doing.
pipe fitters

Yeah, but at the time, that was good money.

When I went in the Air Force and I got to be a 2nd Lieutenant, I got \$150 a month and a certain amount of keep.

Yeah.

But I didn't have quite as much living expenses. But, hell, I couldn't live with that now days.

No. No. But today that \$150 would be \$1500.

Yes, at least.

At least. In terms of the pay rates for the hourly workers, which I'm sure were kept in relationship to the salary people so far as Dupont was concerned, and I think that was also true when GE came here, but from the time these folks, ~~in those days~~ the county come in to, I guess as far as even now, most everybody else that hires people around here keeps saying that the Hanford wages are too damn high.
salary *inundated*

Well, I don't experience that. They must have missed me.

I tried to get my son to hire in out there. He wanted no part of that Hanford project.

Really.

So he works for an electronics firm over in Columbia Center, Staveley Instruments, building transducers for them. He is their top man making these transducers I think he makes \$12 an hour. When I left out there, an instrument technician was making \$18, \$19, \$20 an hour. But he wanted no part of that Hanford project. I don't know why.

Yeah, why?

I don't know.

Well people have an idea, It is not necessarily true. I remember, sometimes I take tours, I took the Farm Bureau out, and when we drove by the parking lot, where we have all the cars out there, all I heard was, "God, look at all those beautiful cars. That's the government for you. Look, these people own that Mercedes Benz." We don't have all

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those _____ now, but there are some nice cars out there. And, so, you were on the Farm Bureau. You might have heard some of it.

Oh, yes. Yeah. Yeah.

And so it is not necessarily true.

I experienced something that really put that into perspective. The people who lived next to us, quite a few years ago, she was from Tennessee, and she commented she was going to go home on vacation. And she said, "Well, they will ask me what I'm doing. And I will tell them. But, I won't tell them what I make because they would never believe it. They would think I'm just lying.

Yeah. Yeah.

It might have been, my son likes long hair and a beard. He still has got his beard. You didn't wear a beard out there, because you couldn't put on a mask, an assault mask. Beards were out. Well, his way of thinking is, "The government is ~~is~~ telling me I can't have a beard."

I have a son like that, yeah.

I don't have a clue. Do you think part of the salary or the hourly rates here were in some way in compensation for the fact that you were working at Hanford? Do you think there was a draw to bring people there by offering slightly more pay, because the perception was that you were doing hazardous work? Or was this somehow hazard duty pay built into a salary rate to make additional benefits?

About all I can tell you is that the rates that they were paying them, right after they come off construction and operating jobs, were comparable to the operating rates at our plant back at the Dye works when I left. So I would say, no; there was not an incentive.

So if you were on the outside and came in, you were probably getting pretty much the same rate of pay?

Yeah.

And then we formed a union.

Shortly after GE got there.

I know you are going to remember this name, George Brown.

Oh, yeah. Yeah, I remember Brownie.

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They would go around and negotiate with the companies, and like that. And it was always more money, more money, more money, see. Until George got ready to retire, and then he found out we should have been asking for better pensions and things like that, see.

Yeah.

And so, and we would have probably got it. We didn't always have to go ask for more money, just better pension, better hospitalization, and things like that.

Where did you think the perception built up, then, that Hanford's employees are too well paid?

I think it was the union.

I think they were.

After the union began negotiating that there was no big difference between on-site and off-site?

I began to think that some of them were being over paid, out there, before I retired, during the '70's and '80's, for the amount of work that they were doing, yeah know. And here my son, for Steveleys, is doing work, I don't think I knew any of the guys out there that could have set down and built these transducers and did the work he's doing, and I think the last I heard, he was making \$12.50 an hour, \$13.00 an hour.

When you first mentioned a dollar, did you mean, for the patrolman, did you mean a dollar an hour? Someone said that.

Yes. A dollar, a dollar and a half, one of the patrolman told me that.

What would a secretary make?

I think at that time about 85 cents an hour.

Yeah. Because when I went to work for Mohawk Wrecking, and that was rough work tearing those bearings down, I think it was 85cents an hour. And we got ready to strike, and we got it boost to a dollar an hour. See, and that was back in 1946.

But rent was like \$35, \$40 a month, too.

Oh, yeah.

Very, right now rentals seem very high here. Had a friend that retired and went back to, of all places, Yate City, Kansas. I talked to him on the phone the other day and he said he

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was paying \$250 a month for rent for a real nice place. Well, Yate City, Kansas is in the middle of nowhere, I guess, because you can't find anything around here for that.

Oh, gosh, no.

Maybe in another year or two.

Yeah. Right. Sell your house now, if you got one.

No one is buying them right now either.

Mr. McCready, back during the first early day when every building out there was producing material like made every building running, what did we have, about 4000 people? 5000?

We had.....

4500.

At tops, I think, we had about 8, 8000.

At the one, all of the new stuff...

We got up to about 18,000. So it about doubled.

A little over.

Obviously they over did the thing, because now they are going the other direction.

Yeah, yeah, yeah.

Otto Hahn

negatively charged.

You know, if you look back on history too, it is very strange, back in the early 1900's, the physicists thought it was all done. You know, it was all classical. And then a guy name Rutherford, an Englishman, came up with a theory that the atom was a small solar system, and that the protons and the nucleus were there, and you had these little particles that were orbiting around the outside that were negative ~~to each other~~. And this caused a lot of discussion with the physicists, and most of them were foreign, a few of them, Chadwick, ~~and in England~~ and Otto Hahn and Straussman ^{were} and Germans and a lot of them were Jewish. But they were kind of a fraternity that lived off by themselves and had no practical reasons to think anything would work. Then, I think it was Otto Hahn and Straussman hit uranium with slow neutrons with some kind of a machine and they got barium, which is half the weight of uranium. And so they knew something happened. They said we got fission. And then ~~Otto~~, I guess it was said, "Well, it wasn't the uranium 238 fission it was the U-235 because it's not as stable." Then from that point on this little combination of thing all over the world, talking together, said well look, if we

orbiting

Barium

uranium 238

that fissioned,

Niels Bohr

can, if it just gives off one neutron when we have this fission, they call it fission, you can't have a chain reaction. But if you get two or three we can have a chain reaction. That is where it all started.

They thought I had in the last couple of weeks when they were announcing, they were sure there was now antimatter. How did we manage to get through.....

Yeah. Now we got antimatter.

But this is when they brought them into work, that type of individual was not subject, they did not like working for Dupont. They had Openheimer, was it, you know, Openheimer was in there class of guys. And he could kind of hold things together. And old Grove^s said that it was the, he called them all crybabies, you know. People are hard to handle. But they certainly got the job done.

They got the job done.

Can I ask about the burials at the reactor areas? How often would that occur? Was it daily, and what were they? It wasn't ordinary trash? What was it all mixed in? What were they doing?

Primarily, after an outage, you would have had some of the spacers, we called them _____, for example those that might have been mixed to the charge. Although for a while, I think they were burying all of those. And then somebody got a very nice suggestion and said, "I think we could decontaminate those." So we began going through this process and then reusing them. But there would always be some things like that that were impractical to reclaim, and of course your step off pads that had to be changed, lower level contamination. Occasionally there was a fervor when something rather important got buried that wasn't intended to be buried. Something got put in the wrong place and ~~at the job they cleaned things up out there, everything goes.~~

the operators had the job to clean

Didn't we bury a whole diesel locomotive back in the early days? It seemed to me like we did.

I don't know. There was always a rumor.

There is still the rumor. So it is still around. I've heard this story about the buried locomotive, but I don't know if anybody knows if it is true.

With all the equipment that they have around here, I should think somebody with a ~~mental~~ *metal detector* would have found that damn thing before now.

I heard it was buried down beyond West area.

Isn't that off the REDOX, so called Circus *(tent)?*

Yeah, but down in there, I think if you go down to that end of 200 West, you can look across and see the highway going up to Yakima.

I don't know for sure. I can remember the reason it was buried had nothing to do with the nuclear business at all. Some so-and-so went overboard and ordered an extra locomotive, then it was not nice having it setting around so he took it out and buried.

Now, setting here and talking about Dr. Norwood, and I got to thinking about something. Back in the early days, in B Plant and T Plant, we had a company doctor come out, and they run blood tests on us: I don't know, once a month or something like that. They checked our blood. And if they didn't like the way the tests come back you could go in the following week and another one and another one. Finally she told me, "I want you to go see your family doctor." I went and seen him over in Pasco and told him. He wouldn't believe me that I had too many white corpuscles. And so he said, "You go back and get a thing from your doctor." So she give me a whole card of blood tests. And I took it and showed it to him. Oh, he threw his hands up in the air and he says, "You got to go to the Virginia Mason Clinic." So I went over there and stayed a week. And they run everything they could think of, but they couldn't come up with any answers. I come back and I told my boss what the deal was. And they put me in town and wouldn't let me go back to the Area. So I had to go talk to Dr. Norwood a couple times a week, and they run tests on me. And finally I said, "Hey, I want to go back to the Area." And he said, "Would you sign a release?" And I said, "Yes." *And that was the last of it.*

Did they ever find out....

Did you ever, did you know if you exceeded your weekly limits in radiation?

No. I never did exceed my limits, I don't think.

Did you ever find out what had ^{driven} ~~drive~~ up the white blood cell count?

They couldn't tell me over at Yakima, I mean over at Virginia Mason.

Did you worry about it? Or did you kind of say... *well*

I didn't worry about it at that age.

Do you normally ever have much like colds or any kinds of diseases of that nature? Or are you pretty free of all that kind of thing?

Well, when I was a kid, back during the Depression, I had lots of colds and the flu.

But not recently?

No.

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Well I have a theory.

What?

Well, I'm in much the same condition you are. I damn near died when I was about eight years old with diphtheria. And I essentially have never been sick since. I think we just built up our personal resistance to the place where it is unusual.

I can remember the scarlet fever signs on people's houses, measles, you name it.

Yeah.

They come and put a sign on your, and that told everybody to stay away from these people.

You don't think it was that sneaky iodine do you?

I was in New Guinea and the southern Philippines, we had all kinds of stuff over there. I might have picked something up over there, I don't know.

But if you did, you took care of it.

I took care of it.

I don't want to disturb the group, but it was a real pleasure. Thank you very much. It's not time, but it's only that I think we need to be somewhere else.

It is getting time for me to be someplace else, too.

Thank you.

Well, I came down here today, and I am really happy that I come. But, I thought maybe I'd meet a few more old-timers that I use to work with.

Yeah.

I think they have a list of those that have checked in on other Thursdays. You might ask them.

I was going to bring a friend with me today, but I called him, and he was sick. He couldn't come.

There has been a lot of talk about start-ups here, if I could mention one that I have enjoyed at the K Plant. The K's, you know when they built it, had this big effluent line,

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and it was huge, maybe I would think maybe six foot or eight foot in diameter, and it was buried underground into the river. And the story went like this. There was a patrol observation point, that he could observe the river at that point. That was kind of a sad job. You just sat there and hoped something would happen. And one day the patrolman really got excited. He called in and said, "I don't know what it is. It looks like a submarine." The story was, in the start^{up} procedure when they began to put water into this line, what the engineers did not recognize was that they were going to be pushing a lot of air down stream in this. And this came out of the ground like a cork. And it was up there snorkeling and bubbling. A submarine^{had} come up^{through} the lock^s.

My dad had come home from those 100^{over 3} days those 100^{days}. And he would be in a real good mood. And I would say, "What are you so happy about, dad?" "Well," he says, "we had a fish fry last night." And they would go down and catch a bunch of fish. Some place down toward the river. And then he would tell me about the big sturgeon that they would see come up. You could see just the shadows up and down in the water.

We missed the first hour.

You might have missed some of it. We had a lot of trouble with it this morning.

Well, I'm sure glad to see you again Mr. McCready.

There are only two names and there are three people here. So someone missed the sign-up.

I think McCready signed it, probably.

~~And Floyd~~ And Floyd signed it. We got one more.

We have one more person than we have signatures.

Do you know where we get a whole bunch of these guys together? At Dennys. At 9:00, the last Friday of every month they have a retirement breakfast.

END OF TAPE. EVERYONE TALKING AT ONCE.

CHARACTERS WITH SPACES-65,783

65 CHARACTERS PER LINE

1012 TOTAL LINES