ORAL HISTORY INTERVIEWS

LUCY PETTAPIECE

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STATUS OF INTERVIEWS:
OPEN FOR RESEARCH

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LUCY W. PETTAPIECE

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Lucy W. Pettapiece

INTERVIEWER: Brit Allan Storey
Brit Allan Storey

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Introduction

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

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

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

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For additional information about Reclamation's

history program see:
www.usbr.gov/history

Oral History Interviews
Lucy Pettapiece

Storey: This is Brit Allan Storey, senior historian of the Bureau of Reclamation, interviewing Lucy Pettapiece on June the 10th, 1997, at about 2:30 in the afternoon at the Heritage Inn in Great Falls, Montana. This is tape one.

Well, Mrs. Pettapiece, I'd like to ask you where you were born and raised and educated and how you ended up at the Bureau of Reclamation.

Born in Sebring, Florida

Pettapiece: I was born in Sebring, Florida, and I attended schools in Florida. I didn't graduate from high school; I sort of dropped out.

Finished Three Years of High School and Went to the University of Texas Where She Changed from "Plan 2" to Civil Engineering Her Second Year

I finished in three years and went away to college and went to the University of Texas at Austin. In those days, you didn't have to say "at Austin." It was *the* university. I started in something called Plan II, which was a real liberal arts plan, and before I'd gotten into it very far, I decided that wasn't what I wanted,

and decided I wanted to get into engineering. But the dean of the College of Arts and Science, whose special plan Plan II was, persuaded me to stay to the end of the year, and then I changed into engineering. Graduated from the University of Texas.

Attended the National Meeting of the American Society of Civil Engineers in Phoenix While at the University of Texas and Went out to See Theodore Roosevelt Dam on the Salt River Project

I think it was my senior year I went to a national meeting of the American Society of Civil Engineers [ASCE] in Phoenix, and as a student they took us out to see Roosevelt Dam on the Salt River. I guess it was the Bureau's first dam, one of the very first, anyway.

Storey: Um-mmm. One of the very first.

"I was interested in getting into water– something related to water. So I decided after that, when I saw all that dry land, that I wanted to get into the Bureau. . . ."

Pettapiece: I was interested in getting into water– something related to water. So I decided after that, when I saw all that dry land, that I wanted to get into the Bureau. When I finished school, they weren't hiring. I

graduated in August, and I went home to Florida and stayed for several months.

"I applied to the Bureau. In those days, you had to take a written exam for the Bureau, and I took the written exam. And I also attended another ASCE meeting in Jacksonville. Someone there gave me the name of one of the assistant commissioners to write . . ."

I applied to the Bureau. In those days, you had to take a written exam for the Bureau, and I took the written exam. And I also attended another ASCE meeting in Jacksonville. Someone there gave me the name of one of the assistant commissioners to write, and I wrote to him, and they still weren't hiring.

". . . in *Western Construction News* there was an ad that said that the Bureau was hiring engineers and to write to Billings, Montana, and I did, sent an application, and they hired me to work in Great Falls, Montana. We had to dig out the atlas and find out where Great Falls, Montana, was . . ."

Somewhere along in the fall in *Western Construction News* there was an ad that said that the Bureau was hiring engineers and to write to Billings, Montana, and I did, sent an application, and they hired me to work in Great Falls, Montana. We had to dig out the

atlas and find out where Great Falls, Montana, was because nobody knew. (laughter)

Storey: Nobody knew in Sebring, Florida. (laughter)

Pettapiece: When I was in college one summer there were two girls from Willow Creek, Montana, taking a drafting course for the summer. One of them's boyfriend was in the Air Force close by. So I'd heard of Willow Creek, and I'd heard of the capital, Helena, which is what I learned in Florida was the capital of Montana, and I had heard of Billings and I had heard of Butte, but never Great Falls. Got to Montana, nobody here had heard of Willow Creek. It's a little tiny town.

"So anyway, I wound up in Great Falls, Montana, at the end of January, when it was six above, and I had been swimming in the lake in front of my house on New Year's Day, and it was a big change. And that's how I got to the Bureau and Great Falls. . . ."

Anyway, they hired me and I was to report to work in January. My parents, who had, in the meantime, found me a job in the fruit packing plant, because my father grew citrus, kept saying, "We hate for you to go all the way up there this time of year, *but* you need to get a job." So anyway, I wound up in

Great Falls, Montana, at the end of January, when it was six above, and I had been swimming in the lake in front of my house on New Year's Day, and it was a big change. And that's how I got to the Bureau and Great Falls.

Storey: So your dad was in farming, in effect?

Father Had a Degree in Mechanical Engineering and Had an Orange Grove

Pettapiece: Well, he had a degree in mechanical engineering from Georgia Tech and had had one engineering job after he finished college. I think his degree was in mechanical.

"During World War II, he worked out at the air base in the daytime in the engineering office and did the orange grove work at night. But he was an engineer and thought like an engineer and acted like an engineer. We grew up with that sort of attitude. . . ."

During World War II, he worked out at the air base in the daytime in the engineering office and did the orange grove work at night. But he was an engineer and thought like an engineer and acted like an engineer. We grew up with that sort of attitude.

Storey: Um-hmm. When were you born?

Born in 1926

Pettapiece: In 1926.

Storey: So, why did you go to the University of Texas from Florida?

Why She Went to School at the University of Texas

Pettapiece: Well, this gets to be a long story.

Storey: That's okay.

Mother Wanted Her to Attend a Co-ed School

Pettapiece: My mother wanted me to go. She had gone to Florida State College for Women, and she wanted me to go to a co-ed school, because I was kind of shy and didn't have much to do with boys and all that sort of thing. The University of Florida was boys only at that time. The Georgia schools, because of some political something or another, were all on probation. The Louisiana schools were all involved in politics. It was during Huey Long's era.

During World War I Her Father Was Stationed at

the University of Texas in Radio School

My father, when he was in the Army in World War I, he was stationed at the University of Texas in radio school.

". . . I had thought I wanted to major in Spanish. If the war hadn't been on, I might have gone to the University of Havana and studied Spanish, but there were submarines off the coast between Florida and Cuba, and it wasn't a good time to be going across there. . . ."

And so I had thought I wanted to major in Spanish. If the war hadn't been on, I might have gone to the University of Havana and studied Spanish, but there were submarines off the coast between Florida and Cuba, and it wasn't a good time to be going across there. And it was before you flew everywhere. So that was one of the reasons was that the University of Texas might have been a place to major in Spanish–although I didn't wind up in Spanish.

Storey: So you went off there when?

Went to the University of Texas in 1942

Pettapiece: It must have been 1942.

Storey: So that *was* during the war.

Took the Train to Austin

Pettapiece: Oh, yeah. And I rode the train and it was a three-day trip. Servicemen got priority to get on the train. So you stood up sometimes for hours and hours and hours because you got on last. You know, when you left to go anywhere, you weren't sure when you'd get there. But, anyway, I rode the train back and forth for several years.

Storey: You did that by yourself?

Pettapiece: Uh-huh.

Storey: Even the first time?

Pettapiece: Yeah. I was sixteen, I think. Well, the *very* first time, the boy across the street, who was older than I, was going to LSU. I think it was LSU. And so I rode as far as New Orleans on the same train with him anyway. So I wasn't *totally* alone, I guess. But, yeah.

Storey: Why did you decide to go to engineering?

Why She Decided to Major in Engineering

Pettapiece: Well, I could see that Plan II was for people

who graduated at the top of the class, and it was real vague and indefinite and you didn't major in anything. I decided I wanted something a lot more definite–in my innocence.

Storey: Why not Spanish?

Pettapiece: I'm not really sure exactly why I decided on engineering, but I thought, well, it sounds much better if you flunk out of engineering than if you flunk out of Spanish or something. I was not at the top of my class. So I went around and talked to the head of the Chem Engineering Department and the head of the Civil Engineering Department and the head of the Aeronautical Engineering. The chem engineering fellow told me I could never be anything but a secretary. The aeronautical engineering, I really don't remember what he told me, but I decided it was a fairly limited field.

". . . civil engineers do *everything*, and so I decided to go into civil. . . ."

And civil engineers do *everything*, and so I decided to go into civil.

Storey: What was it like going to engineering school during the war?

". . . it wasn't like it would be when the war wasn't on, because all of my classmates almost were either from South America or were in the Navy. There was a Navy V-12 Program there . . .There were very, very few boys who were 4-F . . . and there were a few girls in some of my classes . . ."

Pettapiece: Well, it wasn't like it would be when the war wasn't on, because all of my classmates almost were either from South America or were in the Navy. There was a Navy V-12 Program[1] there, and almost all my classmates were in the Navy. There were very, very few

1. "The V-12 Navy College Training Program was designed to supplement the force of commissioned officers in the United States Navy during World War II. Between July 1, 1943, and June 30, 1946, more than 125,000 men were enrolled in the V-12 program in 131 colleges and universities in the United States.

"V-12 participants were required to carry 17 credit hours and 9-1/2 hours of physical training each week. Study was year-round, and the number of terms for a trainee depended on his previous college background, if any, and his course of study. From the V-12 program, most of the Navy candidates went on to a four-month course at a reserve midshipmen's school, and the Marine candidates went to boot camp and then to the 12-week Officer Candidate Course at Quantico, Virginia. The curriculum was heavy on math and science for "regulars" (those entering college for the first time). Those students who already had some college credit, or "irregulars", were allowed to continue in their majors with the addition of courses in mathematics and science. Richard Barrett Lowe, future Governor of Guam and American Samoa, was one of the early commanding officers." Source is: http://en.wikipedia.org/wiki/V-12_Navy_College_Training_Program, accessed on September 15, 2010, about 3:35 P.M.

boys who were 4-F who were in some of my classes, and there were a few girls in some of my classes, but because the fellows in the Navy–a lot of them didn't even want to be engineers, but it was a way to stay off of a ship for a while, I guess–were there. They weren't there of their own free will. A lot of them, I think, would have been somewhere else if they could be. And most of them or, anyway, a large share of them, were from California. So it was not a normal time.

Storey: Not a lot of Texas boys, huh?

Pettapiece: Well, not a whole lot, I guess. Some of the V-12s *during* the time I was there were from Texas, but almost everybody was in the Navy.

Storey: How did you like engineering school?

Felt There Were Students and Faculty Who Thought Women Shouldn't Be Engineers

Pettapiece: Well, I guess I must have liked it, because I stayed the whole time. I enjoyed a lot of the classes. Some of them I didn't. And when you ask about what it was like, there were some of my classmates who didn't think women should be engineers, I'm sure, but the classes were large enough that you didn't associate with everybody in your class

anyway. And I think some of the professors probably didn't think it was the thing, but they never did make it so that you *knew* that they didn't.

Enjoyed Her Surveying Classes

There was one class that I . . . I enjoyed, my surveying classes. I took an advanced surveying class, and I didn't do very well in it. I never was quite sure why. Sometime later, I think after I was out of school, someone told me that the professor didn't approve of me or didn't like me or something. So I suppose that's why I didn't do well in that one. But it was interesting.

Storey: Were there any professors or classes that particularly influenced you?

Enjoyed Soil Mechanics

Pettapiece: Well, I didn't have a very good background for engineering because I hadn't had all the math in high school that Texas students were required to have, so I did not do well in structural classes, and I decided that was not my field. I think the professor that I talked to when I went around to talk to someone about civil engineering taught highway classes and surveying, and I think I enjoyed his classes

more than some of the others, maybe. I enjoyed the soils classes. In those days it was soil mechanics. Now it's called geotechnical engineering, I guess. I enjoyed that. But it was only one class for underclassmen.

Storey: Who was this professor?

Pettapiece: The one that I particularly enjoyed?

Storey: Yes.

John Focht

Pettapiece: John Focht. He was well known in engineering circles.

Storey: F-O-L-K?

Pettapiece: F-O-C-H-T. Toward the end of the war, one of his sons was in one of my classes. He had, I think, a couple of sons and a daughter. And then in years since, I have run into another son in ASCE national meetings. In fact, I believe he might have been a national ASCE president at one time. But he was helpful. I don't know that he was *terribly* encouraging, but he was helpful. I felt like I could go to him and ask questions, stupid questions.

I remember once going to him. We were

supposed to do a drainage map of the stadium. I hadn't a clue as to how to start. I went over and asked him. It happened to be a day when it was raining, and he said, "Well, the best thing is to go out when it's raining and see where the water's going." So I trotted over to the stadium in the rain and watched where the water went. It quit before I quite finished the map. But, anyway, I sort of did things the hard way, I guess, because I didn't know any other way.

Storey: Were there any classes on water, hydraulics, whatever?

Took advanced hydraulics where "I learned how to do back-water curves on reservoirs and about stream or channel flow and canals and streams and things. I used that after I came to work for the Bureau. . . ."

Pettapiece: Yes. At that time in civil engineering you were only allowed six hours of engineering electives, and one of the classes I took *was* advanced hydraulics, and I learned how to do back-water curves on reservoirs and about stream or channel flow and canals and streams and things. I used that after I came to work for the Bureau.

"I did back-water curves on Canyon Ferry

Reservoir, which is the first Bureau dam on the Missouri, I guess. . . ."

I did back-water curves on Canyon Ferry Reservoir, which is the first Bureau dam on the Missouri, I guess. When the Bureau was going to build the reservoir, the dam, the railroad wanted for the government to pay for raising the railroad. I think it was the railroad bridge which crossed at the upstream end of the reservoir. And so I worked on back-water curves, and it wasn't going to affect their bridge. Well, then they came back, wanted a bigger storm or a bigger flow, I guess, because I think I did it two or three times, and it never was going to affect the railroad's bridge. So it stayed where it was and the government didn't pay for it.

Storey: Tell me what a back-water curve is.

Pettapiece: Well, you know when the water comes down the river into a reservoir, it doesn't come down and hit the reservoir at an angle. There's a curve that sort of smooths out. And that was about where their railroad bridge was, was at the upstream end of the reservoir.

Storey: So this isn't really where the pool's going to be so much?

Pettapiece: I'm not sure what–

Storey: Well, when it's full, it isn't going to be where the pool is. You aren't figuring out where the pool's going to lay. That isn't what a back-water curve is about.

Pettapiece: No. No. Because that just depends on–

Storey: What, elevation, maybe?

Pettapiece: Elevation. But it's at the upstream end of the reservoir.

Storey: Interesting.

"Now they have computer programs that do it, but then it was a real long, drawn-out, laborious process. You plotted out cross-sections, and you figured the area of the cross-section . . ."

Pettapiece: Now they have computer programs that do it, but then it was a real long, drawn-out, laborious process. You plotted out cross-sections, and you figured the area of the cross-section, and then somebody said, "Oh, it's going to be fuller." And so then you did a cross-section that was fuller. This was a long time ago. This was almost fifty years ago. I don't remember a whole lot about doing it, and I know that since then there's a computer

program that you . . .

Storey: When was this that you came to Great Falls?

Moved to Great Falls in January of 1948

Pettapiece: In January of 1948. I was working on this probably a year or so after I started working for the Bureau.

Storey: So you had spent five years getting your engineering degree?

". . . I lost credit for everything I took the first year except I was allowed six hours of non-engineering electives and my freshman biology class became my six hours of non-engineering elective, and that was all I salvaged of it. . . ."

Pettapiece: Well, I spent five years in college, not five years getting my engineering degree, because the first year everything–let's see, I lost credit for everything I took the first year except I was allowed six hours of non-engineering electives and my freshman biology class became my six hours of non-engineering elective, and that was all I salvaged of it.

Storey: And you went off to ASCE in Phoenix, you said.

Pettapiece: Yes.

Storey: As an undergraduate?

Pettapiece: Yes. It was a national meeting, and I had competed in the Texas section of ASCE in a contest for students to do a paper, and I did it because I knew it would be good for me, not because I wanted to do the paper. I did not win in Texas; one of my classmates did. This was still during the war. ~~Well, yeah, maybe~~[2] It was right toward the end of the war, and there were some veterans.

Storey: You would have graduated in–

Graduated at the University of Texas in 1947

Pettapiece: In '47.

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

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

"One of our classmates from Venezuela had a car. Cars were scarce in those days, and old. . . . he was going to drive to Phoenix [to the ASCE meeting], and there were three or four of us that were going to go to the meeting. Well, I had to have a note from my mother that I could go. The Dean of Women thought this was most inappropriate. . . ."

Anyway, there were several people. One of our classmates from Venezuela had a car. Cars were scarce in those days, and old. A student from Venezuela had a car, and he was going to drive to Phoenix, and there were three or four of us that were going to go to the meeting. Well, I had to have a note from my mother that I could go. The Dean of Women thought this was most inappropriate. We were going to drive straight through to Phoenix from Austin. The Dean of Women didn't think this was appropriate, and I had to have a note from my mother that I could go with these fellows.

Anyway, we drove to Phoenix, and the men students were all going to stay in a gym someplace. I stayed at the home of the president of the Arizona Section of ASCE, and the boys had to come get me and take me, then, to the meetings and stuff. But, anyway, we all survived it.

Storey: What was your paper on?

Wrote a Paper on TVA's Fontana Dam for an ASCE Essay Contest in Texas

Pettapiece: I did one on Fontana Dam, which is a TVA [Tennessee Valley Authority] dam. It was a new TVA dam. At that time, it was the highest dam in the eastern part of the country, I guess. One summer when I *didn't* go to school, I went with my parents to North Carolina to visit an aunt. Whether they wanted to or not, the family went to all the TVA dams along the way to see them. Fontana was new, and I'm not even sure that it was completely finished. But, anyway, I was very impressed.

Storey: You say they went to all the TVA dams. Because of your father's interest? Because of your interest? By accident?

Pettapiece: Yes, my interest. I mean, when we got close. We didn't go to all of them, but we went to all the ones that were close.

Storey: So you had that interest in dam construction even then, water control, whatever.

Pettapiece: Water, uh-huh. And besides, they were neat to see. Several years before I retired, I

remember being at a meeting with the regional director and he was telling about a Bureau dam somewhere, and I don't remember where it was, that had rusted. I mean, the water had discolored the dam so that it blended in with the landscape and you could hardly see it. And I said, "But I like nice white concrete dams." And he said, "Oh, that's because you're an engineer." But, I mean, people go to see nice big white concrete dams that don't have any idea what engineering is about.

Storey: That's true.

Pettapiece: I didn't argue with him, but I knew better. But I just thought it was terrible that it was all discolored and you couldn't see it. This was when environmentalism became a popular thing, I think.

Storey: You had graduated. Were you looking anywhere besides Reclamation for an engineering job?

Did Not Look Outside Reclamation for a Job

Pettapiece: Not really.

"The ASCE meeting that I went to in Jacksonville after I graduated . . . I was probably the only female engineer . . . people knew I was looking for

a job, and I was sort of halfway offered a job by W. W. DeBerard, . . . head of the water . . . system in Chicago, and [another] . . . sort of halfway offered me a job with the Highway Department in either Virginia or West Virginia. But I knew I wanted to work for the Bureau at that time. I wasn't real brilliant, but that was what I wanted to do. . . ."

The ASCE meeting that I went to in Jacksonville after I graduated, because I was probably the only female engineer there, but I still went with the students to some things, but, you know, people knew I was looking for a job, and I was sort of halfway offered a job by W. W. DeBerard, who was head of the water in Chicago, the water system in Chicago, and I probably would have accepted it except I knew that Chicago wasn't my kind of place. I can't remember the man's name. He later became a national president of ASCE, and he sort of halfway offered me a job with the Highway Department in either Virginia or West Virginia. But I knew I wanted to work for the Bureau at that time. I wasn't real brilliant, but that was what I wanted to do.

Storey: Did that have anything to do with the geographic location, where the Bureau worked, or was it just the Bureau?

". . . the Bureau's job, in those days, was to

provide water for farmers, and because I grew up in an agricultural area where we had plenty of water, and I had seen the dry desert in Arizona and knew that there were areas that needed water . . . Anyway, I just thought it was what I wanted to do. . . ."

Pettapiece: Well, part of it was because it was the Bureau, but part of it was because the Bureau's job, in those days, was to provide water for farmers, and because I grew up in an agricultural area where we had plenty of water, and I had seen the dry desert in Arizona and knew that there were areas that needed water, and part of it was I knew I wasn't the most brilliant person in the world, but I knew that I could put the effort into it. Anyway, I just thought it was what I wanted to do.

Storey: Was there any irrigation in the area where you grew up?

Pettapiece: There wasn't in those days. Later my father put in overhead sprinkler irrigation in the orange groves, and I think he's one of the first people in *that area* that did it. We still have orange groves in Florida, but we don't have overhead sprinklers anymore. We have the microjets on the ground to water them. But he put it in for frost protection and irrigation. But that was after I left home that he did that.

Storey: How did you get to Great Falls?

Took the Train to Her New Job in Great Falls

Pettapiece: On the train. (laughter)

Storey: And what was the route for the train in those days?

Pettapiece: Well, because I wanted to stop by the university and visit friends before I went off into the cold, frozen northland, I went on the train to Austin and stayed several days, and then came up through Denver and Wyoming to Montana. Arrived something like six o'clock in the morning, I think, on a Sunday morning.

Storey: Any particular trains?

Pettapiece: It's too long ago. I don't remember. Well, I'm sure . . . when I went to Austin it would have been you take either the Seaboard Coastline from Sebring or the Atlantic Coastline. Seaboard Airline or Atlantic Coastline in those days. And then you changed. Somewhere along the way, the route took the L&N and then the Southern Pacific, because I did that part of it for a long time. I don't remember what I came north on, though. It must have been–it's the Burlington

Northern now, but I don't remember what it was. It was the Northern Pacific, probably, into Great Falls.

Storey: In January of '48?

Pettapiece: Uh-huh.

Storey: How long a trip was it? Do you happen to remember that?

Pettapiece: Well, probably altogether about five days on the train.

Storey: Who was it that wrote to you and offered you a job?

"I came in January and I think the Upper Missouri Projects Office in Great Falls had only been opened in maybe October of '47. . . ."

Pettapiece: I don't remember. It was from the office in Billings, I'm sure, because that was where my application had gone. Part of it was this was a time when the Bureau, *I think*, had principally just had regional offices, and they were starting to open up project offices. Because I came in January and I think the Upper Missouri Projects Office in Great Falls had only been opened in maybe October of '47. But who sent me a letter, I haven't a clue.

Storey: Do you remember who you worked for?

Worked for Jim Hoge

Pettapiece: Oh, yes. I worked for Jim Hoge, was the engineer in the office in Great Falls that I worked for.

Storey: H-O-A-G?

Pettapiece: H-O-G-E.

Storey: He was later the regional engineer in Billings, but he had been off to Thailand or somewhere in the meantime. But he was head of engineering in the years that I worked in Great Falls office. It was reorganized and sections were renamed and so on, any number of times.

Storey: What was it like when you arrived here?

Remembers the Cold in Montana When She Arrived

Pettapiece: Cold. The first thing I did after I finished work the first day was went down to the local department store and said, "What do you people wear on your feet in the wintertime?" Because I had no boots or anything. I mean, I had a coat and gloves and things that you used in Texas occasionally. But, anyway, it was

cold, and there was snow on the ground, and I hadn't seen snow since I was two or three years old when we lived in north Georgia. It was different.

Storey: Take a lot of adjusting to?

"People didn't *talk* the same way, and the climate was such a shock. There were just a lot of things. My first job away, you know, being that far away from home. It was different. . . ."

Pettapiece: I'll say. People didn't *talk* the same way, and the climate was such a shock. There were just a lot of things. My first job away, you know, being that far away from home. It was different.

Storey: What did you do for your social activities?

Socializing in the Office When She Arrived

Pettapiece: Well, since it was a new office, a lot of the men's families had not come yet, and so the engineers in the office did things together. I remember going ice skating, my very first time ice skating, with a group, and the only person in the group who knew how to ice skate fell and broke his wrist. He was a draftsman, fell and broke his wrist. So I decided, okay, ice skating is probably not my

kind of thing if the only person who knew how to do it fell and broke his wrist. That was probably not a good thing.

". . . I can remember going to dinners at people's houses. Somewhere along the way I joined the local camera club, and I read a lot, and I worked extra. The office wasn't locked up, and so you could go in on Saturday and . . ."

I guess we did things together. I can't remember now particularly what we did. But some of the families were here, and I can remember going to dinners at people's houses. Somewhere along the way I joined the local camera club, and I read a lot, and I worked extra. The office wasn't locked up, and so you could go in on Saturday and . . .

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Storey: So you were doing lots of things.

Pettapiece: I babysat for some of the people when they wanted to go out in the evening. It was sort of a cohesive group.

Storey: Did you ever get–what is it, the PE, professional engineer, exams?

For Various Reasons Never Took the Professional Engineer Exam

Pettapiece: No. When I graduated in Texas, if you applied, you could become an engineer-in-training without an examination. At the time I came to Montana, they had just started registering engineers, and civils were the only ones that were registered, I believe. I had always intended to do it, but you had to have four years of practice under a licensed engineer, I believe. During the years I worked for the Bureau–and I think this is really unfortunate, but there were very few licensed engineers, registered engineers, in the Bureau in the Great Falls office. So I don't know that I would have ever had–well, I would have eventually, I suppose, had four years under a registered engineer. But by the time I would have been eligible to take the exam, I'd been out of school eleven years. I mean, you had to have four years' experience, and by the time I had four years' experience, I'd been out of school eleven years and still didn't have a licensed engineer who'd supervised my work.

Storey: I just thought that might have been something you would have spent time on. I wasn't aware of this four-year rule either.

Pettapiece: Yeah. You get to be an engineer-in-training.

I don't believe Montana does. Maybe nobody does anymore. But at one time, if you graduated from an accredited engineering school without taking an examination, you could become an engineer-in-training. And after four years as an engineer-in-training under a licensed engineer, then you could, I think by just completing an experience application, get your license. I always had intended to do it, but the exam scared me out.

At one time I did take some review courses from the Corps of Engineers that were available to Bureau of Reclamation employees. They were correspondence courses. I read about it in an engineering magazine, had a hard time persuading the office to do whatever it was, sign my application or whatever. But I did, and I took some of those classes, but I think I never did take all of them. I don't remember why I didn't finish. And they were tricky. You could get the answer–I think they were multiple choice and you could get one of the answers they had by doing the problems wrong. I remember that happened.

Storey: How large was the office when you came?

Size of the Office When She Arrived

Pettapiece: I expect when I first came there were probably twelve or fifteen engineers and draftsmen besides the other sections, and in those days I didn't have a whole lot to do with any of the other sections. It was just engineering.

Storey: What would other sections have been?

Pettapiece: I don't remember what they had in the beginning, but in the later years there were like operation and maintenance, and I never did work with those. And then after the 1964 flood, there was a Construction Division, and there were people, and I can't remember what their section was called, but there were economists and land classifiers. I just don't remember what. Well, there was a Hydrology Section even in the beginning, and I worked in hydrology for a while. That was when I worked on the back-water curves.

Storey: Who was the head of the office, do you remember?

Bill Price

Pettapiece: When I first came, I believe that Bill Price was–I'm assuming the title was project manager. But he wasn't here very long and he left and, I believe, became construction engineer for Canyon Ferry Dam.

Harold Aldrich Became Project Manager

I don't remember if someone else was in the project manager's position, but then Harold Aldrich became project manager, and he was project manager for many, many, many, many, many years.

Storey: Did you get to know him?

Pettapiece: Not very well. I was at the bottom of the heap and there was a hierarchy. We spoke and, you know, he knew who I was, that sort of thing, but I didn't ever really get to know him.

Storey: What was he like as a manager?

Pettapiece: I have no idea. I was too far down to know what he did or what any project manager did in those days.

Storey: What about Jim Hoge?

Jim Hoge

Pettapiece: He was a good engineer and I enjoyed working for him, but he mumbled. I would go in and ask for an assignment or what I was supposed to do, and after you say, "Huh? What did you say?" for about five or six times, you know, then I would go away and do however much I had understood, and then

come back and say, "Now, what was it you said to do next?" like I had forgotten. Well, I never understood what he said in the first place. But he was very good, and he was patient and explained things. As a supervisor, I don't really know how good or bad he was. It was the first one I had.

Storey: This was the Hydrology Section, you said?

Worked in the Engineering Section and the Hydrology Section

Pettapiece: No, it was probably called Engineering [Section], because I worked in Engineering to begin with. And then we got a hydrologist who'd gone to SMU [Southern Methodist University] in Texas. I don't know why, but I was assigned to work for him for a while, and that's when I did back-water curves and other hydrology. Maybe then he got somebody to work for him. I don't remember. I worked for him probably six months or so, anyway, maybe more than that. I just don't remember.

Storey: What were you doing at first when you came?

Checking the Area of a Photogrammetric Surveys Each Month to Determine Payments to the Contractor

Pettapiece: One of the first things I remember doing, Fairchild Aerial Surveys was mapping the upper Missouri area by photogrammeic methods, and I was checking the areas every month to see how much they got paid for. It was not very complicated.

". . . another thing I remember doing, though, and I thought at the time that it was about as stupid as you could do, but the United States and Canada were having a disagreement over the water on the Milk River. The Milk River starts in Montana and goes north into Canada and comes back into Montana. . . . I can't remember whether I designed it or just computed quantities for a dam that would block off the entire flow of the Milk River from going into Canada and keep it all in the United States. I knew it would never happen. But, anyway, that was one of the things I did. . . ."

But, anyway, another thing I remember doing, though, and I thought at the time that it was about as stupid as you could do, but the United States and Canada were having a disagreement over the water on the Milk River. The Milk River starts in Montana and goes north into Canada and comes back into Montana.

Storey: Yes, and it's governed by a treaty from about the 1910s, I think.

Pettapiece: Well, whatever there was wasn't solving the problem at that time. I can't remember whether I designed it or just computed quantities for a dam that would block off the entire flow of the Milk River from going into Canada and keep it all in the United States. I knew it would never happen. But, anyway, that was one of the things I did.

Storey: I can imagine the politics that was going on there.

Pettapiece: There must have been something.

Storey: "Hey, we're constructing a dam that's going to solve this problem." (laughter)

Pettapiece: Oh, it would have been huge. Would have been huge.

Storey: Where would it have been? Did you go up and look or anything?

"I was not *allowed* out of the office. How you talk. No, I never got out of the office to see anything for ten years. . . . Because I was a woman. However, a lot of the men didn't get out either. . . ."

Pettapiece: Oh, heavens, no, no. I was not *allowed* out of the office. How you talk. No, I never got out of the office to see anything for ten years.

Storey: Why was that?

"I always thought it was a failing of the office in not allowing us to go out and see what we were working on. . . ."

Pettapiece: Because I was a *woman*. However, a lot of the men didn't get out either. I always thought it was a failing of the office in not allowing us to go out and see what we were working on. And after about ten years–and this is digressing–but after about ten years, someone from the regional office came up and anybody who wanted to could talk to them. So I think it probably was someone from personnel. I went around and talked to him and said that I didn't feel like it was quite right not to allow people out of the office, *me*, out of the office, and that there must be something going on that I could get out of the office to *see*.

"I got called into–it wasn't the project manager's office, it was an engineer who was head of design and construction or head of engineering. . . . I was called into his office, and he and an administrative officer talked to me and wanted to know why I went and talked to this fellow. . . . anyway, they decided I could go out. . . to courthouses in various counties and check on the ownership of various lands. . . . Anyway, I had a government car

and I went to five courthouses scattered around and checked on ownership, and I had had my trip out of the office. But it was a start . . ."

Well, I got called into–it wasn't the project manager's office, it was an engineer who was head of design and construction or head of engineering. I don't remember what his title was at the time. I was called into his office, and he and an administrative officer talked to me and wanted to know why I went and talked to this fellow. I said, "Well, because he was there to talk to." Well, why did I go do this? I don't know what he had said to them, but it must have been something. I remember what made me the maddest was they talked to me all during my lunch hour and I didn't get any lunch that day.

Storey: Why didn't you just take lunch later?

Pettapiece: Well, it was past lunch hour. Things were very rigidly controlled in that office, more so than was necessary, I always thought. But, anyway, they decided I could go out–and I don't think this was something that engineers ordinarily did–but I could go out to courthouses in various counties and check on the ownership of various lands. So I was going to, I think, five counties and check ownership at courthouses. Well, they set it up

for a week that was election week, and courthouses would have been closed on Tuesdays. So I very carefully went in and pointed this out, and so then I went the next week. And I had a government car. I guess I had ridden in a government car once before. Anyway, I had a government car and I went to five courthouses scattered around and checked on ownership, and I had had my trip out of the office. But it was a start, I guess. I mean, it wasn't what I felt was needed, but I got a foot in the door that, yes, I was allowed out of the office and, no, I didn't do anything terribly wrong. I got the ownership that I was sent to get and didn't dilly-dally and waste my time and all that sort of thing. But there were things like that, you know, that went on that were kind of ridiculous.

Storey: Tell me about a typical day at the office.

Pettapiece: Well, it varied from time to time. I mean, you went to work and you worked on whatever you were–

Storey: When did you go to work?

The Work Day Was Tightly Scheduled

Pettapiece: We started work at a quarter to eight and quit at 4:30 and had forty-five minutes for lunch, I

guess.

Storey: Was the lunch at a set time?

". . . we weren't allowed out for coffee. . . . It was just all big room. . . . anyway, this group of people all had a coffee pot and took turns making coffee and collecting for coffee, and we had coffee at our desk, and only the . . . *top* bosses went out for coffee. So the waitresses downstairs at the restaurant knew more about what was going on in our office than we did most of the time, *if* they bothered to listen. . . ."

Pettapiece: Yes. Oh, heavens, I guess the office never had flextime. That was a *much, much* later invention, and we never had flextime. Everybody went to lunch at the same time and came back at the same time. Forty-five minutes, I always thought, was a real odd amount of time, because it was longer than you needed to eat your lunch and too short to do much of anything else, and we weren't allowed out for coffee. We had coffee in the office.

Then most of the time I worked in engineering, we had one big room that every was in, no dividers most of the time. It was just all big room. The draftsmen were in the office with us, and then the supervisor had a

separated office sort of in one corner of the big room. I believe there was another office that at one time was occupied by the geologist and another time, I believe, there was a reports writer who occupied it. But, anyway, this group of people all had a coffee pot and took turns making coffee and collecting for coffee, and we had coffee at our desk, and only the bosses went out for coffee. Only the *top* bosses went out for coffee. So the waitresses downstairs at the restaurant knew more about what was going on in our office than we did most of the time, *if* they bothered to listen.

Storey: Did Reclamation provide housing when you came up here?

Housing Was Tight in Great Falls When She Reported to Reclamation

Pettapiece: No. No.

Storey: How did you find housing?

Pettapiece: Well, it was hard. Great Falls, in those days and for many years thereafter, *sole* support of the economy of the town were the Anaconda Company and the air base, and so housing for everybody was hard to find. It wasn't the Anaconda Company; they had some company

housing. But the air base, although there was base housing, there were also airmen and their families who lived in town. And there wasn't a lot of housing. I don't know how other people found housing.

"I first lived in a rooming house that someone in the office had told me about, and then later I did find an apartment. . . ."

I first lived in a rooming house that someone in the office had told me about, and then later I did find an apartment. But housing was not very plentiful, and I don't know how the people with families, you know–maybe that's why their families weren't here in the beginning was that it wasn't easy to find housing.

Storey: Do you remember your title and your salary when you came to Reclamation?

". . . I was a P-1 and my salary was slightly over two hundred dollars a month. . . ."

Pettapiece: Well, I was a P-1 and my salary was slightly over two hundred dollars a month.

Storey: Um-hmm. And where was the office?

First Office Was in the "Washington School"

Pettapiece: Well, when I was accepted for the job and told to report, I was told to report to the Washington School, and I thought this has got to be something *really*, really strange. The first morning I took a cab to work and I told the cab driver to take me to the Washington School, and he knew where it was. I guess I did have a street address for it. But it was the school that belonged to the school district and it wasn't being–I believe *part* of it was being used for offices and storage, maybe, for the school district, but the second floor was rented by the Bureau, and we were there for about a year and a half.

Moved Downtown to a Renovated Building Where, as the Great Falls Office Varied in Size, They Occupied Varying Parts of or All of the Third, Fourth, and the Fifth Floors

Then a building downtown, *right* downtown, had a total fourth floor added to it and a fifth floor added over what had been the stage on a theater, I believe. Anyway, it was a partial fifth floor and the whole fourth floor. At one time, because the office was larger and smaller at various times, at one time, the Bureau occupied maybe all of the third floor, at least a part of the third floor, and all of the fourth floor and all of the fifth floor.

Actually, the fifth floor was room for *one* office and some storage, I think, files and stuff.

Storey: But when you say one office, one of these big rooms like you described?

Pettapiece: That was about what it was. It wasn't as big as the one that I had worked in on the fourth floor, but it was one room where several people worked.

Storey: Tell me more about what you did when you first came.

Pettapiece: How long do you think my memory is? (laughter)

Storey: Well, we're going to find out. (laughter)

Pettapiece: I did whatever I was told.

Storey: Well, what were you told?

"I was the reporter for the regional newsletter from the Great Falls office. It was called *The Headwaters.* So I went around and asked people where they went on their vacations and what they were doing and who had had a new baby. And that was about the only contact I had with people in the office except in engineering. . . ."

Pettapiece: Well, let's see, I've told you about the things I remember, checking the acreage to pay the Fairchild Aerial Mapping Company. One of the things I did, and this was a non-engineering thing but I did it for a while, anyway. I was the reporter for the regional newsletter from the Great Falls office. It was called *The Headwaters.* So I went around and asked people where they went on their vacations and what they were doing and who had had a new baby. And that was about the only contact I had with people in the office except in engineering. I took a day or two every month and went around and chit-chatted with people.

"In those days you got a lot more leave. Even when you first started, I think you got twenty-six days a year. . . ."

Then I think after I'd been doing it about a year and a half, I got married and my husband and I were going to Florida to see my folks over Christmas holidays. In those days you got a lot more leave. Even when you first started, I think you got twenty-six days a year. So, anyway, I went in and said I was going to be gone during the time the newsletter needed to be done, the news needed to be gathered up, and I thought maybe it was time somebody

else did that job. So then I didn't do it anymore. But it was one of those things that I didn't really feel like it was an engineering–I knew it wasn't an engineering job. I had *done* it, but I didn't want to do it anymore.

"I came back and didn't know where my office was. . . . I knew that this would happen and I packed up all my stuff and they moved it for me. So then when I came back . . . I had to ask somebody where . . . I belonged. . . ."

I think when we were gone then is when they moved to the office downtown, and I came back and didn't know where my office was. I mean, I knew that this would happen and I packed up all my stuff and they moved it for me. So then when I came back to work after Christmas, why, I had to ask somebody where I was, where I belonged.

Storey: Was this a planning function or a design function or a combination or what?

Pettapiece: I guess in those days it must have been mostly planning, and the big thing was the Upper Missouri, Three Forks Division, maybe. See, I didn't know enough about what was going on to know in those days. That was when Canyon Ferry was being constructed, was during those early days, but that office wasn't

under the Upper Missouri Projects Office.

Farmers Never Signed up for an Irrigation Project at Tiber Dam on the Lower Marias Unit of the Pick-Sloan Missouri Basin Program

The mapping was being done for irrigation projects that were later planned on the upper part of the Missouri River. In those days, maybe Tiber Dam was being–they were getting ready to build Tiber Dam That's up north of here on the Marias River, and it was planned for a big irrigation project. And sure enough, they built the dam and then it rained for a number of years and the farmers have never signed up for an irrigation project, haven't 'til this day, although the dam is there and belongs to the Bureau and has been operated for years and it's used for recreation and some flood control, I guess.

Resigned from Reclamation about 1950 and Came Back about Seven Years Later

I think that somewhere in there, because I worked for the Bureau about a year after I was married and then we were going to have a baby, and I left the Bureau, resigned and lived on the ranch and didn't come back for about seven years. And somewhere in there, maybe

it was after I left, but Tiber was constructed,[3] because we started a local branch of ASCE and I was the secretary. We had meetings in Great Falls, and I can remember some of the people who worked at Tiber coming down at least once or twice for some of those meetings. But I wasn't involved with the Bureau when it was being constructed mostly, I think.

Storey: So how long did you work for Reclamation, that first stint?

Pettapiece: About a year and a half.

Storey: Then you got married, or you'd already gotten married?

Pettapiece: Yeah, I'd already gotten–no, it must have been two and a half years. It was about two and a half years, I think, that I worked, and then I was gone for seven.

When She Was Ready to Return to Work, Applied for a Job in Reclamation's Surveying Office in Cascade, but Was Offered a Job in Great Falls

Then they were getting ready to–in fact, the Bureau had set up an office in Cascade, a

3. Reclamation built Tiber Dam in the period 1952 to 1956.

surveying office. So I came in and applied for a job out there in the surveying office, and they didn't want me because it would have meant probably I was out of the office. But, anyway, they offered me a job in the office in Great Falls. So I came back to work in Great Falls for the Bureau.

Went to Work in Planning/Project Development

Then I remember being in planning. Maybe it was called project development. I don't know what it was called, but we planned. I remember then laying out irrigation systems. Most of them were never built, but it was a planning. I didn't work in design.

"In those days then we had planning and we had design, and I worked in planning and laid out irrigation systems and did survey computations and laid out plane table sheets for surveyors and planimetered land classification for the land classifiers . . ."

In those days then we had planning and we had design, and I worked in planning and laid out irrigation systems and did survey computations and laid out plane table sheets for surveyors and planimetered land classification for the land classifiers, a non-

engineering kind of thing. (laughter)

Storey: Planimetered? What does that mean?

Pettapiece: In those days, you know, if you have an irregular-shaped area of Class I land, say, you need to know how many acres are in it. There's a little device called a planimeter that you run around the edge, and then it will tell you. I mean, you compute it, but it will tell you the area inside that area. The correct way to do it is run it around three times and take an average of the readings, and then you know what scale your map is.

"there was a lot of coloring involved. . . . we colored the maps. Green for Class I and, you know, yellow or blue for the others. *Then* you went around and planimetered and got the area. . . ."

"The land was classified into different classes; Class I was the best and Class II and so on. I think there were five or six, and six was not much good for anything. . . ."

Actually, before we could do that, there was a lot of coloring involved. The land was classified into different classes; Class I was the best and Class II and so on. I think there were five or six, and six was not much good

for anything. And so we colored the maps. (laughter) Green for Class I and, you know, yellow or blue for the others. *Then* you went around and planimetered and got the area. So, you know, you could only have 160 acres of irrigable land, but you could own 160 acres and, say, only have 45 acres of irrigable land. So you could really own more than that. And the different classes–and I didn't ever work in land class, so I'm not sure, but I think the different classes have a different weight. So what you really could have was maybe, say, 160 acres of Class I land, and if you had all Class II land, you could maybe have more than that. I'm not sure about that, because it wasn't my thing. But I got to color. When things really got bad and my children were older, I would take maps home and get help. (laughter)

Storey: In the coloring, you mean?

Pettapiece: I had to promise to give them the colors. It seems to me there were a lot of fellows doing that.

Storey: Did you have to draw these shapes on there from surveys or something?

Storey: No. The surveyors had gone out with plane table sheets and mapped the areas, and then

the land classifiers had dug holes or drilled holes, or whatever they did, to classify the land and they'd drawn the boundaries.

". . . I didn't draw boundaries. I just colored and planimetered, and that really was because they didn't have enough people in land classification to do it and it had to be done. . . ."

So, no, I didn't draw boundaries. I just colored and planimetered, and that really was because they didn't have enough people in land classification to do it and it had to be done.

At a later time, someone developed a grid that you laid over it and it had little circles on it and you counted up circles and squares. There were squares with circles in the middle and you counted up the squares if they all laid in the area. And if they were only partly–then if it ran on one side of the circle, it was so many tenths of an acre, and if it ran on the other side and if it ran through the middle, and so you just counted things instead of running the planimeter around it.

". . . most of the time I worked for the Bureau I did a lot of the survey computations, and I enjoyed doing it. It was sort of not too complicated. Nobody bothered you. You did it by yourself, and

you could tell when you were done whether you were right or wrong. . . ."

I'm not sure quite why I did, but most of the time I worked for the Bureau I did a lot of the survey computations, and I enjoyed doing it. It was sort of not too complicated. Nobody bothered you. You did it by yourself, and you could tell when you were done whether you were right or wrong.

". . . I . . . laid out a seventeen-mile railroad relocation on the East Bench Project down near Dillon. It was something that I worked on by myself and selected the slopes of the railroad. It was a railroad that had been there . . . for a long time. I always thought they probably couldn't go more than twenty-five miles an hour on the railroad that they had. But, of course, if Uncle Sam was going to rebuild it for them, they wanted to go seventy-five miles an hour on it. . . ."

One of the things I did from surveys was laid out a seventeen-mile railroad relocation on the East Bench Project down near Dillon. It was something that I worked on by myself and selected the slopes of the railroad. It was a railroad that had been there, belonged to the U-P, and had been there for a long time. I always thought they probably couldn't go more than twenty-five miles an hour on the

railroad that they had. But, of course, if Uncle Sam was going to rebuild it for them, they wanted to go seventy-five miles an hour on it. So I would lay things out and select the grades and so on, and then the head of engineering would go to Omaha to talk to the railroad and come back and they would want things changed, and so then you'd change them. I would have sworn that if he gone down there one more time, we were going to have gold-plated rails on it.

"But, anyway, it was kind of neat. Not many people get to design railroads anymore. Most of the railroads have been built long ago . . ."

But, anyway, it was kind of neat. Not many people get to design railroads anymore. Most of the railroads have been built long ago, and so it was sort of neat to do.

END SIDE 2, TAPE 1. JUNE 10, 1997
BEGIN SIDE 1, TAPE 2. JUNE 10, 1997.

Storey: This is Brit Allan Storey with Lucy Pettapiece on June the 10th, 1997.

You were saying they wanted spirals at the end of the curves.

Pettapiece: Right. And they sent the information on how

to compute them, but the spirals that you put on curves sort of ease into the curve, and I didn't know how long a stretch they expected to be the spiral. But because I went to the ASCE meetings, I knew a fellow who worked for the Burlington Northern, and so I asked him about–I asked the boss, but he didn't know. So I asked this fellow that worked for the railroad, and he told me how the Burlington Northern did it, how long a stretch. Like, okay, you take so long at the beginning. And I went back and did it, and when that went to Omaha, they never did argue about it, so I assumed it was what they wanted. I mean, I used their criteria for laying them out. But it was kind of fun. I never did see it after it was finished.

Storey: And you didn't see it while you were designing?

Pettapiece: Oh, heavens, no. No, no, *no!* Of course not. (laughter)

Storey: You mentioned that you designed canal systems, some of which were built, most of which were not built. Do you remember any in particular?

Working on Canal Systems in the Area of Townsend, Montana

Pettapiece: The ones I remember the most about were on the Townsend area, which is upstream from Canyon Ferry, and that project was never built. I'm sure I did a lot of others, too, but I just don't remember what they were.

Planning for Lining Canals on the East Bench Project

Then in later years, one of the projects that the Upper Missouri Projects Office built was the East Bench Project down in Dillon, one that I did the railroad relocation for. So one of the things that we did in later years was lined the canals, some of them with asphalt. It was after they'd been in operation for a number of years. Because, I guess, you needed to conserve more water, we went in and lined some of them, some with asphalt and some with polyvinyl chloride. And I worked on designs for some of that, I guess, or planning.

Storey: So you had left about–let's see if I'm getting this right–about 1950, went back about '57?

Returned to Reclamation about 1957

Pettapiece: Um-hmm.

Storey: Had you gotten a promotion? Were you still a

P-1?

Was a P-1 until She Asked for Her P-2

Pettapiece: No. Well, they had changed a lot of things while I was gone. I was a P-1, and in those days you had to be a P-1 for a year before you could be a P-2, and I guess after a while I decided I'd been P-1 long enough, and so I went in and said something to my boss about, you know, I thought it was time for me to be a P-2. I can't remember what happened. But, anyway, eventually after that, I got to be a P-2.

". . . nobody was going to promote me, I guess, unless I asked. I wasn't very good about doing that sort of thing. . . ."

But nobody was going to promote me, I guess, unless I asked. I wasn't very good about doing that sort of thing. I hesitated and I waited a long time, and I was a P-1 for a lot more than a year. But I got to be a P-2.

"The only times I ever got promoted were when someone somewhere decided that all engineers . . . they referred to it as the journeyman grade [should be increased in grade] . . . At one time I think it was GS-9. Then when someone decided it should be GS-11. Then I got to be a GS-11, along

with all the others. . . ."

Then when I came back, they had changed the whole system and it was GS. The only times I ever got promoted were when someone somewhere decided that all engineers–and they referred to it as the journeyman grade for engineers, although I eventually told personnel that that was not a professional term and I didn't want to–I didn't believe they ought to say that anymore. But, anyway, they kept referring to it as the journeyman grade. At one time I think it was GS-9. Then when someone decided it should be GS-11, then I got to be a GS-11, along with all the others. But I didn't ever get promotions because I did a good job or anything of that sort. Although, of course, I did. (laughter)

"I used to apply for jobs in the office when they came along that would have been promotions, but I didn't ever get them. . . ."

I used to apply for jobs in the office when they came along that would have been promotions, but I didn't ever get them.

"I remember going in once to the administrative officer, who really was the person who ran the office, not the project manager. . . . there'd been

some job advertised and I'd applied for it and said, you know, something about why didn't I get it. . . . equal opportunity employment was at least out in the world. And I said they had to treat me the same as other people. He told me that he had turned down someone named Lee who had applied for the job because he was Oriental and the government could do what it wanted to do. . . ."

> I remember going in once to the administrative officer, who really was the person who ran the office, not the project manager. I went in to the administrative officer when there'd been some job advertised and I'd applied for it and said, you know, something about why didn't I get it. This was after–I'm not sure after it became such a big thing, but equal opportunity employment was at least out in the world. And I said they had to treat me the same as other people. He told me that he had turned down someone named Lee who had applied for the job because he was Oriental and the government could do what it wanted to do. I thought that was very, very strange, because I grew up in the South and if you say "Lee," you think of Robert E. who was not Oriental.

"I kept applying when there were vacancies in the office, because we had a ranch and it's real hard

to pick up your cows and move them. I knew that I wouldn't get the job, but it was a reminder that I was still around. And it updated my [application] . . . form. . . ."

But, anyway, I decided, okay, if that was his attitude, there was no use fighting that battle anymore. And I kept applying when there were vacancies in the office, because we had a ranch and it's real hard to pick up your cows and move them. I knew that I wouldn't get the job, but it was a reminder that I was still around. And it updated my–whatever it was, the form.

Storey: Your application form.

Pettapiece: Application form. But, yes, it was probably really different working knowing that no matter what you did you wouldn't be promoted. And so you just did not what suited you, you did the best job that you could do for your own satisfaction.

Storey: But for the most part, this wasn't overt?

Pettapiece: Well, I suppose it was, but you knew what the situation was. So what was the use of–no, they didn't come out every time and tell me that, "We're not going to promote you." And there was one time that I felt kind of bad

about it, because I think they had set up a job for a person in the office but, you know, you had to apply for it. I mean, they took applications for it, and I applied for it and the job never did materialize. The fellow didn't get it. And I'm sure that they had set it up for him. Nobody got the job. It just disappeared. I thought, well, that was too bad, because he would have gotten a promotion. But you know, this was all just conjecture on my part. But I worked with the same people for a long time, and I sort of knew how it operated.

Storey: Who did you go back to work for when you went back? Was Jim Hoge still there?

After Returning to Reclamation Worked for Jim Hoge, Wade Stone, Warren Webber, and John Facey

Pettapiece: I think he was for a very short time and then–although I can't swear to it. And he was replaced by Wade Stone, whose brother-in-law had been a draftsman in the office when I first went to work there. I think he wasn't there when I came back. But it seems to me that Jim might have been there just for a few months and then left. As far as I know, he was never a part of the problem about my never getting a promotion no matter what happened or anything. You know, he's the

one I went in and talked to when I got from a P-1 to a P-2.

Storey: So that would have been, what, two and a half years before and then some time when you were reemployed.

Pettapiece: Yes.

Storey: What was he like as a supervisor for you?

Pettapiece: Wade?

Storey: Yes.

Pettapiece: Well, I guess he wasn't my immediate supervisor. I can't remember now. . . he was head of design when I first went back to work, and John Facey [phonetic] was head of planning or project development or whatever they called it. Oh, I know who. It wasn't Wade Stone. It was–oh, dear. Warren Webber [phonetic] was head of engineering then, I believe, after Jim Hoge. John Facey was my immediate supervisor, and he was all right to work for. I got along with him all right, I guess. I sound like I didn't get along with people very well, don't I?

Storey: No, actually what you say is what most folks say in the interviews.

Pettapiece: What?

Storey: "I got along with him fine, and I could work with him," something *along* those lines is what most people say.

Pettapiece: Well, most people you can.

Storey: That's true.

Pettapiece: But then I came to one that I couldn't. Somewhere along the line, and I don't remember how long it was into things, Warren Webber was promoted to like a division chief, and Wade Stone and John Facey competed for whatever the next level down was, the next level above where they were, and Wade Stone got it. Although he was a competent engineer, he was not a very good supervisor or manager, and he didn't stand up for the people who worked for him. And I guess probably John Facey didn't stand up for the people who worked for him either, because Warren Webber, although I got along with Webber, he was not easy, I guess, for people. And I'm not sure how to describe the way he was. He was certainly a competent engineer.

"Because we had this very authoritative administrative officer who ran things, it was difficult for any of them, I think, to do much for the

people that worked for them. . . ."

Because we had this very authoritative administrative officer who ran things, it was difficult for any of them, I think, to do much for the people that worked for them. But, anyway, we survived, mostly.

Storey: So it's the A-O who ran things, really?

The administrative officer ". . . eventually became project manager, and he wasn't project manager very long. . . . And I think they forced him to retire. . . ."

Pettapiece: For a good many years. Then he eventually became project manager, and he wasn't project manager very long. I mean, in the whole scheme of thirty years, he was not project manager very long. And I think they forced him to retire. Somebody he said later, maybe he was offered a job in Billings. I don't know. But for a lot of years there were rumors.

". . . somewhere along the line there was talk about our office being closed, and there was talk about . . . closing the regional office and combining it with the region in Denver. Those sorts of rumors went on for–it seemed like forever. . . ."

When the office was first opened was when they were setting up projects offices as opposed to regional offices. Then somewhere along the line there was talk about our office being closed, and there was talk about it for a lot of years, and there was talk about closing the regional office and combining it with the region in Denver. Those sorts of rumors went on for, it seemed like forever.

". . . in 1964 there was a big flood, and Swift Dam up near Dupuyer on Birch Creek failed. It was not a Bureau dam. . . . There was flooding in Great Falls. There was flooding in a wide area. . . . Gibson Dam on the Sun River . . . was overtopped by seven feet of water, and it scoured the area downstream for quite a long ways . . . The dam wasn't damaged . . . I wouldn't believe it when I heard that it had been overtopped. . . . the snow was still in the mountains, and it rained, and melted snow, and the water came down. And there was flooding up on the Marias River and just a lot of streams in the middle of Montana. . . . But in '64 our office went on overtime, the engineers anyway, and we worked sixty hours a week. We worked on Swift and there were a lot of smaller structures out on the Sun River Project . . ."

In 1964 there was a flood, and I'm sure the administrative officer had a big hand in

doing it. He could accomplish things. He did not treat people very well. Anyway, the office took on–okay, it was in early June. In Great Falls, in Montana, in this part of Montana, the story is that we have a flood every eleven years. So in 1964 there was a big flood, and Swift Dam up near Dupuyer on Birch Creek failed. It was not a Bureau dam. It went out and about eleven people were drowned. The dam tender's–I think his whole family was wiped out. He survived. And he had a large family. But a lot of people were drowned. There was flooding in Great Falls. There was flooding in a wide area.

Storey: When that dam failed, didn't it overtop one of our dams?

Pettapiece: No. It was not on the same stream. Gibson Dam on the Sun River and the Sun is right out here at your doorstep. The Sun River. Gibson Dam was overtopped by seven feet of water, and it scoured the area downstream for quite a long ways and took out trees and whatnot. The dam wasn't damaged, although it was built with mules and fresnoes and hand labor back in, I guess, in the twenties.

Storey: Evidently with an elementary form of trial-load method.

Pettapiece: I don't know. But it did very well. I wouldn't believe it when I heard that it had been overtopped. I thought somebody was just spouting off the top of their head. But I think it was June 6th, and the snow was still in the mountains, and it rained, and melted snow, and the water came down. And there was flooding up on the Marias River and just a lot of streams in the middle of Montana. I live at Cascade right on the river, and we didn't have serious flooding in '64. But that was after Canyon Ferry was finished. In '53 there was flooding, because Canyon Ferry wasn't finished.

But in '64 our office went on overtime, the engineers anyway, and we worked sixty hours a week. We worked on Swift and there were a lot of smaller structures out on the Sun River Project, which is one of the Bureau's older projects. They designed and rebuilt some of the structures out there. I don't know the politics of how the Bureau got involved in redoing things like Swift Dam, which wasn't ours, but they brought in survey crews. I guess they set up an office at Conrad eventually.

Reclamation Ran into Trouble with its Plane Table Sheets as Work Proceeded to Repair 1964 Flood Damage

Brought in survey crews and they would go out and do surveys and they would bring in the information, and then I would compute it and lay out plane table sheets. Then they would take the plane table sheets out to the field and map on them, and they'd come in with some more control and bring the sheets in and I would put it on . . .

There was a real problem, though, because the sheets, which are heavy cardboard, would change dimensions when they were out in the field. So that if you measured a thousand feet between two points as carefully as you could, when it came back in, it wouldn't be exactly a thousand feet. But if you had another point, say, that had measured a thousand feet when you laid it, or, you know, some particular distance, when you laid it out on the sheet, when it came back in, it would have changed a different amount than the thousand feet you had on there for the first two points. And when the plane table sheets went to Denver for designs, they had a real problem in that you couldn't measure things and have them turn out right. I used to take those plane table sheets home and hang them up in my laundry room, thinking that maybe the moisture would help them to stabilize. It didn't work.

I can remember–and I'm not sure why I was–I was working with Warren Webber at that time, although he wasn't my supervisor, but he came in and told me I had to come up with some sort of a factor to use, and I kept trying and trying and you couldn't measure between any two points and come up with the same percentage difference. I finally told him he'd have to do it himself, because I couldn't come up with the figure that would suit them. So I don't know what he did, but he came up with something and Denver got the dam designed.

But we worked long, hard hours all summer long. I remember two people from Denver came up, designers, and they apparently were accustomed to working four weeks of overtime and then having like a weekend off or something, and they had thought they would get to go up to Glacier Park some weekend. It didn't work that way in our office. You worked sixty hours a week the whole time.

Storey: And did they pay you overtime?

Pettapiece: Yes, but since we were only authorized to work sixty hours a week, sometimes we had to work more than that to get what needed to be done. So then we would only put down sixty

hours on our time sheets and then the next week we'd put the rest of it on, if it worked out. We got paid overtime for all of it, though. It was interesting and you felt like you were accomplishing something. You weren't planning something that might or might not be built. But tempers did tend to get short after a while.

Storey: What were you working on in that period?

Pettapiece: I did those plane table sheets for Swift Dam, and that was a continuing thing for quite a long time. I was forced into designing some structure out on the Sun River Project. And design was not my cup of tea. It was some small structure, I guess, but I struggled through it. I don't remember what I did the rest of the time.

Storey: That's sixty-hour weeks for how long, do you suppose?

Pettapiece: Well, we started–it went on for months. We started–well, the flood was the sixth of June, and I would guess by sometime in July, probably, and I don't remember when it was.

There was going to be a Bureau picnic one Saturday, and my family really didn't care about going to Bureau functions. My husband

was a rancher and my kids were going to school out in a small school and didn't know the other kids, so I wasn't planning to go to the picnic. But they came in and asked me if I'd work on Saturday and I said okay. This is starting to do some of the survey computations.

There was another fellow in the office who said, oh, well, he'd be glad to work overtime. He hadn't been in the office. He'd worked on the East Bench Project when it was being constructed, and East Bench Project must have been finished and he came into our office. I don't know if he felt like he ought to be more important or what it was. But, anyway, he was long-winded, and I had to explain to him everything to do, and I could have gotten the job done quicker by myself, I think, if I hadn't had to explain to him what to do. That doesn't sound very good either. It sounds like I thought it was real important. But I'd been doing survey computations for a long time. I knew what I was doing, and to have to stop and explain to him. He was older than I. I thought he ought to know what it was all about and it was kind of frustrating. That one day was the only day we had worked together, just the two of us.

". . . anyway, the flood rejuvenated the office, I

guess, because then we had a *lot* of work to do and worked long hours. . . ."

But, anyway, the flood rejuvenated the office, I guess, because then we had a *lot* of work to do and worked long hours.

"They brought in . . . a man who was not a graduate engineer but he'd been an engineer, I guess, on the Helena Valley Project, and he came into the Great Falls office as head of construction then. . . ."

They brought in somewhere along the line a man who was not a graduate engineer but he'd been an engineer, I guess, on the Helena Valley Project, and he came into the Great Falls office as head of construction then.

Went to Work in Construction

In 1965, the secretary in the Construction Division had some illness that kept her off work for, I think, several months, and they asked me if I would go work in construction, and I said fine. I sort of felt like he thought he was getting a substitute secretary. But, anyway, I worked in construction and I remember being asked to type some report, that it was just fill in the blanks, but when I had to ask how to turn on the electric

typewriter, I suspect that– (laughter)

Storey: They got the message, huh?

Pettapiece: I got it done, but, you know. I probably used a lot of White Out. I worked in construction for–and I enjoyed working in construction. I worked in construction for, I don't know, a couple of years, maybe.

"Although I got along with him fine and I enjoyed him, he thought answering the telephone was 'women's work,' and if he was standing right by the phone and it rang, he wouldn't answer it. And I just didn't think that I could work for somebody with that kind of mentality. So I went down and said that I . . . was hoping to get my license, and that I needed to work for . . . somebody who was an engineer, and I wanted to be transferred out. . . ."

And then I know what it was–these are awful things to be saying, but it was the way it was. The man who was in charge of construction–this was after the flood thing was all over–retired, and so the field engineer, who was not a graduate engineer, was going to be promoted to be head of construction. Although I got along with him fine and I enjoyed him, he thought answering the telephone was "women's work," and if he was

standing right by the phone and it rang, he wouldn't answer it. And I just didn't think that I could work for somebody with that kind of mentality. So I went down and said that I just didn't think I wanted to work for him, but I was hoping to get my license, and that I needed to work for a–because he was not a graduate engineer–that I needed to work for somebody who was an engineer, and I wanted to be transferred out. That wasn't the reason at all. It was the telephone, answering the telephone being "women's work" was what I thought I couldn't handle.

Moved Downstairs into Planning

So, anyway, I moved back downstairs into planning, I guess, or whatever they called it in those days.

Storey: Working for whom?

"I suppose I was working for John Facey. . . . And then he . . . went to Riverside, California, to work for not the Bureau; I think it was like for Riverside Water Project . . . about a year later he came back to that same job and he stayed, I don't know if it was two days or three days and he left again, and . . . I think maybe he'd forgotten what the office was like and came back and realized it hadn't changed any and he left. . . ."

Pettapiece: I suppose I was working for John Facey. I can't remember then. And then he must have left. He went to Riverside, California, to work for not the Bureau; I think it was like for Riverside Water Project or Riverside Irrigation Project or something. I think they must have just left the job vacant for a while, because about a year later he came back to that same job and he stayed, I don't know if it was two days or three days and he left again, and I don't know what–I think maybe he'd forgotten what the office was like and came back and realized it hadn't changed any and he left.

". . . after that they brought in a man from North Dakota who didn't even speak the engineering language. I had applied for the job, knowing I wouldn't get it. . . ."

I guess after that they brought in a man from North Dakota who didn't even speak the engineering language. I had applied for the job, knowing I wouldn't get it.

But, anyway, I don't think this is going real well, because all I'm doing is complaining, and I didn't all the time. But those are the things that I remember.

Storey: That's okay.

Pettapiece: Anyway, they brought in this fellow from North Dakota. He had, I think, maybe had a year of engineering school, and he had taught in a school so small that he was the principal and the janitor both. Apparently the Soil Conservation Service had had an exam for engineers and he had taken whatever test they had, and they were so short of engineers that everybody that took the test passed it. I don't know when he had come to work for the Bureau. He *obviously* resented me, and there was nothing I could ask him that he could answer that I needed to know. Anything he could tell me, I already knew and I didn't need to ask him. I wasn't a smart-aleck either, but it was really frustrating.

Storey: How long did he stay?

"Well, I transferred out of that one again. I don't know how long he stayed. Too long for me. And it wasn't just me. . . ."

Pettapiece: Well, I transferred out of that one again. (laughter) I don't know how long he stayed. Too long for me. And it wasn't just me. One of the secretaries told me he had come in and asked for "the Lower Marias file." And she said, "We have like, I don't know, five or ten

three-drawer, four-drawer files of Lower Marias stuff, and which one do you want?" And he didn't have a clue. Then he acted like it was her fault. So he didn't know what he was doing, and he resented finding out that he didn't, I guess.

Storey: And working with him was not–

Moved into Hydrology for a While

Pettapiece: I finally went in and said I just couldn't work under those conditions, and so they moved me into hydrology for a while.

Storey: So what were you doing there . . .

END SIDE 1, TAPE 2. JUNE 10, 1997.
BEGIN SIDE 2, TAPE 2. JUNE 10, 1997.

Storey: ... doing in hydrology and with whom were you working?

Worked with Brian Edwards

Pettapiece: I worked with Brian Edwards, who later was in the regional office, I think, until he retired. One of the things I did, I think, was figure–I can't even remember what you call it–average growing days or something of the sort. You compute how many average days, growing

days does the weather permit.

Storey: The growing season?

Pettapiece: Sort of. And you used Weather Bureau records.

Storey: On any particular projects?

Pettapiece: No. It had a big impression on me, because I can't remember any of it.

Storey: And you were still in the office all the time then?

Pettapiece: Oh, yes. Yes. I guess they could only detail me for six months without doing something different. I may not have the time sequence right, because, well, then they told me they'd have to move me back into the other office, I guess. I'm not sure. It seems like I was in construction at some time along there, but I think I was only in construction the one time.

Somewhere along the line I worked on the Saltzman machine, which was a big enlarger. I can't even remember what I was working on, except that you stayed in a dark room to do it, and it was out of adjustment and you couldn't get it in adjustment. It bothered my eyes a lot.

Storey: This was for stereo effect?

Pettapiece: No, it wasn't stereo. It was just enlarging–I'm a total blank. I can't remember what I was doing, but I did it for longer than I wanted to, anyway.

Storey: And then they transferred you back?

Pettapiece: I must have been transferred back. I don't remember working for the one I'd had trouble with, but maybe I did or maybe I just did something that I didn't have to bother to ask him anything about. I think at some time they maybe just had one person supervising all the engineers then. Maybe they didn't hire anybody to break it up into planning and design for a while.

". . . most of the time when I worked in engineering, I didn't have any overall picture of what was happening. I only knew the part that I was working on. We didn't have any office meetings that explained to us . . ."

But most of the time when I worked in engineering, I didn't have any overall picture of what was happening. I only knew the part that I was working on. We didn't have any office meetings that explained to us that this was the East Bench Project and we were going

to work on it and what it was all about in the overall scheme of things. You learned things by hearing other people talk about it or, you know, you got some concept, but you didn't know as much as you maybe would have been better off knowing where you fit into the picture.

"I remember designing *parts* of two office buildings, one for the East Bench Project and one for the Helena Valley Project. One of them I did the lighting system, and one of them I did the heating system . . ."

I remember designing *parts* of two office buildings, one for the East Bench Project and one for the Helena Valley Project. One of them I did the lighting system, and one of them I did the heating system, and I always knew, because this was not my forte, I always knew that one of them was bound to be cold and the other one was bound to be dark. (laughter)

I did get to see the one at Helena Valley. I guess eventually I must have seen the one at East Bench, too, but it was, you know, *years* after they were built. And it was kind of interesting because buildings was not our usual thing. They were metal buildings and then they put some brick facing on part of it.

Part of it was, I think, for a shop. Part was for office space. So that was sort of different.

There Was Uncertainty about the Life of the Project Office, People Were Transferred Out, and the Project Manager Position Turned over Several Times after Harold Aldrich Left

I can't remember all of the various things that were going on, but there was always talk about closing the office. I'm trying to remember when it was, and I can't. At some stage a lot of the people from the office were transferred out. A number of them were transferred to Billings. At one time, I think there were probably over a hundred people in the office when it was at its greatest size, and they had cut back at various times. Somewhere along the line they cut back and they shipped people out, either retired them or transferred them or whatever, and some people went to Billings who only needed a year or so to retire, I think.

We changed project managers. For a long time, Mike Drasitch [phonetic] was the project manager after Harold Aldrich, I think. He must have retired, and maybe that's when the administrative officer became project manager, and he wasn't project manager very long. Whether it was an effort to get him out

of the office or what, I don't know. But something happened so that he retired, and I don't think he particularly wanted to retire.

Then Ralph Hauck [phonetic], who was quite young for a project manager and had been, I think, principally a reports writer maybe, became project manager for a fairly short time, and he transferred to somewhere in Arizona, I think.

Storey: Mr. Hauck had been a reports writer here in Great Falls.

Pettapiece: Yes, I think that's what he had. See, I wasn't quite sure what people's titles and jobs, except in my own bailiwick. He was project manager. Then I believe after he left, maybe he left at the time they really chopped the office up.

"They wanted to close the office, and they were getting closer to accomplishing their goal, but there must have been . . . some political to-do. So they didn't completely close the office. They moved all of the functions out except construction. . . ."

They wanted to close the office, and they were getting closer to accomplishing their goal, but there must have been somebody–there was

some political to-do. So they didn't completely close the office. They moved all of the functions out except construction. I guess most of them must have gone to the regional office in Billings and they left construction.

"The job was vacant and that's when I applied, to remind them I was still around. And then I was selected as project manager, for lack of somebody else, I expect, because there were still the rumors about the office being closed. . . ."

The project manager was Bill Brooks. I think he didn't go to college right after he finished high school. He came to our office just after he finished college and was about a thousand years younger than I was. (laughter) He was project manager for a year or two, and they were going to open a construction office at Tiber Dam to do some repair work. I'm not sure, it was probably under the safety of dams program. But, anyway, they set up a construction office up there. He really wanted to be a construction engineer, but he went up there as field engineer, I think. The job was vacant and that's when I applied, to remind them I was still around.

And then I was selected as project manager, for lack of somebody else, I expect,

because there were still the rumors about the office being closed.

"I went . . . to some class in Denver . . . someone in my group mentioned that he had been going to apply for the project manager's job there, and someone had told him that the office was probably going to close. So I don't know whether he didn't apply or withdrew his application or what. . . ."

I went sometime later to some class in Denver, one of those where you learn what you are or something, you know, one of those. Not my kind of thing. But, anyway, someone in my group mentioned that he had been going to apply for the project manager's job there, and someone had told him that the office was probably going to close. So I don't know whether he didn't apply or withdrew his application or what.

Storey: When would that have been?

Selected as Project Manager in 1976

Pettapiece: In '76.

Storey: So what were you doing in that ten years in between? What was your grade when you applied for this position?

Pettapiece: GS-11.

Storey: So the Project Manager position was a 12?

The Project Manager Job Was a GS-12

Pettapiece: It was at that time. It had *been* much more than that. I would guess that when they cut it back to nothing but construction, they cut the position back to a 12. So it went on for several months and I was acting. Maybe there was only one other engineer in the office, a young engineer who had only been maybe a couple of years there. I can't remember when Brooks left, but in the fall, I think, I was selected then.

Storey: Well, I know you're not going to believe it, but it's been two hours since you arrived.

Pettapiece: And it's time to quit.

Storey: And it's time to quit for today.

Pettapiece: All righty.

Storey: I'd like to ask you if you're willing for the information on these tapes and the resulting transcripts to be used by researchers.

Pettapiece: Sure.

Storey: Good. Thank you very much.

Pettapiece: For whatever it's worth.

END SIDE 2, TAPE 2. JUNE 10, 1997.
BEGIN SIDE 1, TAPE 1. JUNE 11, 1997.

Storey: This is Brit Allan Storey, senior historian of the Bureau of Reclamation, interviewing Lucy Pettapiece at the Heritage Inn in Great Falls, Montana, on June the 11th, 1997 at about two o'clock in the afternoon. This is tape one.

Seven Years Away from Reclamation

I'd like to ask you about those seven years when you were away from Reclamation. You mentioned them yesterday. You were off taking care of family, I gather.

Pettapiece: Right. And ranching and feeding cows and all that sort of thing.

Storey: You mentioned one child, I believe, was coming when you left.

Pettapiece: Correct. I have three daughters.

Storey: Named?

Pettapiece: The oldest is Susan Pettapiece Wooten, and

the second is Patricia Pettapiece. She's married, but she didn't take her husband's name. And the third one is Ruth Pettapiece Hartman. Two of them live at Cascade, and the oldest lives in Stone Mountain, Georgia.

Storey: They were all three born in that seven-year period, were they?

Pettapiece: Yes, they were.

Storey: And your husband?

Pettapiece: Was a rancher and ranched all of his life.

Storey: On a family place?

". . . we rented ranches over the years, different ranches, until we were finally able to buy one, and we still own it. . . . we still have the ranch, and the youngest daughter runs it. . . ."

Pettapiece: Well, we rented ranches over the years, different ranches, until we were finally able to buy one, and we still own it. My husband died about four years ago, but we still have the ranch, and the youngest daughter runs it.

Storey: And your husband's name?

Pettapiece: Vance Pettapiece.

Storey: Was he a native Montanan?

Pettapiece: Oh, yes. Montanans back then, I don't think got out of the state a whole lot. I mean, people were born in Montana and never saw any of the rest of the world. He had been in the Navy during the war, so he'd been outside. But his parents, his father, I think, had hardly ever been out of Montana. A lot of people in those days didn't leave the state.

Storey: Did he ever say anything about why he joined the Navy?

Pettapiece: I can't remember that he did. He quit high school to join during the war and I think was young enough his parents had to sign for him to go into the Navy.

Storey: It's an interesting phenomenon. My dad went into the Navy, too, and he was a Coloradan.

Pettapiece: And had never seen the ocean?

Storey: Yeah. I just wondered if there was some characteristic there.

Pettapiece: Well, join the Navy and see the world.

Storey: Yeah. Well, another question I wanted to ask you is whether you knew other women

engineers at Reclamation.

Women Engineers in Reclamation

Pettapiece: No. I think when I first began with the Bureau, there weren't any. In later years, I think there were some in the region, in the Dakotas. But I didn't ever meet them. The last year I worked for the Bureau, there was a young women engineer in the regional office in Billings, who was on the rotation program, I think, and worked in the division that I was in, although I believe maybe when her rotation was over, she transferred or she got permanent assignment in another division. But I didn't know her very well and had to leave. Before that year was over, she had resigned from the Bureau and left.

But there were others, and I used to get phone calls about using me for an example for something. I'm not sure what. I would say, "Well, there's another woman engineer." And I can't remember where it was, it was one of the Dakotas. I guess maybe she hadn't been with the Bureau as long or something, because I got to be the bad example of whatever it was they were doing, I think.

Storey: Did you have any insights as to why the woman in Billings resigned?

Pettapiece: She was married and was going to have a child, and so she left. I think she *did not* enjoy working in the division, the Engineering Division, and went into finance or programs or something for a while before she resigned. I didn't know her very well, although she lived in Cascade after that, and I saw her. Well, for about a year then, I think, and she and her husband started a construction business.

Storey: What about training? What kind of training did you get while you were working for Reclamation?

"I kept wanting to go to Earth and Concrete School in Denver, but I'm not sure the request ever got anywhere besides just my asking, because I didn't ever get there until I became project manager. . . ."

Pettapiece: Not much. I kept wanting to go to Earth and Concrete School in Denver, but I'm not sure the request ever got anywhere besides just my asking, because I didn't ever get there until I became project manager.

"I had a class in supervision and group performance in Billings before 1964. . . ."

I had a class in supervision and group

performance in Billings before 1964. I was never sure why I was sent, because I wasn't a supervisor. Maybe it was so I'd improve my group performance.

" . . . I took some correspondence courses to review for the PE exam from the Corps of Engineers that the Bureau had to approve. . . ."

But that was the only training other than I took some correspondence courses to review for the PE exam from the Corps of Engineers that the Bureau had to approve.

"After I was project manager, I sent myself to Concrete and Earth School, and I also went to a class in Denver. . . . I think you were supposed to find out what sort of person you were or what sort of supervisor you were, maybe. I was surprised to find that I was about equal when it came to whether you more oriented toward getting the job done or more oriented toward people. . . ."

After I was project manager, I sent myself to Concrete and Earth School, and I also went to a class in Denver. I don't remember what it was called. They locked you up for a week in the hotel, and you played little games and acted out things, and I think you were supposed to find out what sort of person you were or what sort of supervisor

you were, maybe. I was surprised to find that I was about equal when it came to whether you more oriented toward getting the job done or more oriented toward people. I think I fell somewhere in the middle and I was kind of surprised to find that. It was interesting, and there were people from all over the Bureau in the group.

Storey: That was a week-long class, two-week-long class?

Pettapiece: A week-long class.

Storey: What surprised you about what you found out?

Pettapiece: Well, I guess I had thought I was more job oriented than people oriented, so I felt better about the way I operated. But it was just a test. Maybe I cheated. I don't know. (laughter)

Storey: Well, you never can tell. (laughter)

Pettapiece: I mean, they didn't ever tell me what the class was for before I went. You weren't suppose to know anything about it before you went. I asked somebody who'd been, and they wouldn't tell me. And all I know was that the regional director said it was something I ought

to go to, and I went.

Storey: Well, yesterday we went fairly quickly from about ‘64, I think, to ‘76. You were talking about the project managers and then suddenly you were one. What were you doing in the office during that period of time?

Work Between 1964 and 1976

Pettapiece: I thought about it last night, because I couldn’t remember, but I think that’s the period of time probably when we were working on–okay, East Bench Project and Helena Valley Project had been in operation for a number of years, and it reached the point where they needed to have drains put in.

Lining Canals and Putting in Deep Drains on the East Bench Project and Helena Valley project

They weren’t put in during the original construction, and it reached the point where they needed to line some of the canals to conserve water or prevent the leakage.

Storey: So there was some waterlogging out there?

Pettapiece: Well, I don’t know that . . . since I ever got to see them, I don’t know that there was. I don’t think it was *that* serious. Maybe it was a case

of not having enough water to go around, and so you conserved it by lining the canal and preventing the seepage, but I can't say for sure.

"Someone else made the decision that it was to be done, and we prepared specifications and did the designs in the office and estimated quantities and costs for doing the work. . . ."

Someone else made the decision that it was to be done, and we prepared specifications and did the designs in the office and estimated quantities and costs for doing the work.

Storey: Did anybody go out and look at these projects?

No One from Engineering, Planning, and Design Went out to the Canal Lining Projects and Work Went on over Several Years as If it Was Programmed

Pettapiece: Well, someone must have, but not anybody in engineering and planning and design. I think that probably the decisions came from people in operation and maintenance, and it seemed to be sort of an ongoing sort of thing. You did some, say, at East Bench this year, and then you did some at East Bench next year. And it must have been a programmed sort of thing,

like this area needs it most this year, and maybe we can skip next year, but then we need to do this. And we didn't do all of them.

Storey: So this was canal lining?

Pettapiece: Canal lining.

Storey: And drainage.

Pettapiece: And putting in deep drains.

Storey: When you say deep drains, open drains? Tile drains?

Contractor Dispute over Installation of Drains

Pettapiece: No, tile. Tile drains or concrete pipe. I didn't ever see them. I don't know. I don't remember. But they were deep. One of the things that I remember about it was that one of the contractors, who was an engineer, had a claim against the government and went to court and won. The drawing and the specifications, because there was to be a gravel envelope around the pipe–

Storey: That prevents dirt infiltration.

Pettapiece: Yes. And so I don't remember what the requirement was, but for a certain-sized pipe

you had to have at least, say, six inches of gravel around the outside of the pipe. Well, it's hard to place gravel in a round kind of thing, around the pipe. So what the drawing showed was a square around the pipe that had a minimum dimension, say, of six inches outside the pipe, and that was what the contractor was to be paid for. But he could dump in, you know, two feet of gravel if he wanted to. Not two feet. But he could just dump it in so that he had more gravel in there. But it was cheaper for him, because he didn't have to place it with a mold or something. He could just make sure that he had a minimum of six inches around. Since it was a trench that was trapezoidal-shaped, you know, it was wider at the top than at the bottom.

"It was the secretary in his office who caught it. He came back and wanted to be paid for, say, you had a one-foot pipe and you had to have six inches of gravel on each side. He wanted to be paid for a two-foot-square area, as if the whole pipe were filled with gravel . . ."

He didn't do it himself. It was the secretary in his office who caught it. He came back and wanted to be paid for, say, you had a one-foot pipe and you had to have six inches of gravel on each side. He wanted to be paid for a two-foot-square area, as if the whole

pipe were filled with gravel, although he would have had to take it all out and do it over again if he'd put gravel inside the pipe. But because the drawing was that way with an arrow that pointed to this square area for the gravel, he went to court, and the judge said he was just a poor little innocent contractor and the big old government was trying to beat him out of money. And he got paid for the whole–as if he had put gravel inside the pipe. And I thought that was sort of an interesting thing, and that caused an immediate revision in the drawings that went in the specifications to try and figure out a way to keep contractors from claiming that they should be paid for all that extra gravel.

Storey: Yes, I guess so.

Pettapiece: That was one of the most memorable things about drains to me was this smart contractor's secretary who decided that they should get more money for the gravel.

Storey: When you say "deep drains," what do you mean?

Pettapiece: It seems to me that they were maybe, say, ten feet deep or in that neighborhood.

Storey: Quite a ways down, actually.

Pettapiece: Uh-huh.

Storey: If you were designing something, and you never got to go out there, what were you using as the basis of the designs?

Consulting with the Field Engineer and Designing Without Seeing the Site

Pettapiece: Surveys. For various types of–I'm trying to think of something. Okay, say on a canal, we had topographic surveys, and so you'd just use those to lay out the canal. For a structure you would have more detailed surveys, probably.

But what I did after there was a Field Engineering Branch in the office, after the '64 flood, what I would do when I did something like that was I would go ahead and do my design, and then I'd go up to the field engineer and say, you know, "Does this look like something you can build, or do you see any particular problems with it, or is there something out there that I don't know about?" And sometimes I would have a specific question, like, "Is there a ridge next to this, or is there a hole out there that I don't know about, or does it look okay?" Or, "The next time you're out there, would you look and see if there's, say, a big tree right where I'm going to do this?" And so I'd get a little more help.

Sometimes there would be photographs that someone who'd been there had taken and you could look at those and say, "Whoops! You can't do that right there. You need to move it a little bit."

Storey: So field engineering was a different section or a branch or a division or something?

Field Engineering Came into the Office after the June 1964 Flood

Pettapiece: Yes. There wasn't any field engineering in the office before the '64 flood. There were surveyors who worked out away from the office. I remember seeing the chief surveyor one time, but I don't know where he was headquartered. He wasn't in that office. But after the '64 flood and after we were through with construction, then there was sort of a field engineering–the surveyors and a field engineer, say, in the office. I guess the field engineer supervised the surveyors, probably, and whatever construction was going on that it wouldn't have been major construction, but whatever minor–well, say, the field engineer supervised the inspectors and supervised the construction that was going on, say, for the drains or for the canal lining or anything like that.

". . . the state of Montana cited the Bureau of Reclamation for air pollution . . . the upper end of the reservoir [at Canyon Ferry]. So the Bureau was scrambling for a solution to the problem. . . . The problem was that the soils in that area are very loose and fine, and in the spring when the reservoir happens to be at a low elevation in an ordinary year . . . The winds are strong in the spring, and they would pick up the loose soil and blow it into Townsend, which is the nearest small town to the upper end of the reservoir. And people said they couldn't see and that they had . . . dust in their houses and whatnot from the air pollution. . . ."

During that period of time–and I don't remember exactly when it started–the state of Montana cited the Bureau of Reclamation for air pollution down near Canyon Ferry, the upper end of the reservoir. So the Bureau was scrambling for a solution to the problem. It wasn't that when the reservoir was low all of the stuff that was deposited, you know, at the upstream end of the reservoir blew. That wasn't the problem. The problem was that the soils in that area are very loose and fine, and in the spring when the reservoir happens to be at a low elevation in an ordinary year . . .

Storey: Unlike this year, you mean?

Pettapiece: Not this year. The winds are strong in the spring, and they would pick up the loose soil and blow it into Townsend, which is the nearest small town to the upper end of the reservoir. And people said they couldn't see and that they had dirt in their houses, dust in their houses and whatnot from the air pollution. So the Bureau tried a number of different things.

And I wasn't involved with it in the beginning, but they tried things like planting grasses. But when they were inundated for months at a time, they didn't survive. They tried putting snow fence that would catch the blowing soils, and that wasn't satisfactory. I believe they tried some sort of a sprinkler system, maybe, to keep the area wet, but none of those were really a satisfactory solution. They may have tried some other things. I can't remember.

". . . in the end, they decided to spend 13 million dollars and put dikes along on both sides of the upper end of the reservoir, build dikes, and then dredge the fine material down to gravel from the reservoir and deposit it in behind the dikes and make ponds . . ."

But in the end, they decided to spend 13 million dollars and put dikes along on both

sides of the upper end of the reservoir, build dikes, and then dredge the fine material down to gravel from the reservoir and deposit it in behind the dikes and make ponds and, as a plus, because environmental concerns became more important, they got some gold stars for building goose-nesting islands in the ponds. So that project went on for quite a few years.

Kept Water in the Ponds to Capture the Soils In-place

We had to build a canal down on each side of the reservoir to keep water in the ponds.

I think I designed one of the canals. I don't remember which one. I remember there was a problem, because the ground was so flat you could hardly get the water to run down the canal. I believe we put two dikes on one side and three dikes on the other, and this project, I was project manager when we finished it up. I wasn't when we started.

As I say, it went on for several years. The dikes were all built under separate contracts, I believe. They started at the upstream end of the reservoir and built them.

Dredging Contractor Had a Petroleum Powered Dredge and since it Was the Energy Crisis

Couldn't Get Fuel Commitments So Subcontracted the Work to Western Pacific Dredging from Portland, Oregon

They got one or two done, and then they put out bids for a dredging contract. I can't remember who the low bidder was, but it was someone from the Midwest, I keep thinking. I'm not sure. He had a diesel or gasoline or something, petroleum product powered dredge, and it was the time of the energy crisis and he didn't get a firm commitment on fuel. So they allowed him to subcontract to Western Pacific Dredging from Portland, which had an electric dredge. Western Pacific came in. I don't remember how big the dredging contract was, but they came in and dredged. They had something like a half-mile or a mile-long extension cord out to the dredge.

They completed the first dredging contract, and then they didn't move their equipment out. They left it down there. So they were in a prime position to be the lower bidder on the second dredging contract, and they were. It wasn't a very *exact* thing, because they would dredge until there was a rattling in the pipes that indicated they were picking up gravel, and then they would quit and move to another spot. But in the

meantime, all of that gravel and sand and soil was being pumped into the pond.

". . . we learned things like geese don't like to share their nesting island with other geese. . . ."

The theory was that they would sort of line the inside of the dike to cut down on seepage with this material, but they also then would leave the dredge pipe, the outlet pipe, in one spot and build up an island that could be used for goose nesting and duck nesting and whatnot. And we learned things like geese don't like to share their nesting island with other geese. Montana Fish and Game was somewhat involved in this project, and they would plant bushes down the middle of the island so that there were separate quarters for geese on one side of the island and a separate bunch of geese on the other side of the island. They didn't put any money into the project, I don't believe, but they were always asking us to do more things for them, and some of their managers were a lot easier to get along with than others, more reasonable in what they asked for.

"We had another method of building goose-nesting islands. In the wintertime when the ponds were frozen over, we'd have . . . dump trucks . . . drive out on the ice and dump their load of gravel

and dirt and whatever, and then when the ice melted in the spring, it sank down and you had a goose-nesting island. . . ."

We had another method of building goose-nesting islands. In the wintertime when the ponds were frozen over, we'd have a contract. I think one winter we had to cancel it because there wasn't enough ice. But dump trucks would drive out on the ice and dump their load of gravel and dirt and whatever, and then when the ice melted in the spring, it sank down and you had a goose-nesting island. So several winters we had contracts for building nesting islands.

It seems to me that somewhere near the end of the project, they had dredged, it seemed like forever. I guess it really wasn't that long. But they dredged, and they were working their way further downstream with the dredging, and we had *spent* a *lot* of money and it was getting to the point where there were cost overruns. So we decided that it really wasn't all that bad if water seeped through the dikes, because it would keep the area below the dike damp. So at some stage it was just decided that enough is enough, and that was the end of the contract, and there wasn't any problem with the contractor over it.

I think we did have some claims from him later. I can't remember what they were. It was at the time when the government had to start paying interest on claims, whereas they hadn't before that, and the contractor didn't get his documentation in, and he didn't get it in and he didn't get it in, and I'd call and say, "Which year did you say you were going to send that stuff?" We eventually got it all and some of his claims were justified, because he paid for all of his employees.

"The engineers used to get really upset when they would get the contractor's payrolls in and see how much those dredging people were making. It was like, 'They made as much as my yearly salary that month.' In one month the contractor got paid, I think, half a million dollars for his work. . . ."

The engineers used to get really upset when they would get the contractor's payrolls in and see how much those dredging people were making. It was like, "They made as much as my yearly salary that month." In one month the contractor got paid, I think, half a million dollars for his work.

There were some interesting times with the dike contractors, too. And there were some times when the dikes had to be rebuilt

because the original plans weren't–well, they put in some outlet pipe so the water could be discharged from the ponds from a certain level. The ice came along and smashed the structures, and so they had to be rebuilt and the design changed. And the dikes had to be–the slopes flattened, I think, on some of them. It was a trial-and-error kind of thing.

Remembers Issues with a Contractor from North Dakota

We had one contractor who–well, it was an experience working with him the whole time. He was from North Dakota. He did have a woman scrapper operator, because they would drive out–they built the dike from the shore from both ends and would go out and dump the material and then fill in sort of the middle. The woman scrapper operator went into the lake one day with the scrapper. Nobody was hurt. And she, I think, wasn't there for a real long time. I don't know if she got fired because of it or what. But being a scrapper operator for a woman, I thought, was pretty unusual.

But the thing we had the most problem with the contractor was paying bills, I guess. His banker used to call me monthly from Minneapolis to ask–I think it was

Minneapolis. The contractor was from North Dakota, but I believe his banker was in Minneapolis. Anyway, I'd get a monthly call from his banker wanting to know if we had paid the contractor yet and how much money he was getting. Well, it was public information, so we'd tell him. But somewhere near the end of the job, the banker advised the contractor to quit paying his bills. He ran out of money, apparently. So then there were a lot of claims from suppliers and whatnot, and we had to write a lot of letters that the Bureau sends that says, you know, this is the procedure if you're trying to recover your money from the bonding company and so on. I remember we had a lot of those to do with that contractor.

But the really interesting thing about him was that someone in the Bismarck office called me one morning and said–I've forgotten what the contractor's name was, but anyway, "So-and-so was on television last night."

And I said, "Oh?"

And they said, "Yes. He was in jail."

And I said, "What for?"

"Well, his diesel or whatever supplier had come to repossess the diesel in his tanks because he hadn't paid for it, and the contractor took a front-end loader and ran into it." And I guess then they called the law and hauled him off to jail.

And I said, "Well, okay. Thanks for letting us know." (laughter)

Storey: That's interesting.

Pettapiece: Oh, working with contractors was always interesting.

Storey: This was after you were project manager?

". . . the dust abatement project went on for a long time . . . began long before I was project manager . . . and it continued until after I was project manager, and we completed it before the office was closed. . . . We did a lot of other smaller things, but that was sort of the ongoing thing that kept us in business for a while. . . ."

Pettapiece: Well, the dust abatement project went on for a long time, so it began long before I was project manager when the office was still a good-sized office, and it continued until after I was project manager, and we completed it before the office was closed. But several

years, I think. But it was our big project. When I was project manager, it was the big thing that we did. We did a lot of other smaller things, but that was sort of the ongoing thing that kept us in business for a while.

I always thought it was funny. I didn't get down to see it. But on Canyon Ferry Reservoir there got to be large waves, and they had an ocean-going tug that sank in the reservoir because of the waves.

Storey: Really?

Pettapiece: Yes.

Storey: Reclamation did?

Pettapiece: It belonged to the contractor, but it was a tug he used to position the barge and go out to the barge and so on. Sank in the ocean waves on Canyon Ferry Lake.

Storey: Must have been quite some waves.

Pettapiece: They do get pretty high. And that was one of the reasons that I think even after the project was completed–well, after it was completed . . .

END SIDE 1, TAPE 1. JUNE 11, 1997.
BEGIN SIDE 2, TAPE 1. JUNE 11, 1997.

Storey: You were saying that after the project was completed . . .

Riprapping Dikes at Canyon Ferry

Pettapiece: We had to have a contract to go back in and put riprap on some of the dikes because of the wave action that they were washing away. So they got pretty high. I was not ever down there to see how tall they got, but apparently pretty good-sized. The Denver office, I believe, helped with some redesign.

Oh, this was one of the things. I think it was at that time the largest project that was not designed by Denver. Part of it was designed in the regional office, I believe, and part of it designed in the projects office. By largest, I expect we're talking about the most money. So that was during that period of time after '64. I'm not sure when the dust abatement project started, but it went on for quite a long time and a lot of money. Even after it was finished, I once drove from Townsend to Three Forks, which is about thirty miles, and it's in that area. I drove behind a big truck that I could see the top of, and I couldn't see the rest of it and that was

the only way I could tell where the road was. I kept hoping he didn't stop in a hurry. So it wasn't just the reservoir that was causing the dust problem in the area. It's the soils in the area and the fact that they're plowed up in the spring when people are going to plant, and that's when the high winds come off the mountains.

But, anyway, it was sort of an experimental project. I don't know that any of the things that were learned were ever used on another reservoir. I think I do remember hearing that there had been talk about doing something similar but not as elaborate somewhere else, but I didn't ever hear if it was done or not.

Storey: Tell me about the Denver office. How did the project office relate to them, if at all?

There Was Little Contact with the Denver Office

Pettapiece: Not much. It was somewhere far off that you knew about, but that was about all, during most of the time I was with the Bureau. I mean, maybe the project office had something to do with Denver, but I think not a whole lot, because things like drains and canal lining and small structures could all be done in Billings. Designs could be done in Billings or in Great

Falls. Now, during construction, we used Denver to run tests on concrete aggregate and that sort of thing. I either don't remember or didn't ever know what went on between Denver and the project office until I was project manager, and after I was project manager we worked on several projects that the designs were done in Denver. I think Denver had reorganized then, and so we had a principal designer that we dealt with from Denver.

"Also when I was project manager, I got caught in the–when the regional directors wanted to take over–I'm not sure exactly what it was. It was a fight between the Denver office and the regional directors about who was going to be in charge of construction . . ."

Also when I was project manager, I got caught in the–when the regional directors wanted to take over–I'm not sure exactly what it was. It was a fight between the Denver office and the regional directors about who was going to be in charge of construction,[4] I

4. Likely this reference is to the transfer of the construction contracting function and responsibility from the Denver office to the regions after the failure of Teton Dam. Prior to this time there was divided responsibility for construction. Director of the Office of Design and Construction (previously titled "assistant commissioner" (continued...)

guess, because when we were working on Helena Valley Dam, it's a regulating reservoir offstream but downhill from Canyon Ferry and supplies water or, you know, controls water to Helena Valley Project. The reservoir had, I think, leaked since the time it was built.

Anchor Dam and Reservoir and the Helena Valley Reservoir

It wasn't like Anchor in Wyoming that never held water, but the Helena Valley Reservoir had had problems with leakage for years and they'd tried a lot of different things to seal it. They'd put in bentonite lining in areas, and I'm not sure what other things they had tried.

But, anyway, somewhere along the way, I think under safety of dams, they were going to do some work on the dam itself, and the design was done in Denver. Let's see, at that stage, although it was in the territory that we operated in, they didn't want me to be the construction engineer because, "What dam had I ever built?" I believe was the comment.

4. (...continued)
and "chief engineer") was in charge of contracting and settlement of the larger contractor claims against construction projects. The regions were responsible to provide the budget–both for construction and for settlement of claims, and sometimes those settlements were quite large.

The Construction Engineer for Tiber Dam Also Served as Construction Engineer for Helena Valley Dam Work

So they decided that I could be resident engineer, and Tiber Dam work was–the office was there but they hadn't started work. So the construction engineer from Tiber Dam was the construction engineer for Helena Valley Dam. He came down on Monday and Tuesdays, and I was down there, if needed. I guess I was there most of the time on Wednesdays, Thursdays, and Fridays. But everybody who worked on the dam, the inspectors and the surveyors, worked for me, and we did the cost estimates, the monthly cost estimates, to pay the contractor out of my office. I think for a while we sent him up to Tiber to have him sign them, and after a while we just said, "Sign some blank ones and we'll fill them in."

But, anyway, I remember somewhere along the way the geologist came up from Denver. The first trip was the principal designer and his immediate supervisor–and I don't remember his name–came up from Denver to look at the project. We never did know what happened, but the next day we all had phone calls from the regional office wanting to know what we had done, like they had gone back to Denver and complained

about what we were doing, and we didn't know–I don't know if they complained about the work or our attitudes or what, because we kidded with them like we did everybody else and didn't bow and scrape, I guess. Maybe that was the problem. I don't know.

We never did know what we had done wrong, and all we could say was, you know, "Well, we gave them a bad time about So-and-so." Or one of the fellows said something about like, "It was a good crop of rocks." And we said, "Yeah, they plant them every year in that field." Because there were rocks lying all over the place in a plowed field. And just smart remarks, and we never, ever, none of us, because the construction engineer was there and, I think, the geologist was there from Billings that day, maybe, anyway, there wasn't a one of us that knew what we had done that caused this uproar.

So anyway, things went along and we kept on doing what we were doing. I can't remember. For some reason, we were all going to Denver, I guess to account for our actions, and we went on the Bureau plane and the regional director went, and the regional geologist went, and the construction engineer went, and I went. It seems like there might have been someone else. We went to Denver.

I can't remember the name of the engineer who was in charge of Teton when it went out, but he was whatever the title was. It used to be chief engineer, but that wasn't it at the time. But he was in charge of the Denver office when we went down.[5]

Storey: Bob Jansen or Rod Vissia?

Pettapiece: Neither one of them sound right. Anyway, we went down and were in the office, and the head of design was there and the head of construction was there.

Oh, before that, I'd had a phone call from the principal designer who said that his boss had asked him to call me and tell me that it was nothing personal but they were going to get me. And I thought, "This is crazy. I'm the easiest person in the world to get. They don't need to make a big effort to do this." Well, other people had received similar phone calls that they were going to get us. And I asked the regional director on the way down if he knew that we'd had these phone calls. I don't know whether he had heard it before or

5. The chief engineer title changed to assistant commissioner and chief engineer then to Director, Office of Design and Construction/Chief Engineer (September 1970), then to Director, Office of Design and Construction (April 1972); then Assistant Commissioner–Engineering and Research (February 1, 1978).

not.

But, anyway, we got down there and, as I say, it was a time when there was the battle between Denver and the regional directors about who was going to be in charge. I didn't take it personally. I guess I thought, you know, if they're out to get me, they're wasting their effort, because it would be real easy.

But we had a meeting, and our construction liaison people were there, and nobody could ever say what it was we were doing wrong or why it was that we shouldn't be in charge of the work. But it was real funny, I sat there and kept my mouth shut, because I probably would have giggled that there was all this effort to do us in. But, anyway, in the end, we continued with the job. The geologist used to say to me later, "And we're still here and they're gone, all those people." But it was real funny.

Storey: Who was the regional director and who was the geologist?

Pettapiece: Joe Marcotte was the regional director and Glen Taucher was the regional geologist. The last year I worked for the Bureau, I was in the regional office on detail, and I shared an office with Glen Taucher, the geologist.

Periodically we'd say, "Remember that time we went to Denver?" And Glen would say, "Yeah, and we're still here." (laughter) It was really strange. So that was sort of one of the contacts that I had with Denver.

"After I didn't mess that one up, then I got to be construction engineer when we did the work out at Gibson Dam. . . ."

After I didn't mess that one up, then I got to be construction engineer when we did the work out at Gibson Dam. If you get out there, we put splitter piers on top of the dam in case it's overtopped again. It can be overtopped by eleven feet now. We removed loose rock down on the abutments and placed concrete and put in twenty-five-foot-long and twenty-seven-and-a-half-foot-long rock bolts. The *Tribune* came out with the article one time that made it sound like we were bolting the dam to the–like we were going to have a bolt that was long enough to go from one side of the dam all the way around to the other and bolt it to the rocks. Really funny. And I'm trying to think who the designer on that one was, the principal designer.

Storey: That was the safety of dams thing?

Pettapiece: Yes. Yes. I know that Mas Arai[6] was the principal designer on something we did, and we saw him a few times, but I can't remember if it was the Gibson job or not.

Storey: There was Harold Arthur there as chief engineer or assistant commissioner, they called them then.

Met Bob Jansen at an ASCE Meeting

Pettapiece: This was afterwards. But you mentioned Jansen, and I couldn't remember his name. But I met him at an national engineering meeting just after it was announced that he would be the chief engineer or assistant commissioner, whatever. I went up and introduced myself and welcomed him to the Bureau and told him a little bit about our office. He was giving a paper on lifeline engineering, I think, that I went to.

A year or so later at another national ASCE meeting, he was there, and it was after we had finished the work on Canyon Ferry dust abatement. There was talk about, I guess, Helena Valley, one of the big projects. I said I wasn't asking him to give me an answer, but

6. Apparently referring to Masayuki A. Arai in the Concrete Dams Section of the Engineering and Research Center in the Denver office.

I'd like him to know that our office had some very capable people, particularly inspectors, and that we were in the area and that we would really like to do whichever job it was and we would like for him to think about it anyway. And I didn't ever hear anything. But when we got the job, one day the regional engineer said to me, "I don't know if I should tell you this or not," but he said, "you must have talked to"–what was his first name?

Storey: Bob Jansen, I think.

Don Duck and Bob Jansen Decide She Could Be a Resident Engineer

Pettapiece: Bob Jansen. And I said, well, I'd met him. And he said, "Well, they were talking about who was going to be construction engineer." It must have been Helena Valley. And Donald Duck had said, "What dam did she ever build?" And Bob Jansen said, well, that I had talked to him and he thought I sounded like a reasonable person. And so that was when they decided I couldn't be construction engineer, but I could be a resident engineer. And I thought that's kind of neat. But I think Donald Duck didn't ever approve of me because I was a woman, probably, because he didn't know me from anybody else, as far as I know.

Storey: And he left very soon after this, anyway.

Pettapiece: Well, he's one of those who Glen would say, "And we're still here and they're gone." (laughter)

Storey: Also was Don Duck.

Pettapiece: Donald Duck and Brown was the head of design.

Storey: Brown was the deputy assistant commissioner for Harold Arthur and for Bob Jansen.

Reviewed the Designs for the Gibson Dam Work in Denver

Pettapiece: Well, anyway, those were the kinds of–but now I did have–it must have been the Gibson work. That was a set aside for a minority contractor, and so the inspector who was going to be on the job and I went to Denver to review the specs before they were completed and to go over them with the designer. And I always thought that was a really helpful thing, and I always tried to take the inspector who was going to be on the job along with me when we reviewed the specs, because he knew a lot more about what the conditions in the field were.

So we went down and reviewed the specs. Then I went–it must have been a separate trip–went down when we were negotiating with the minority contractor. Who was it that helped the minority contractors? Small Business [Administration]?

Storey: I don't know.

Pettapiece: I can't remember. It was another government agency that was on *their* side. I don't think necessarily it was supposed to be, but the one we dealt with was, because when we were *not* in the meeting with the contractor, I remember the principal designer making some remark to him about, you know, like not being impartial but trying to have everything go the contractor's way. The fellow from whatever the government agency was didn't take kindly to the remark.

But, anyway, we did go down when they were negotiating with the minority contractor, and it was a woman minority contractor. She was a Native American from Lame Deer, I believe. But I thought going down and reviewing the specs helped us. I hope it helped the designer some, too, or the spec writer, but it helped us in knowing what he had in mind when we were going to do it. I don't remember doing it except on that one,

but I think it would have helped to have done it on some of the other things.

Storey: That was Gibson that you remember it for. Who was it that selected you for project manager?

". . . Bob McPhail was the regional director at the time, and he's the one who called me and told me I'd been selected. . . ."

Pettapiece: I haven't a clue in the world. But Bob McPhail was the regional director at the time, and he's the one who called me and told me I'd been selected. I sometimes spouted off when I shouldn't, I guess, and it's a wonder that he selected me, because when he was new as regional director, he came to Great Falls and they took him around to everyone and introduced all of us to him. I always cringed when I got introduced as a "woman engineer," because it was pretty obvious I *was* a woman and they could have just said I was one of the engineers. But, anyway, I was introduced to him, and he said to me, "Are you civil?" And I stopped and thought about it and I knew I shouldn't do it, but I said, "Occasionally." (laughter) And I could just see mouths dropping open, "She's done it again." But anyway, he either forgot it or didn't hold it against me. But I knew I wasn't always civil,

just once in a while.

Storey: But the office had shrunk down to a few people when you were appointed, is that what I heard you say yesterday?

". . . all of the functions except construction had been moved out about two years before I got to be project manager. . . ."

Pettapiece: Yes, all of the functions except construction had been moved out about two years before I got to be project manager.

Storey: So at the point you became project manager it was a construction office. Who was O&M'ing?

Pettapiece: Out of Billings.

Storey: It was done out of Billings?

Pettapiece: Everything was done out of Billings.

Storey: Out of the Montana Area Office?

Pettapiece: No. All that developed after I was gone, but I think the Montana Area Office is what we were before. It was like moving the Great Falls Office to Billings and calling it the Montana Area Office. I mean, it wasn't the

same people, but I think that the functions are probably the same. But at the time that they moved all the people to Billings, O&M was being done out of the regional office and all of the other functions.

Storey: Did the office grow then?

Pettapiece: After I was project manager?

Storey: Yeah.

"The largest it was when I was project manager was seventeen, and it was usually less than that. I had a survey crew . . ."

Pettapiece: No. The largest it was when I was project manager was seventeen, and it was usually less than that.

Had a Flexible Survey Crew

I had a survey crew, and I talked them into letting me have enough surveyors so that, if need be, we could break up into two small crews, like we had maybe six and we could have a crew of four and– maybe it was seven, four and two or three and four or something–for some things and still just be a reasonably sized survey crew when everybody was working on the same thing. I think the

most inspectors we had were, maybe we had four at one time, three or four, and two of them were experienced and been with the Bureau years and years and years and knew a lot more than I did about what they were doing. And I don't think we could have lasted if it hadn't been the case.

Tried to Get a Promotion for an Inspector in the Field

I told personnel when I was trying to get a promotion for one of the inspectors, I told them that I was going to have to use him as a field engineer because they'd never let me out of the office and I hadn't been out to see all of this. We didn't have much luck in getting his promotion, but he should have. I think it was after the other experienced one left, so he really was sort of chief inspector, and the other inspectors worked for him.

Storey: What other kinds of things were you doing out of this construction office?

Pettapiece: When I was project manager?

Storey: Uh-huh.

". . . we did four or five construction contracts every year. We did everything . . . a lot of little

jobs that there needed to be somebody to do.. . . we were responsible for any construction in the state of Montana east of the divide where there wasn't a permanent construction office set up. . . ."

Pettapiece: Oh, we did four or five construction contracts every year. We did everything from building solar outhouses, graveling roads, building boat ramps, a lot of little jobs that there needed to be somebody to do.

Storey: And these were given to you from Billings? How did that work?

Pettapiece: Yes. After I was project manager, we were responsible for any construction in the state of Montana east of the divide where there wasn't a permanent construction office set up. In the Bureau, I guess we were kind of a weird office. We weren't like any other office. And yet I always felt like we fulfilled a function that needed to be there. The surveyors were always out of the office on per diem, but they developed into a group who were used to working together, being away from home all week long, and then coming back in on the weekends and going out the next week to goodness knows where. Sometimes they went to eastern Montana, and occasionally we'd change the tour of duty so they could go out

for ten days and be back home for four days when it was a long ways away, and we did surveying for other parts of the regional office. I remember one time the survey crew was down at Buffalo Bill.

Storey: In Wyoming?

The Survey Crew

Pettapiece: In Wyoming. And I got word from the head surveyor that they weren't going to work down there anymore. (laughter) A big chunk of ice had fallen off the cliff, and they were working out on a rubber raft out in the river. One guy went into the river. The ice landed in the raft. Apparently one guy went overboard. They lost some of their equipment in the river. And they said they weren't going back again for a while. They came home and they did something else, because it was too dangerous.

But sometimes someone from the regional office would call and say, "We need surveys for so and so. Can your crew do it, and how much will it cost?" And my first question always was, "How *soon* do you need it done so we can fit it into other things?" But I think that we did a good job. Tiber wanted to have their own survey crew, although the plan had been for our crew to do whatever

surveying was needed. I probably wrote a snippy letter to the regional office or something about, you know, we were able to do the work and we should be doing it and that had been the plan. He never did get his survey crew. We just did whatever work was needed for them.

Storey: And before this time it had been more than a construction office?

Pettapiece: Before I was project manager?

Storey: Yeah, and before it was downsized?

Bill Brooks Headed the Office but Then Transferred to Tiber

Pettapiece: It was downsized a couple of years before that, I think, and Bill Brooks had been project manager for a year or a year and a half, and then he had transferred to Tiber. But it was downsized, anyway, before I was project manager.

Storey: But it was a construction office even before?

Pettapiece: No. It had a construction section or construction division, and that part of it was what was left, was the surveyors and the inspectors and a project manager and a couple

of clerks and a couple of engineers.

When Bill was project manager and before that when it was just a division, they oversaw all of the construction and did the monthly estimates for payments to the contractors and approved them, you know, signed them. They went on further for approval. But we opened bids for contracts, for construction.

Storey: Did you write the specs, too?

Pettapiece: Before it was downsized, yes. Most of the specifications for the smaller jobs were prepared in the Great Falls office.

Storey: Even when you were Project Manager or just before?

Pettapiece: No. Before it was downsized. After I was project manager, I can't remember what it was they were going to do. There was something that was going to be done, and I asked them to let the guys in my office, the engineers in my office, the two that I had, do the specs so that they would get that experience, because I had written specs and knew how to put all those paragraphs together, cut and paste. So we started to do that, and we just got started and they decided *not* to do whatever it was. It was

going to be something fairly simple, but it would have given them some experience in preparing specs.

Storey: So all that was really being done then out of Billings, all of the spec writing and the contract opening?

Pettapiece: No. About that time, somewhere along in there, the whole Bureau changed. The contracting officer had been the regional director.

Storey: After '77.

Insisted Bids Be Opened in the Great Falls Office

Pettapiece: And then somewhere along the line they decided that the procurement officer would be the contracting officer. I was really opposed to it, but of course nobody asked me. But I insisted that we continue to open the bids in our office, even though, I guess, everybody else was being opened in Billings. Because my theory was that that might be the only time we were on friendly terms with the contractor. And when we opened bids, as part of the bid opening report you put in what their plans were for beginning work and so forth. So when we opened the bid, we had a chance to talk to them about, "Hey, how are you going

to start and when are you going to start and how do you plan to do this?" And they let me do it. I guess I must have hollered or something and they let me do it, continue to do it.

So we opened bids and then we prepared a bid opening report just like when we prepared the specs, then opened the bids in the office, and the report went to Billings and Washington and Denver and anybody that was interested in it.

Storey: And then somebody in Billings issued the contract?

Pettapiece: Yes.

Storey: Any other contracts you particularly remember?

Pettapiece: Let's see. We had hoped to do–Sherburne Dam is a Bureau dam up on the Milk River Project just up on the edge of–

Storey: Yes. Up [on Swiftcurrent Creek] ~~in Milk~~ in Glacier [National Park], I believe.

Pettapiece: Yes, just on the edge. They had two separate contracts. One of them was to raise the dam using reinforced earth.

Storey: That parapet thing.

END SIDE 2, TAPE 1. JUNE 11, 1997.
BEGIN SIDE 1, TAPE 2. JUNE 11, 1997.

Storey: This is tape two of an interview by Brit Storey with Lucy Pettapiece on June the 11th, 1997.

A Job on Sherburne Dam Went to an Idaho Construction Office Which Had a Job Fall Through

Pettapiece: We had hoped to be in charge of that job, but there was an office in Idaho–and I can't remember what it was, but their job didn't start when they thought it was going to, and so they sent the construction engineer and another engineer who had worked in Billings, I don't know what his title was, and they did raising the dam.

But I had gone out. Well, my chief inspector had gone out. No, he must have been busy, because I went up to Babb to show the job to contractors. One of the things I always pointed out to them was that there was a grizzly sow with a cub who lived over on the right abutment and they might want to keep an eye out for her during construction.

I went up several times. I think it was

maybe a two-week period that we were showing the job. It was in the fall, and the work wouldn't start until spring. But I went up and showed them the borrow areas and the dam site and mentioned to them that I think that you had to deal with the Indian employment office.

Then we didn't get to do it, but I did take all of the people from the office, made them swear they wouldn't ask for any overtime or per diem or anything, but took the engineers and went up and watched or looked at the construction that was going on while they were doing that reinforced-earth thing and talked to the construction engineer and so on.

The Following Year the Idaho Staff Returned to Their Area and Great Falls Continued Some of the Work at Sherburne Dam

Then the following year they went back to Idaho and did whatever they were supposed to do, and we raised the gatehouse and the bridge. And that was an embarrassment. The specifications–the contractor raised the bridge. It was a sloping bridge and went from the gatehouse over to the dam. He raised it enough that the specs called for, but it didn't reach the top of the dam.

Storey: This is over the spillway, is it?

Pettapiece: Well, yes, from out on the spillway over to the top of the dam. It fit at one end. It was just short at the other end. Anyway, we dealt with the contractor and got it raised the right amount, although he was short four boards in the walkway, I think. We had required treated lumber, and they were that putrid green color. Anyway, he wanted to know if he could put some other kind of lumber in there, and I said, "Well, keep trying and see if you can't find four boards," or whatever it was that it took.

It was embarrassing, because here we were the great and mighty Bureau of Reclamation, and we had told him what he had to do, and it didn't work. It turned out that in surveying up there, they had used two different benchmarks, and so when we looked into it later, apparently the crew from Idaho had found some sort of discrepancy, but we never knew about it. Apparently, someone had repaired the head wall at the end of the outlet, who knows when, and probably took the benchmark off or raised it or did something and stuck it back on, and so it wasn't at the same elevation that it should have been. I think it was like a couple of feet or two and a quarter feet or something different.

Storey: So that caused a design problem.

Pettapiece: And so it caused a problem. We overcame it, but as I say, it was very embarrassing that we had raised the dike and it didn't–

Storey: Do you know where the design was done?

Pettapiece: Denver. And I think that was the first the Bureau had done with reinforced earth. The specifications were written so they could use– there were two brand names or proprietary names or something, and they could have used either one, and I think the one they used was called reinforced earth.

Storey: But this bridge design was a Denver design?

Pettapiece: I'm pretty sure it was a Denver thing. I mean, the whole raising the gatehouse, because there were all the controls and everything that had to be raised. I wound up having to be the inspector for a couple of weeks, because– what was it? Oh, that was the last year and our office was being closed, and people were kind of fidgety in not knowing what was going to happen to them and stuff. And one of the inspectors, in a fit of temper, quit. He didn't tell us. He just left and didn't show up.

But the chief inspector had vacation

planned, and I figured he'd quit, too, if he didn't get it. So he went on vacation and I spent two weeks in Babb. Oh, that was exciting. (laughter) Like the end of the earth, because this was in October after the tourist season was over. The motel stayed open because we had a couple or three people staying there. Oh, I guess when I was up there, I asked for somebody to come. We were going to be doing some stainless steel welding in the outlet tunnel, and I didn't feel qualified to inspect it. So Billings sent me up somebody for a week or two.

One Sunday, I guess, the lady at the motel who had run the restaurant asked if we could find another place to eat, because there was something she wanted to do. If she had to, she would have stayed and cooked for us, but if we could find somewhere else to eat, why, she would certainly appreciate it. And it was like thirty or forty miles to Browning, I think, and maybe twenty miles or so to Canada to whatever the little town up there was. But we decided to go to Canada for dinner. It was *only* after that that I remembered you need the approval of the Secretary of State or something to take a government car out of the country, some real horrendous thing. Well, we didn't do that. We just went up and ate and came back.

(laughter)

There were a lot of things I could have gone to jail for over all of this. But, anyway, we got that one finished up. But they didn't finish the roof on the gatehouse that year, and then the office was closed in December, and so I think somebody in Billings finished up.

Storey: December of what year?

Great Falls Office Closed in December of 1983

Pettapiece: The office was closed in '83.

Storey: Did you ever go to any meetings?

Pettapiece: Didn't know they had any. We used to have conference calls once a month with the Billings office with all of the heads of whatever. But it was like I wouldn't be on it every month. It would be every third month or something, and Canyon Ferry would be on it and somebody else would be on it. So it was not a continuous thing. I'd talk to the people in construction a lot in Billings. I tried to keep them posted on what was going on.

Storey: What about the other project managers around Reclamation, did you ever talk to them?

Pettapiece: Um-umm..

Storey: Your contact was to Billings?

"I did get to a construction engineers' conference in Denver one time. I think it was before I was in charge of a Denver-designed contract, and I wasn't sure why I was invited. . . ."

Pettapiece: To Billings. I did get to a construction engineers' conference in Denver one time. I think it was before I was in charge of a Denver-designed contract, and I wasn't sure why I was invited. But it was when Bob Colterman [phonetic] was regional engineer, and I was invited to go and I went. Someone asked me what I got out of it. When I went down, somebody asked me about it and I said, "Well, that even putting in a culvert can be scary." Because they had a discussion about some big culvert failure somewhere.

But I wasn't ever invited again. I don't know what happened. I don't think I did anything at this that precluded my going again, and I'm not sure, I think maybe the next year they didn't have one in Denver. Then they started rotating them around to different places, and I remember being at something and the regional director saying to me, "Well, I'll see you next week at the

construction engineers' conference." And I said, "Huh?" Because I didn't know anything at all about it. This was, I think, a retirement party or something on a Friday night and I'd not heard word one. I asked the assistant RD later about it and I didn't ever get any kind of satisfactory answer.

The next time I heard about one might have been when we were closing the office, and the regional director said something about my being at the construction engineers' conference, and I said that I was busy closing the office and I didn't know anything about it. I didn't even know where it was being held. He started to tell me and I said, "I don't even know what state it's in." He was saying that I should go, and I said, "There's only me and a clerk left here, and we've got movers." And this was Thursday or Friday before it began on Monday.

Storey: So they closed the office?

Pettapiece: Yes.

Storey: What happened? Where did the function go?

Pettapiece: Billings.

Storey: And you went with it, I gather.

Pettapiece: No. Friday the thirteenth, I think it was *May*, Friday the thirteenth. We knew that they were talking about closing the office. I mean, it had been discussed for years. I didn't take it personally. The regional director and the assistant regional director came up and announced that it was going to be closed, and we were supposed to be able to finish what we were doing, and they decided that the end of December was the date that they would close it.

Nobody Lost Their Job, Though One Person Did Retire, When the Great Falls Office Closed

So people were offered jobs or applied for jobs in other places. I don't know that anybody really lost their job over it. I think there was one person, maybe, who had been just holding on until he could retire, and so he could retire.

"I applied for the construction engineer's job at Buffalo Bill. Why not? And didn't get it. But anyway, then they offered me the office engineering job at Buffalo Bill. . . . I decided that I would go to Buffalo Bill. . . ."

I applied for the construction engineer's job at Buffalo Bill. Why not? And didn't get it. But anyway, then they offered me the office

engineering job at Buffalo Bill. I could have retired then or I would have been eligible because of thirty years a year later. So we discussed it. My husband and I discussed it, and I decided that I would go to Buffalo Bill. They had set up an office at Cody.

"I was, on paper, the office engineer at Cody for a year and never, ever saw the office. I was detailed to Billings, and I spent a year in Billings on detail. . . ."

I was, on paper, the office engineer at Cody for a year and never, ever saw the office. I was detailed to Billings, and I spent a year in Billings on detail. After about eight months–well, originally it was to be a three-month detail to Billings, and I'd never had any desire to work in a regional office, but I thought, okay, maybe I could last three months in Billings and then go to Cody.

And after three months, the detail was extended and then it was extended again, and sometimes on the last day of the detail I'd have to go and say, "Are you extending this or not? Am I to come here on Monday or am I to do to Cody on Monday?" One time it was a Friday afternoon before I ever found out. After eight months, I decided I had to know there was an end to it. I wasn't real happy

with what I was doing in Billings.

"They had promised me I'd be doing useful work and it would be at least a GS-12 . . . level. I was doing the same thing I'd done as a GS-7 . . . It wasn't a happy situation. . . ."

They had promised me I'd be doing useful work and it would be at least a GS-12, I think, level. I was doing the same thing I'd done as a GS-7, I think. It wasn't a happy situation.

Decided to Retire at the End of 1984

So after eight months of this, I said to myself, "You can last out if you know when the end is." And I decided I would retire at the end of the year. About a week or two later, they came around and told me they were ready for me to go to Cody, and I said, "Well, I've already decided to retire at the end of the year, and I'll go to Cody or I'll stay here. I'll do whatever you want me to do, but I'm going to get out."

Worked on the WEB Water Project

So I was in Billings. But they did, after I complained a lot, they did–I don't know if you know about the Web Water Project in South

Dakota.[7]

Storey: Um-mmm.

Pettapiece: It was handled out of South Dakota office. Where was the South Dakota office? Anyway, wherever the South Dakota office was, was closed, and the project manager, I think, then was the contact for the WEB Water Project. It was a political thing and they were taking water out of the Missouri and transporting it as much as a hundred miles, and every little farm or pig sty along the way that wanted water could sign up for water. Every town that wanted it could have it. The people were providing the right-of-way for the pipelines, and the government was providing the rest. It was, I think, estimated as a $96 million project.

7. December 1975 representatives from **W**alworth, **E**dmunds and **B**rown Counties (WEB) in South Dakota actively sought improved drinking water for their communities. Within a few years the coalition grew to 10 counties. Today the WEB service area reaches customers in seventeen counties in South Dakota and North Dakota. Congress authorized the WEB project in Public Law 96-355 in 1980 during the presidency of Jimmy Carter. Congress reauthorized the Project in Public Law 97-237 , and on September 22, 1983, President Ronald Reagan signed WEB into law. The WEB organization signed a loan and grant agreement with the Department of the Interior on September 29, 1983. Source: http://www.webwater.org/ accessed on September 20, 2010, about 2:15 in the afternoon.

Anyway, the fellow that was from South Dakota that was looking after it–I don't know if they ousted him or he went out on his own or what; anyway, he was gone and they asked me if I would do it. I didn't know what it was about, but I said, yes, anything was better than what I was doing.

So I worked on the WEB. I was the government representative on the WEB Water Project. I asked them what my job was, and I was to see that the money wasn't wasted. They had a seven- or nine-man board. They were all farmers except one who had a hardware store and one who sold used cars, I think. Then they had a hired manager. That wasn't his title, but he was their hired person. And then they had consultants that were hired to do the project, to design it and oversee construction and everything.

I went over to their monthly board meetings that lasted usually until midnight and then they adjourned to the bar, which one of the board members, I guess–I guess he wasn't a farmer, he ran a bar, we adjourned to the bar until the bar closed for the meeting. Sometimes I flew to Bismarck and drove down with the consultants. It was not an easy place to get to. Sometimes I went on a chartered plane, and sometimes I went on the

Bureau plane.

Always when they saw me coming, they closed the airport. I *swear*. *Whatever* airport. Usually their meetings were held in Mobridge, South Dakota, and we got to Mobridge one time and they were just laying out the big yellow Xs on the end of the runway to close the airport. The pilot said he had checked before he left. But, anyway, they did allow us to land, I think. Another time they had closed it and we had to go to Aberdeen and rent a car and drive back. I didn't have a credit card, and the pilot got permission to–it was a chartered flight and he got permission to rent a car, and he drove me to Mobridge. I don't know what he did during the meeting, and came back and got me and took me back.

"I, who didn't really know that much about it, taught them how to budget. . . .they knew that I was just temporary, and I was surprised that they asked if they could have me as a permanent person. But they couldn't because I'd already decided to quit. . . ."

But, anyway, it was interesting. I, who didn't really know that much about it, taught them how to budget. I was surprised, but I understood–they knew that I was just temporary, and I was surprised that they asked

if they could have me as a permanent person. But they couldn't because I'd already decided to quit. I ran into a friend years later whose family lived over there, and I was telling them that I'd worked on the project, and they said, "How did you get along with those conservative farmers, being a woman engineer?" I said, "We got along fine." There weren't any problems. No, and they gave me a plaque or something when I left. I got along with the consultants. In fact, less than a year ago, I guess, a fellow called me for an ASCE thing. I didn't know him but he told me who he worked for. I said, "Oh, wasn't it your firm that was involved with the WEB Water Project?"

And he said, "Oh, Dave Harden [phonetic] was."

And I said, "Yeah, I worked with Dave."

When I left, the consultants gave me a chromed digger tooth with a little engraved plaque on it. (laughter) So that was something I did when I was in the Billings office.

Storey: What did they have you doing before you started doing this?

What She Did in Billings Before She Was Assigned the WEB Project

Pettapiece: Oh, I would lay out a boat ramp or something.

". . . the Bureau had that big drive on to do things metric. But I'd dealt with enough small contractors, I know they didn't hardly know what was up, much less metric. . . ."

They were going to do it on metric and I kept saying to them, "You're going to have a small contractor do this, and small contractors don't even understand cubic yards, much less cubic meters." Because the Bureau had that big drive on to do things metric. But I'd dealt with enough small contractors, I know they didn't hardly know what was up, much less metric.

In the end, it was like, "Okay, you put in a boat ramp and it has to go right here." I didn't ever finish it because I couldn't make it fit. I guess then they moved it later, put it somewhere where it would fit. And I did odds and ends of other things, and I did some work for the Cody office. I did some of the monthly things that went to finance to show how much money had to be set aside for that project every month, and a lot of odds and ends of that sort.

How a Painting Contract Didn't Work When it Went to the Low Bidder

Then there was a contract that was being handled out of Cody to paint the afterbay gates down at Yellowtail Dam, and it had to be done with a special type of paint, and it had to be done in the fall when the weather was cold, and the temperature had to be high enough to do the painting.

And I'm not trying to sound like I *know* it all, but I'd had some experience when we did the gates at Canyon Ferry and they set aside the contract for a specialty firm to come and paint them, and I remember someone from Denver came up to check on them to make sure it was being done right and so on. I can't remember the type of paint.

But, anyway, I kept telling them that when we had done Canyon Ferry, it had been someone who was experienced in that type of painting. The low bidder was Sunshine Painting from Billings. I think it was a house painter, and he wasn't able to do the job, and in the end, the contractor was canceled. But he tried. You couldn't use an open flame for heat, and he couldn't get the area warm enough to apply the paint. We had suggested maybe he could use something to warm it up

and then remove that heat source and use whatever else he had, and once he got it warm enough, maybe he could maintain it. Well, he couldn't do it.

"They assigned a woman engineer as the inspector . . . The contractor, I don't know why, but called me one day to ask if I couldn't do something about the inspector. I said, 'Is she requiring you to do anything that the specifications don't call for?' *No*, *but* she wouldn't let him do what he wanted to do. And I said, 'Well, we have her there to make sure that the specifications are followed, and if she's doing something that is out of line with the specifications, that's one thing. But otherwise that's what she's there for.'. . ."

They assigned a woman engineer as the inspector on the job. She was not from the Billings office. I don't know where she was from. The contractor, I don't know why, but called me one day to ask if I couldn't do something about the inspector. I said, "Is she requiring you to do anything that the specifications don't call for?" *No*, *but* she wouldn't let him do what he wanted to do. And I said, "Well, we have her there to make sure that the specifications are followed, and if she's doing something that is out of line with the specifications, that's one thing. But

otherwise that's what she's there for."

So I guess he gave up. I'm sure she wasn't asking for anything that was out of line, it was just he expected to paint the gates like he painted a house, probably. So I believe that I heard they had left to try it again the next year to someone else.

Storey: I sort of get the intimation through all of what we've talked about that you stayed active with ASCE and you went to their annual meetings and that sort of thing. Am I right or wrong?

Attending ASCE Meetings

Pettapiece: I did when I could. Even if I didn't get to go to national ones, I needed to go to state ones and local ones, because when I went to ASCE meetings, I got treated like a real engineer and people didn't talk down to me and I could talk to anybody on an equal–I mean, I didn't go up and say, "Hey, I know as much as you do." but they talked to me like I knew as much as they did.

". . . I needed every once in a while to get out and know that I was equal to other engineers. . . ."

I can remember being involved in a conversation with a man from California, who

was a world expert in construction for earthquakes, and he was explaining to me some tests that were going on for earthquake construction. I met Ellis Armstrong, who'd been the commissioner, at an ASCE meeting, and we talked about we were both honor members of Chi Epsilon [XE], which is a national civil engineering honorary–or I mean civil engineering like Phi Beta Kappa [ΦBK], except it's for civil engineers. He was a national honor member and I was a state honor member at Bozeman. So I needed every once in a while to get out and know that I was equal to other engineers.

Storey: Did you do the state meetings and local meetings more often?

". . . I have a sister who was an engineer also, a younger sister, and so we would sometimes meet at [meetings] . . ."

Pettapiece: I did when I could. Usually the national ones, I had to have some reason. I have a sister who was an engineer also, a younger sister, and so we would sometimes meet at ones. She lives in San Francisco now, I guess. If there was one in San Francisco, then maybe I would go to that one. I didn't try to make all of them, but I got to several of them, anyway, and enjoyed them, and came back feeling better

about being an engineer and knowing that you could do things better than we were doing sometimes.

Storey: Tell me about the regional directors you worked with. There was Bob McPhail. To whom did you report as project manager?

Regional Directors and Regional Engineers

Pettapiece: On paper I reported to the regional director. In fact, okay, I think, I guess that Joe Marcotte followed Bob McPhail. When I got my evaluation, I think I got one from Bob McPhail. I said, "But you don't know what I've been doing and if I've been doing it right, wrong, or indifferent."

He said, "Well, if it was wrong, I would have heard about it." In effect, I think I reported to the regional engineer. He was the person I talked to most of the time.

Storey: Who was that?

Pettapiece: Bob Colterman was the regional engineer when I was first project manager and then Jim Verzuh was regional engineer after that.

Storey: That's V-E-R-S-U-H, isn't it?

Pettapiece: Z-U-H.

Storey: Z-U-H. What were they like?

Bob Colterman

Pettapiece: I got along with Bob Colterman fine. I can remember him asking me when I first got to be project manager what I would do if some irate contractor came into the office screaming and yelling and pounding on the desk. I said, "Well, maybe we won't operate so that we reach that point." And I didn't have but one that I had a problem with, and he just yelled at me over the telephone.

I remember we had a job down at Yellowtail removing loose rock above the dam, and the contractor came in with a scheme to wipe off everything that would move, and that wasn't what had been intended. But he rigged up a device that did it, and it made the geologists then leery when we went to do the work at Gibson. They didn't want to remove anything, because the quantities overran by a lot at Yellowtail. But I remember being down there with Colterman and–I can't remember, someone else. Maybe it was the liaison person from Denver, I don't know. And standing around and talking to them and whatnot.

That's when they started having GMs, and I wasn't a GM. I was a GS still. I asked them what GM stood for, and I guess to the end of my days I never did find out, because they told me General Motors. But, anyway, I talked to him about what we were doing, and he was still the regional engineer when we were finishing up on the dredging at Canyon Ferry, and I talked to him about it. I said, you know, we'd reached and surpassed the quantity that was in the specs, and I said this is further downstream, and I *really* could not see any good reason why we should keep on dredging and we'd spent an awful lot of money. And he listened to me and must have considered it or thought the same way, because then we did end the contract after that. So I felt like I could talk to him and he would listen. He might not always agree. He came out one day when we were–oh, we measured the dredged material in the ponds, but we also *sounded* to see if we had dredged enough loose material.

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BEGIN SIDE 2, TAPE 2. JUNE 11, 1997.

Pettapiece: He came out and went out on the–we had a little raft sort of affair that the inspectors went out on and measured from, and he came out and spent the afternoon with us out on that.

Then I remember the contractor thought it was funny. We had the government car out on the dike on a contract, it was parked close to a puddle, I guess, and the contractor went by and splashed the car from head to foot and inside, because the window was opened, with mud. So we had to clean up the car. I had to go down to the lake and take my hard hat and get water to get the windshield clean so you could see out to drive off.

Jim Verzuh

But, anyway, it was fine. I guess I got along less well with Jim Verzuh, and I didn't ever remember it, when I was in construction, we had rebuilt Paradise Diversion Dam up on the Milk River. It was a small dam. Jim had designed it when he was in Denver, and he came up, I think, on vacation or something and stopped in the office and was introduced around, maybe, but he was going on up to see it, I think. Maybe it was after he was in the Billings office, I don't remember. But, anyway, I must have had occasion to talk to him about that or something else that he had done, and I must have argued with him when I shouldn't, because years later he made some comment about us not seeing eye to eye. I don't remember it necessarily being an argument. I'd called to ask if something could

be–I'm thinking what we did was I called to say, you know, "This is what you called for, and can we do thus and so," and gave him the reasons. It was like, "No, this is what it's got to be." And I probably brought up two or three more things. In the end, we did whatever it was, but I didn't just blindly do what he said do. I needed to know why sometimes we were doing something some way. It seemed like we were always slightly at odds all the time.

". . . once when he was doing my evaluation, he told me my work was unsatisfactory, and I told him I didn't think so. He thought so, but it didn't wind up that way on the evaluation. I probably got 'mediocre' or something. It wasn't 'unsatisfactory.'. . ."

I guess once when he was doing my evaluation, he told me my work was unsatisfactory, and I told him I didn't think so. He thought so, but it didn't wind up that way on the evaluation. I probably got "mediocre" or something. It wasn't "unsatisfactory." I think it was a problem for him. He hadn't had a whole lot of construction experience.

Issues with a Riprap Contract at Canyon Ferry

We had a real set-to one time. We were

putting the riprap on the dike down at Canyon Ferry. The Bureau had said where the contractor had to get the material, because they wanted to use it for a quarry later, and it was limestone. The geologist had selected the site. The specifications were not for huge enormous riprap; they were sort of a medium-sized riprap. The contractor had had some problem because the limestone would crumble, fall apart, kind of. He had a problem in meeting the specs, but also because we thought that the specs were not large-enough material, we allowed him to put the oversized material on the dike. I guess that's where we ran into the trouble, because Jim and the head of construction and the construction liaison person, maybe, from Billings–I can't remember–oh, and the procurement contracting officer all came out. Jim had a screaming temper tantrum about there wasn't 10 percent of the material that met the specifications. I said that I believed that he was mistaken, that we had had a testing lab in Helena doing our tests for us, and I said that we *knew* that the contractor was having trouble *meeting* the specifications, but that, you know, it wasn't nearly as bad as Jim was saying.

We went into a private room at the airport, everybody, not just Jim and me, but

everybody that was there, and he ranted and raved at me for an hour and what was I going to do about this. And I said we were going to keep on trying to get within the specifications. I didn't realize, I guess, that because he saw the big riprap out there, that was really oversized for the specifications, that he thought that was what it should all be. I didn't realize that that day.

He told me to tell the contractor to shut down his operations. Now, when I had heard construction people talk, the only thing you ever shut a contract down for was safety violations. Otherwise, you were directing their operations and they could come back at you if it didn't work, if you told them what to do. So I didn't exactly didn't tell them to shut down right away, and in the end, he and the contracting officer, I guess, both told me to shut them down. So I went over to the superintendent and told him if he put any more on there, we weren't going to pay him.

Jim said he'd never seen riprap produced without a screen, a grizzly, and the contractor was to get a grizzly and use it before he put any more riprap on. So the contractor got a grizzly. Fifteen percent of the material that went across the grizzly was all they got out of it. The rest of it was falling apart and whatnot

and didn't meet the specs. He put in a claim, I believe, and probably got paid. I don't remember. But, anyway, I don't know, Jim and I just didn't exactly get along real well. And I was a menace on the highway going home that night.

Storey: What about the regional directors?

Pettapiece: Got along with them fine. They didn't have a clue as to what I was doing most of the time, I don't think.

Storey: There would have been Mr. McPhail, Mr. Marcotte.

Pettapiece: That was it.

Storey: Just the two. Marcotte was the one who was replaced by Billy Martin. I guess that would have been after you were here, though.

Pettapiece: That was after I was gone. I think you're right, though.

Storey: What else should we talk about? Social life in the office? I gather because you were over in Cascade, you didn't do a lot of that.

Social Activities in the Great Falls Office

Pettapiece: No, I didn't, and I don't think after the office was larger that there was a whole lot of it either between the people. When the office was first opened, because everyone was new and most people from somewhere else, there was some social life, but I don't *really* think there was a whole lot of it afterwards. People had their own activities. Maybe two or three people did something together, but not a big crowd of them, although I can't say for sure.

Measuring Quantities on the Dredging Contract

Oh, I didn't tell you about how we measured–oh, on the dredging, we measured how much had been dredged in the ponds. It was before I had anything to do with it. But the surveyors spent all winter down drilling holes through the ice and measuring down to see how much silt there was in the bottom of the pond. I kept thinking we should rent those holes out for ice fishermen. We took some of our money, but we didn't. They got gas-powered augers. It had to have been pretty miserable a lot of the time.

Storey: Yes, I would think so.

Pettapiece: But they, you know, had a grid and drilled holes, and then they'd measure down to how much silt, and that's how the surveyors spent

their winters for a lot of years.

Storey: And then you paid on that basis?

Pettapiece: We paid on that basis. The contractor knew that this is how it was going to be paid. Most of the contractors we dealt with were small contractors who probably had never dealt with the government before. And I know we weren't supposed to, but I think we *trained* a lot of contractors. You couldn't tell them what to do, but when they were having a problem, you could say something like, "Have you thought of trying so and so?" And maybe they would or maybe they wouldn't.

'. . . it was the inspectors that were very good about working with the contractors. I always said at pre-construction conferences that we were not there to stand around and watch them do it wrong and then tell them it was wrong, that we were there to help them get it done right the first time. . . ."

And it wasn't me, it was the inspectors that were very good about working with the contractors. I always said at pre-construction conferences that we were not there to stand around and watch them do it wrong and then tell them it was wrong, that we were there to help them get it done right the first time. That

was the thing that bothered me about having procurement people be in charge of contracting, because when you buy a box of pencils, if it isn't right, you can send it back. But when you're building a dam, you've got to have it being built *right*, not stand back and say, "Oh, that was all wrong. You'll have to tear it all out and do it over." It didn't make any sense to anybody.

Storey: Yeah. How true.

The "Infamous Region Six Letter"

Pettapiece: I'll tell you about my involvement in the "infamous Region Six letter," as I heard it referred to later. When procurement took over–well, before that, after a contract was awarded, the contracting officer sent a letter out to the contractor telling them how much the COAR, how much authority they had. Like my authority was I could make changes up to $10,000 without having–I didn't ever do it, but I could have made changes without going further up the line to get approval.

When procurement took over, they sent out a letter that I think it probably said, you know, I had $10,000 authority. But it also said all over the place that if you have any problems or questions you go to the

contracting officer. And it wasn't just my job; it was regionwide. So it left the contractor with the opinion that if there was ever anything he wanted, he should just go to the contracting officer and bypass the construction engineer or the authorized rep.

I talked to the head of procurement and said I didn't think–I can't remember how I put it, but I said I thought that the letter was not very good. And he told me they had to do that and that was the way it was. So I said okay.

But when my Denver liaison person came up–I guess it was with the Billings liaison person, I asked them if they had seen the letter, because I knew that construction people didn't need things to work this way and that procurement people weren't going to be able to answer the construction questions. I gave them a copy of the letter and they went home again and they asked me if I'd talked to the procurement man, and I said yes, and he told me this is the way it's got to be.

The next letter that came out was different. I heard it somewhere referred to as the "infamous Region Six letter," but I just kept my mouth shut. I didn't say anything more. So there's more than one way to get things done sometimes.

Work at Gibson Dam

The job they came out on, we were up at Gibson Dam on the right-hand side when you go up. There's a road on both sides, but on the right-hand side. When you go up to the top of the dam, there was a problem with the rocks falling off. So I guess we had sort of a joint project with the Forest Service, except I don't remember what their involvement was. But we were going to bench it off, bench the rock off, and the Bureau needed some riprap, and so it was going to be a dual-purpose thing, and in the *middle* of the winter. It was cold, and we had to have the road open every night and every morning for the school bus. I think it was the school bus. Some reason it had to be opened every night and every morning. So it had to be cleaned off.

Then there was the concern about upsetting the mountain goats or the mountain sheep or–I guess it was the mountain sheep, probably. And they were blasting. It didn't disturb the sheep at all, because they would just be standing on the other side of the top of the hill when the blasting went on, and it didn't bother them even a little bit. I can't remember which fellow from Denver–Jack Hilt [phonetic]. Is that his name? That was in

construction for a good many years in Denver. Anyway, he came and we stood around freezing to death. Anyway, the first thing he said was that the safety engineer must never have been up there. We said, yeah, he was up here, you know, last week or something and things were fine. I don't know what he thought the problem was. But, anyway, the safety man had thought it was fine. He didn't stay very long because it was so cold. But it was kind of an interesting little job and kept us busy on into the wintertime that year.

I was thinking of some other job that we had that was kind of different, but now I can't remember what it was. So we're probably all done.

Storey: What have you done since retirement?

Activities since Retiring

Pettapiece: Ranched. Oh, an interesting thing I did since retirement. ASCE started a program because–and I can certainly see that it's true–people go into teaching without ever having been out practicing engineering. They go to school and then they get their master's and then they get their doctor's and then they teach. So apparently it's bothered ASCE officials for some time, and they started a

program called Practitioner in Residence. It's supposed to be set up so that the company you work for pays for your time and your transportation to go to a university for a week and teach, tell, talk to the students and the faculty about what engineering is *really* about.

A friend of mine who was–and I think he was an ASCE director, national director, at the time, anyway, sent me an application form, and I just sort of threw it away, because I didn't figure I was what they were looking for. Then he got hold of me at a meeting, insisted I finish it. He'd sent them to his friends, all of his friends. I said, "Well, that means only five or six people, I suppose." No, no. Anyway, I sent it up and I wasn't selected the first year. They sent out a list of schools and you were supposed to prioritize which ones you'd be willing to go to, and it was only supposed to be a one-time thing. So I wasn't chosen, and they asked me if I would participate the next year, I guess, and I did.

Anyway, Louisiana Tech asked me to come to Louisiana Tech, and I talked to the head of the department down there a number of times on the phone and asked them what they wanted, because it was sort of a loose arrangement. Nobody told you what you were supposed to talk about, and I suggested

several topics to him. One of them was the Canyon Ferry Dust Abatement Project, and one was communicating with contractors and inspectors and so on. I can't remember what the others were. Anyway, I went to Louisiana Tech for a week, and I talked to professors and I talked to students. They had quite a few women engineering students, I think, is why they asked me to come.

Their classes were more than an hour long–I can't remember how long they were–and you were expected to talk the whole time. I did get some slides from the regional office of the Canyon Ferry Dust Abatement Project. Although they told me I would have different groups so that I could talk about one thing all the time, it didn't turn out to be true, because one kid told me later he had heard me three times, but he liked the dust abatement talk the best. But, anyway, it was kind of an interesting experience.

As I say, I've been asked if I would stay on the list, and I said, yes, I would. Nobody else has wanted me.

It was kind of funny, because Texas University and Texas A&M are arch rivals. The head of their department had gone to Texas A&M. He had a clock on his wall that

ran backwards. We always knew those Aggies were kind of backwards. His clock ran backwards, and I gave him a bad time about being an Aggie. I went to lunch with different professors every day, and we had good Southern cooking. I went to lunch with the dean of engineering and the assistant dean one day, and it turned out the Dean of engineering and I started first grade in the same small school in south Florida in a town that isn't even a town any longer, not at the same time, but we'd had the same first grade teacher, and it was just unbelievable. But, anyway, it was a real interesting experience, and they talked to me about the problems they had as professors, and one of them was raising money. But they seem to be doing a pretty good job with what they had. So that was one thing I did.

Then two days after I got home, my husband died real unexpectedly and it was in the middle of lambing and calving, and so I spent a lot of time lambing and calving and ranching and whatnot, and sheepherding.

I'm involved in a service club that takes a lot of time. I go to the town council meetings and know that I ought to run for something–and still debating about it. I was on a local government study commission,

elected to a local government study commission. I read and I sew and I take up crafts that I never had a chance to try, and garden.

Storey: But your youngest daughter is running the ranch now?

Pettapiece: Yes.

Storey: Rather than you?

Pettapiece: Well, she and her husband want to buy a ranch. We haven't gotten the estate settled yet. I'm still working on it. So they're going to buy it. *My* cows are out on shares with a neighbor, and so I don't have to do anything. I don't get any money either, but I don't have to do anything. I mean, cattle prices have been horrendous the last couple of years.

My daughter and I own registered paint horses together, and so that's what I do, chores in the morning. She doesn't allow me to do much with them, but I get to feed some of them and check the water tanks and all that sort of thing. We sell some occasionally. We had six colts this year. Three of them were paints, three of them were solid colors. I keep hearing, "Well, now, we need to keep this one." And then pretty soon I hear, "Well, we

don't want to sell this one." But if somebody comes along with money, we'll sell.

Storey: Anything else?

Pettapiece: I don't think of anything. We've covered a lot.

Storey: I'd like to ask you again whether you're willing for the information on these tapes and the resulting transcripts to be used by researchers.

Pettapiece: I'm willing. I can't imagine what they can do with them, but I'm willing. (laughter)

Storey: Good. Thank you very much.

END SIDE 2, TAPE 2. JUNE 10, 1997.
END OF INTERVIEWS.